UNIT 2.01

Math	Add & subtract to 20
Science	Geology
Culture	Middle East
Communications	Phonics/Biographies
The Bible	Genesis-Leviticus
The Arts	Middle East
Personal Development	Character
Technology	Machines 1

KNOWLEDGE SERIES

Introduction

Welcome to OnSchooler!

Whether you have graduated from The Foundations Series or are transferring in to The Knowledge Series from another program, we hope that you will enjoy the lessons and have great academic success.

All of our lessons are organized in the Five Tiers Academic System.

- The Foundations Series covers traditional preschool, kindergarten and first grade skills. Students master their shapes and colors, letters and numbers, reading, writing and math in this Tier, as well as essential personal skills such as following instructions, using scissors, cleaning up activities and performing personal hygiene tasks. Students beginning at age 3 in our program typically complete this by age 6 or 7.
- The Knowledge Series and the Skills Series cover the material normally covered in grades 2-12, with the exception of advanced maths such as Trigonometry and Calculus. With the Standard schedule, this takes 8 years to complete. This can be cut down to six years with a year-round schedule, or even less with an Accelerated schedule. Students who begin in The Foundations Series at age 3 will typically complete this at age 13 or 14.
- The Specialty Series (not yet available) covers advanced high-school through junior-college material, on par with excellent college-prep high school programs around the world. Students completing this curriculum can take college equivalency exams typically worth two years of college credits. Students who have followed our curriculum from the beginning will typically complete this at age 17 or 18.
- Tier Five is true college-level material offered at quality colleges and universities.

As you begin this first unit of The Knowledge Series, there are a few structural notes that will help you plan and organize for the term:

- Each term in The Knowledge Series and the Skills Series have 100 lessons: 15 each of the major subjects (Math, Science, Communication and Culture)and 10 each of the minor subjects (The Arts, Personal Development, Technology and the Bible).
- The minor subjects are an essential part of the curriculum: they help create connections between the major subjects. For example, the computer programming lessons in Technology combine math, Communications and logic skills. These help make the major subjects “stickier” in the memory, plus they are a lot of fun and will bring out skills in students who may not easily excel in the major subjects.
- With the Standard schedule, students do just two lessons each day. Each of those lessons includes an on-line and a hands-on component. Suggested schedules are included; new and young students should begin with a Decelerated schedule at least for the first two weeks before switching to the Standard schedule.
- Before the first day of each term, we recommend a Prep Day to organize materials, save favorite links to resource websites, print and cut out hands-on activities, save learning songs to a CD, and so forth. If you are missing a few materials for the first week (i.e. things you are ordering but have not yet arrived) you can just rearrange your schedule a little to do those lessons later.
- If you do not take off any vacation/sick days, it takes 10 weeks (50 instructional days) to complete each term on the Standard schedule, followed by 3-5 days for final exams and typically 1-2 weeks for vacation and prepping for the next term. If you are home schooling, we recommend just planning your schedule one week at a time until you get an idea of how long it will take each of your children to complete their lessons.

	The Knowledge Series	Tier Three
Communications	Clear written communication: handwriting, typing, spelling, vocabulary, basic grammar, punctuation, sentence structure, paragraphs and five-paragraph essays. Fluent at reading with inflection. Can grasp subtle meaning in written and spoken communication.	Powerful mastery of the English language: expanded vocabulary, persuasive speech involving both a clear message and supporting body language, able to glean information from ancient texts, reference works and the internet. Can create professional and business documents as well as creative and entertaining works such as cartoons and plays.
Math	Absolute mastery (both accuracy and speed) of the basics of math: arithmetic with whole numbers. Deep understanding of the values of very small (decimal and fraction) and very large (exponential) numbers and how to do calculations with them. Ability to solve any type of arithmetic "word problem" using these skills.	Expansion of problem-solving skills to use the tools of algebra and geometry to solve even more complex problems. Can analyze any "word problem" to create and solve equations using variables, graphs and geometric relationships to solve everyday problems in a wide variety of fields.
Culture	By the end of unit six, label every country in the world on a blank map along with major physical and political features. By the end of unit twelve, create a timeline from memory highlighting all the major civilizations in human history including notable figures, historical events, and cultural developments.	By the end of unit six, create a timeline from history highlighting the major eras of US history including notable figures, events and cultural developments; be conversant on any topic in US history. By the end of unit twelve be conversant on the current international situation on these topics: economics, government, religion, dining and other social events, tourism, and political hot topics.
Science	After three units each in (macro)biology, botany, geology and physics: master the skills of observing, questioning, experimenting, collecting data and drawing conclusions. Use correct scientific terms and taxonomy, convert between metric units and develop an awareness of flaws in logic that lead to incorrect conclusions.	After three units each in microbiology, chemistry, physics and astronomy: master the skills of questioning assumptions, measuring and calculating very small and very large quantities, creating and executing controlled experiments, reading ancient original texts and modern scientific journals to understand the progress (and mistakes) of scientific history, and use science skills to solve problems.
The Arts	First six units: study the arts of each continent along with the Culture sequence. Last six units: practice and develop artistic skills inspired by historically significant developments in graphic arts, music, textiles and fashion, theater, architecture and technology.	First six units: continue to develop personal artistic skills with projects inspired by developments in US history. Last six units: focus on one artistic strand to develop professional-level skills; produce at least one high-quality project, ideally a collaboration with other students.
Technology	First six units: two each in simple machines, electronics and coding. Next six units: half History of Technology (coordinates with Culture strand) and half coding (coordinates with Math strand).	Half coding (combines logic with Math and Communication strands) and half applied technology. Ability to program a computer to create mathematic and scientific models, games and other practical applications. Ability to repair everyday technology and use technology to create new solutions.
Personal Development	Half vital personal skills, half physical education. Covers everything from flossing and nutrition to making friends and dealing with bullies. Develop flexibility, strength, speed, endurance and coordination.	Half practical psychology and sociology, half physical education. Students identify and solve their personal problems, make a life plan and improve the world. They also monitor and improve health and fitness levels each unit.
Bible/ 2nd Language/ Study Hall	Read selected Bible stories, memorize famous verses, and apply principles to daily life (w/ Pers. Dev. strand). (If not using the Bible strand, use this time slot for a dedicated 2nd language or a general study hall period.)	Read through the Bible in English with light study of the ancient languages of the original text. Study the overarching themes of the Bible, its impact on modern life (with Culture strand), and everyday applications (with Personal Development).

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Getting Started: Choosing the right Series and Speed

Let's say that you and two friends are homeschooling together. Between the two of you, your kids are age 4, 6, 7, 8, 10, 11 and 12. The first decision to make is: in which Tier each student should begin? This is actually fairly easy to decide. If the student reads absolutely fluently at the third grade level or above, he or she may begin in The Knowledge Series; otherwise begin in The Foundations Series.

In this case, let's say that your youngest three students all begin in The Foundations Series, but the 7-year-old has mastered nearly all of the material and so begins in the The Foundations Series Transitional Unit while 6-year-old is working on reading, writing and math and the 4-year-old is working on shapes, colors, letters and numbers.

Now for the older four: all of them begin in The Knowledge Series, Unit One (often abbreviated Q201 or 2.01). Have the 8-year-old begin at half speed: only one of the three-hour lessons per day. That way if it takes a bit longer, you still have the afternoon to finish it up; otherwise you can use the afternoon for a 2nd language, art projects, field trips, and so forth. Now let's say with the oldest three, the 11-year-old is very bright and advanced: this student can begin at double-speed, completing four lessons per day until the work starts to become too hard, then slow down to the normal pace at two lessons per day. Then let's say that the other two have been making average or below-average progress at school; but because of their age they've already seen quite a bit of the material before so they can start at the regular speed of two lessons per day.

	4, 6	7	8	10, 12	11
8:30	The Foundations Series: direct Instruction	Computer 1 (The Foundations Series Transitional)	Computer 1 (Q201)	Computer 1 (Q201)	Computer 1, 2 (Q201)
9:00					
9:30					
10:00	Play	Hands-On 1 (The Foundations Series Transitional)	Hands-On 1 (Q201)	Hands-On 1 (Q201)	Hands-On 1,2 (Q201)
10:30					
11:00					
11:30					
12:00					
12:30	The Foundations Series: direct Instruction	The Foundations Series: direct Instruction	Extra Work Time/ Fun Classes	Computer 2 (Q201)	Computer 3, 4 (Q201)
1:00					
1:30					
2:00	Play/Rest	Play/ Fun Classes	Play/ Fun Classes	Hands-On 2 (Q201)	Hands-On 3, 4 (Q201)
2:30					
3:00					

After you've completed 1-2 units like this, the 8-year-old should switch to the standard schedule of two lessons per day. This decelerated schedule at the beginning simply helps that student to feel successful when beginning this very challenging program.

With home schooling, you have a lot of flexibility to make changes as you go. Let's say that instead of the proposed schedule above, the 8-year-old is eager to keep up with the older kids and begs to follow their schedule by doing two lessons per day. If this student wants to do that, this type of ambition should be encouraged. Or let's say that the 12-year-old is really struggling with the materials and needs to slow down, or that the 10-year-old wants to try the accelerated schedule...go ahead and switch things up! We recommend planning out your lesson schedule just one week at a time so that you can be flexible and change things as needed.

When planning the schedule, pair students strongest subjects with their weakest so that the extra time they gain from completing one lesson early can be added to a more difficult subject. For example, we often see students with uneven skills in Math and Communications so we schedule those on the same day. But if you have a student who hates them both but loves two other subjects, pair a positive subject with a negative one to balance out the day. When working with multiple students, as in this example, try to schedule everyone for the same subject at the same time; in other words, they're all doing Science even if it's different lessons. This makes it easier for you as the teacher to get them all started on their hands-on activities with the same group of supplies.

Example: Standard Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	Math 1 Comm 1	Science 1 Culture 1	Tech 1 PDev 1	Math 2 Comm 2	Bible 1 Art 1
Week 2	Science 2 Culture 2	Math 3 Comm 3	Tech 2 PDev 2	Science 3 Culture 3	Bible 2 Art 2
Week 3	Math 4 Comm 4	Science 4 Culture 4	Tech 3 PDev 3	Math 5 Comm 5	Bible 3 Art 3
Week 4	Science 5 Culture 5	Math 6 Comm 6	Tech 4 PDev 4	Science 6 Culture 6	Bible 4 Art 4
Week 5	Math 7 Comm 7	Science 7 Culture 7	Tech 5 PDev 5	Math 8 Comm 8	HOLIDAY/SICK DAY/ REVIEW DAY
Week 6	HOLIDAY/SICK DAY/ REVIEW DAY	Science 8 Culture 8	Tech 6 PDev 6	Math 9 Comm 9	Bible 5 Art 5
Week 7	Science 9 Culture 9	Math 10 Comm 10	Tech 7 PDev 7	Science 10 Culture 10	Bible 6 Art 6
Week 8	Math 11 Comm 11	Science 11 Culture 11	Tech 8 PDev 8	Math 12 Comm 12	Bible 7 Art 7
Week 9	Science 12 Culture 12	Math 13 Comm 13	Tech 9 PDev 9	Science 13 Culture 13	Bible 8 Art 8
Week 10	Math 14 Comm 14	Science 14 Culture 14	Tech 10 PDev 10	Math 15 Comm 15	Bible 9 Art 9
Week 11	Science 15 Culture 15	Bible 10 Art 10	FINAL EXAMS		
Week 12	MAKEUP DAYS/VACATION/PREP FOR NEXT TERM				

For home school, we recommend keeping the Minor Subjects on the same two days each week for predictability. They can be any two days to coordinate with music lessons, soccer practice, robotics clubs, etc. Toward the end of the term things may need to be shifted. We recommend taking a break (about a week) after each term to prep for the next one and do fun field trips and other activities as a reward for passing all the final exams.

Example: Decelerated Schedule

Week	Monday	Tuesday	Wednesday	Thursday	Friday
1	Math 1	Tech 1	Comm 1	Bible 1	Science 1
2	Culture 1	Arts 1	Math 2	P Dev 1	Comm 2
3	Science 2	Tech 2	Culture 2	Bible 2	Math 3
4	Comm 3	Arts 2	Science 3	P Dev 2	Culture 3
5	Math 4	Tech 3	Comm 4	Bible 3	Science 4
6	Culture 4	Arts 3	Math 5	P Dev 3	Comm 5
7	Science 5	Tech 4	Culture 5	Bible 4	Math 6
8	Comm 6	Arts 4	Science 6	P Dev 4	Culture 6
9	Math 7	Tech 5	Comm 7	Bible 5	Science 7
10	Culture 7	Arts 5	Math 8	P Dev 5	Comm 8
11	HOLIDAY/SICK DAY/REVIEW DAY				
12	Science 8	Tech 6	Culture 8	Bible 6	Math 9
13	Comm 9	Arts 6	Science 9	P Dev 6	Culture 9
14	Math 10	Tech 7	Comm 10	Bible 7	Science 10
15	Culture 10	Arts 7	Math 11	P Dev 7	Comm 11
16	Science 11	Tech 8	Culture 11	Bible 8	Math 12
17	Comm 12	Arts 8	Science 12	P Dev 8	Culture 12
18	Math 13	Tech 9	Comm 13	Bible 9	Science 13
19	Culture 13	Arts 9	Math 14	P Dev 9	Comm 14
20	Science 14	Tech 10	Culture 14	Bible 10	Math 15
21	Comm 15	Arts 10	Science 15	P Dev 10	Culture 15
22	FINAL EXAMS				
23	MAKEUP DAYS/VACATION/PREP FOR NEXT TERM				

The Decelerated schedule is recommended for Unit 201 for young students (typically age 8 and younger) to provide an easier transition from The Foundations Series and to ensure that students are very successful in their first term. After that, students should typically switch to the Standard schedule except those that are very young, need significant extra time for learning, or in families that have a lot of other activities in the afternoons (i.e. piano lessons + Spanish + soccer practice + Boy Scouts + family business + robotics club) to the point that following the Standard schedule is too stressful for the student. In this case we recommend a year-round schedule to ensure completion of at least two complete units each calendar year. With the Decelerated schedule it is important to do at least ten rounds on the MathGame every day; also do 20-30 minutes daily with Duolingo or other language program if doing a second language (either instead of Bible lessons or in addition to them).

Accelerated schedules are recommended for adult learners, students age 12 and up transferring in from other academic programs, talented and gifted students, and anyone else wanting to progress very rapidly through the academic program. Using an accelerated schedule like this, a student could complete all twelve units of The Knowledge Series in just two years—which is very handy for older students with gaps in their skills. Most students will want to slow down to a Standard schedule for Tier Three, but a few may want to continue at an accelerated pace.

With an Accelerated schedule, the hands-on activities are typically combined and condensed. Moreover, since most students in the Accelerated schedule are adults or teens, most hands-on assignments can be completed more quickly than by younger students. You will notice that we recommend sticking with just one or two subjects per day; this makes it easiest to combine and condense the hands-on assignments.

When using an Accelerated schedule, be sure to modify it as needed. Schedules with 4-5 lessons a day are provided. But you can make a schedule with 3 lessons per day or more depending on the student's learning speed. Please note that the Bible lessons in Tier Three are very long, so students are more successful with a maximum of one Bible lesson per day, or even splitting them in half and doing half a lesson every day along with the other accelerated schedule.

Some students have a particularly one-track mind and prefer to study only one subject at a time, or just need to refresh their skills in a single subject area. In this case, Accelerated Schedule D may be the best match. However, this type of schedule loses some of the cross-subject connections built into the curriculum so it's not typically recommended.

Example: Accelerated Schedule A

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	Math 1,2 Culture 1,2	Science 1,2 Comm 1,2	Tech 1,2 PDev 1,2	Math 3,4 Culture 3,4	Bible 1,2 Art 1,2
Week 2	Science 3,4 Comm 3,4	Math 5,6 Culture 5,6	Tech 3,4 PDev 3,4	Science 5,6 Comm 5,6	Bible 3,4 Art 3,4
Week 3	Math 7,8 Culture 7,8	Science 7,8 Comm 7,8	Tech 5,6 PDev 5,6	Math 9,10 Culture 9,10	Bible 5,6 Art 5,6
Week 4	Science 9,10 Comm 9,10	Math 11,12 Culture 11,12	Tech 7,8 PDev 7,8	Science 11,12 Comm 11,12	Bible 7,8 Art 7,8
Week 5	Math 13,14 Culture 13,14	Science 13,14 Comm 13,14	Tech 9,10 PDev 9,10	Math 15, Science 15 Culture 15, Cul 15	Bible 9,10 Art 9,10
Week 6	FINAL EXAMS				

Example: Accelerated Schedule B

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	Math 1-5	Science 1-5	Tech 1-5	Comm 1-5	Bible 1-5
Week 2	Culture 1-5	Math 6-10	PDev 1-5	Science 6-10	Arts 1-5
Week 3	Comm 6-10	Culture 6-10	Tech 6-10	Math 11-15	Bible 6-10
Week 4	Science 11-15	Comm 11-15	PDev 6-10	Culture 11-15	Arts 6-10
Week 5	FINAL EXAMS				

Example: Accelerated Schedule C

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	Math 1-3 Bible 1-2	Comm 1-3 PDev 1-2	Culture 1-3 Art 1-2	Science 1-3 Tech 1-2	Math 4-6 Bible 3-4
Week 2	Comm 4-6 PDev 3-4	Culture 4-6 Art 3-4	Science 4-6 Tech 3-4	Math 7-9 Bible 5-6	Comm 7-9 PDev 5-6
Week 3	Culture 7-9 Art 5-6	Science 7-9 Tech 5-6	Math 10-12 Bible 7-8	Comm 10-12 PDev 7-8	Culture 10-12 Art 7-8
Week 4	Science 10-12 Tech 7-8	Math 13-15 Bible 9-10	Comm 13-15 PDev 9-10	Culture 13-15 Art 9-10	Science 13-15 Tech 9-10
Week 5	FINAL EXAMS				

Example: Accelerated Schedule D

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	Math 1-4	Math 5-8	Math 9-12	Math 13-15	Math FX
Week 2	Comm 1-4	Comm 5-8	Comm 9-12	Comm 13-15	Comm FX
Week 3	Science 1-4	Science 5-8	Science 9-12	Science 13-15	Science FX
Week 4	Culture 1-4	Culture 5-8	Culture 9-12	Culture 13-15	Culture FX
Week 5	Tech 1-5	Tech 6-10	Arts 1-5	Arts 6-10	Tech & Arts FX
Week 6	PDev 1-5	PDev 6-10	Bible 1-5	Bible 6-10	PDev & Bible FX

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1					
Week 2					
Week 3					
Week 4					
Week 5					
Week 6					
Week 7					
Week 8					
Week 9					
Week 10					
Week 11					
Week 12					
Week 13					
Week 14					

Unit 2.01 Lesson Titles

Lesson #	Math	Science	Culture	Communications
201	**Add & subtract to 20**	**Geology**	**Middle East**	**Phonics/Biographies**
201.01	Add 0, 1, 2 or 3 up to 20	Geology overview	Introduction, Oceans	-a- words
201.02	More addition practice	Our solar system	Continents	-e- words
201.03	Add 5, or 4 or 6	The Earth	Turkey, Cyprus	-i- words
201.04	Add 10, or 9 or 11	Rocks, minerals and soil	Syria, Lebanon	-o- words
201.05	Add 7 or 8	Earthquakes	Israel, Jordan	-u- words
201.06	Addition Review	Volcanoes	Saudi Arabia	4-5 letter phonetic
201.07	Addition & Subtraction Families	Mts., hills, plateaus, glaciers	Yemen, Oman, UAE, Qatar, Bahrain	4-5 letter phonetic
201.08	Subtract 0, 1, 2 or 3	Water	Kuwait, Iraq	4-5 letter phonetic
201.09	More subtraction practice	Oceans	Iran	sh, ch, tch
201.10	Subtract 5 or 10	Seas & lakes	Pakistan	th, ck
201.11	Subtract 5, or 4 or 6	Rivers	Afghanistan	ss, ll
201.12	Subtract 10, or 9 or 11	Floods & glaciers	Tajikistan, Kyrgyzstan	ow, aw
201.13	Subtract 7 or 8	Wind	Uzbekistan, Turkmenistan	ou, ew, ay, oy
201.14	Subtraction Review	Hurricanes	Azerbaijan, Armenia, Georgia	ar, ir, er, ur, or
201.15	Mixed Review	Weather, seasons, biomes	Review	-e words

Lesson #	The Bible	The Arts	Personal Development	Technology
201	**Genesis-Leviticus**	**Middle East**	**Character**	**Machines 1**
201.01	Genesis 1-15	Turkey	Honesty	Six Simple Machines
201.02	Genesis 16-26	Syria	Wisdom	Inclined Plane
201.03	Genesis 27-36	Israel	Love	Wedge
201.04	Genesis 37-50	Saudi Arabia	Joy	Screw
201.05	Exodus 1-10	Iraq	Peace	Wheel & Axle
201.06	Exodus 11-23	Pakistan	Patience	Gear
201.07	Exodus 24-32	Iran	Goodness	Class 1 Lever
201.08	Exodus 33-40	Afghanistan	Kindness	Class 2 Lever
201.09	Leviticus 1-15	More -stans	Gentleness	Class 3 Lever
201.10	Leviticus 16-27	Azerbaijan, Armenia, Georgia	Self Control	Final Review

Math 2.01: Overview & Prep Day

Objectives

By the end of this term each student will be able to:

- Add single-digit numbers to create sums up to 20 with:
    - 100% accuracy
    - Speed of 10 questions in 20 seconds
- Subtract single-digit numbers from a subtrahend up to 20 with:
    - 100% accuracy
    - Speed of 10 questions in 20 seconds
- Use a variety of models to illustrate the meaning of these values
- Solve simple "word problems" requiring these same skills

On-Line Lessons	
Lesson #	Math
201	**Add & subtract to 20**
201.01	Add 0, 1, 2 or 3 up to 20
201.02	More addition practice
201.03	Add 5, or 4 or 6
201.04	Add 10, or 9 or 11
201.05	Add 7 or 8
201.06	Addition Review
201.07	Addition & Subtraction Families
201.08	Subtract 0, 1, 2 or 3
201.09	More subtraction practice
201.10	Subtract 5 or 10
201.11	Subtract 5, or 4 or 6
201.12	Subtract 10, or 9 or 11
201.13	Subtract 7 or 8
201.14	Subtraction Review
201.15	Mixed Review

Description

The first four unit-units of math cover addition, subtraction, multiplication and division with whole numbers. As this is the foundation of all mathematic calculations, it is very important that students fully grasp these concepts and are able to perform these calculations with 100% accuracy; speed is also important.

The first seven lessons this unit cover addition; the last eight cover subtraction and mixed review. Next unit will be nearly the same but with multiplication and division. Then units three and four will repeat those skills but with much larger numbers.

Of all the subjects, math is the least accelerated. Instead, students need to master it at a truly deep conceptual level while building accuracy (followed by speed) in calculations. Thus activities include both the very concrete and the completely abstract.

Prepping

1. On each computer, go to the Hands-On materials for math lesson 2.01.**01** (Tier 2, unit 1, lesson 1) and download Mrs. Fischer's MathGame. Start it and make sure that it works.
2. Print out a stack of 25 MathGame ScoreSheets for each student (any extras will be used next unit). Do a baseline page: have each student do the MathGame at level 1 for each of the four operations and write down the scores, 10 times each. Calculate the average.
3. Print the Number Strips page and cut out all the number strips. Tape the longer number line (1-18) together and tape it to the desk in front of the keyboard. Place all the number strips of varying length in a plastic bag or other container.
4. Print a set of worksheets for each student and place them in the Math section of the student's notebook. Print a set for yourself to use as an answer key.
5. Print the flashcards and cut them up, ideally with a paper cutter.
6. Reserve and pick up some books from the Math Literature list. Use these when students finish their work early.

Supplies

Base Ten blocks or paper equivalent

Math 2.01: Hands-On Lesson Plans Overview

201	Activity 1	Activity 2	Activity 3	Activity 4
201.01	MathGame Addition Level 1 10 right in 100 seconds	Flashcards & Manipulatives Finger Addition	Worksheet Finger Addition	Chart Addition to 20
201.02	MathGame Addition Level 1 10 right in 75 seconds	Flashcards & Manipulatives Sums to 12, Commutative	Worksheet Sums to 12, Commutative	Story Problems Sums to 12, Commutative
201.03	MathGame Addition Level 1 10 right in 50 seconds	Flashcards & Manipulatives Sums to 20	Worksheet Sums to 20	Story Problems Sums to 20
201.04	MathGame Addition Level 1 10 right in 40 seconds	Flashcards & Manipulatives Sums to 20	Worksheet Sums to 20	Story Problems Sums to 20
201.05	MathGame Addition Level 1 10 right in 30 seconds	Flashcards & Manipulatives Adding 10, 9, 8	Worksheet Adding 10, 9, 8	Story Problems Adding 10, 9, 8
201.06	MathGame Addition Level 1 10 right in 25 seconds	Flashcards & Manipulatives Plus 10 to 100	Worksheet Plus 10 to 100	Story Problems Plus 10 to 100
201.07	MathGame Addition Level 1 10 right in 20 seconds	Flashcards & Manipulatives Review	Worksheet Word Problems	Extra time on the MathGame
201.08	MathGame Subtraction Level 1 10 right in 100 seconds	Flashcards & Manipulatives Brothers & Sisters	Worksheet Brothers & Sisters	Story Problems Brothers & Sisters
201.09	MathGame Subtraction Level 1 10 right in 75 seconds	Flashcards & Manipulatives Finger Subtraction	Worksheet Finger Subtraction	Story Problems Finger Subtraction
201.10	MathGame Subtraction Level 1 10 right in 50 seconds	Flashcards & Manipulatives The Ones	Worksheet The Ones	Story Problems The Ones
201.11	MathGame Subtraction Level 1 10 right in 40 seconds	Flashcards & Manipulatives Teens Minus Singles	Worksheet Teens Minus Singles	Story Problems Teens Minus Singles
201.12	MathGame Subtraction Level 1 10 right in 30 seconds	Flashcards & Manipulatives Subtracting Close Numbers	Worksheet - Close Numbers	Story Problems - Close Numbers
201.13	MathGame Subtraction Level 1 10 right in 25 seconds	Flashcards & Manipulatives Review	Worksheet Word Problems	Extra time on the MathGame
201.14	MathGame Subtraction Level 1 10 right in 20 seconds	Extra time on the MathGame	Extra time on the MathGame	Extra time on the MathGame
201.15	MathGame Add & Subtract Level 1 10 right in 20 seconds	Extra time on the MathGame	Final Exam version A	Exam Discussion

MathGame Score Sheet

Type: + - * / **Level:** 1 2 3 4

	# Right	Seconds
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
Average		

Type: + - * / **Level:** 1 2 3 4

	# Right	Seconds
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
Average		

Type: + - * / **Level:** 1 2 3 4

	# Right	Seconds
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
Average		

Type: + - * / **Level:** 1 2 3 4

	# Right	Seconds
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
Average		

Math Literature

Counting 1-10

Can You Count 10 Toes? *Evans*
Cat Count *Lewin*
Count-a-saurus *Blumenthal*
Cucumber Soup *Krudwig*
Emeka's Gift: an African Counting Book *Onyefulu*
Every Buddy Counts *Murphy*
Feast for 10 *Falwell*
How Many Bugs in a Box? *Carter*
In a Cabin in a Wood *McNally*
Moja Means One *Feelings*
Mrs. McTats and Her Houseful of Cats *Capucilli*
My Little Sister Ate One Hare *Grossman*
One Gorilla *Morozumi*
One Hunter *Hutchins*
One Monkey Too Many *Killer*
One Watermelon Seed *Lottridge*
Pigs from 1 to 10 *Giesert*
Simon and the Snowflakes *Gilles*
Six Dinner *Sid Moore*
Ten Go Hopping *Allbright*
Ten Rosy Roses *Merriam*
Ten Sly Piranhas *Wise*
The Midnight Farm *Lindberg*
Two Ways to Count to Ten *Dee*
Waving: A Counting Book *Sis*
Zin! Zin! Zin! A Violin *Priceman*

Counting (other)

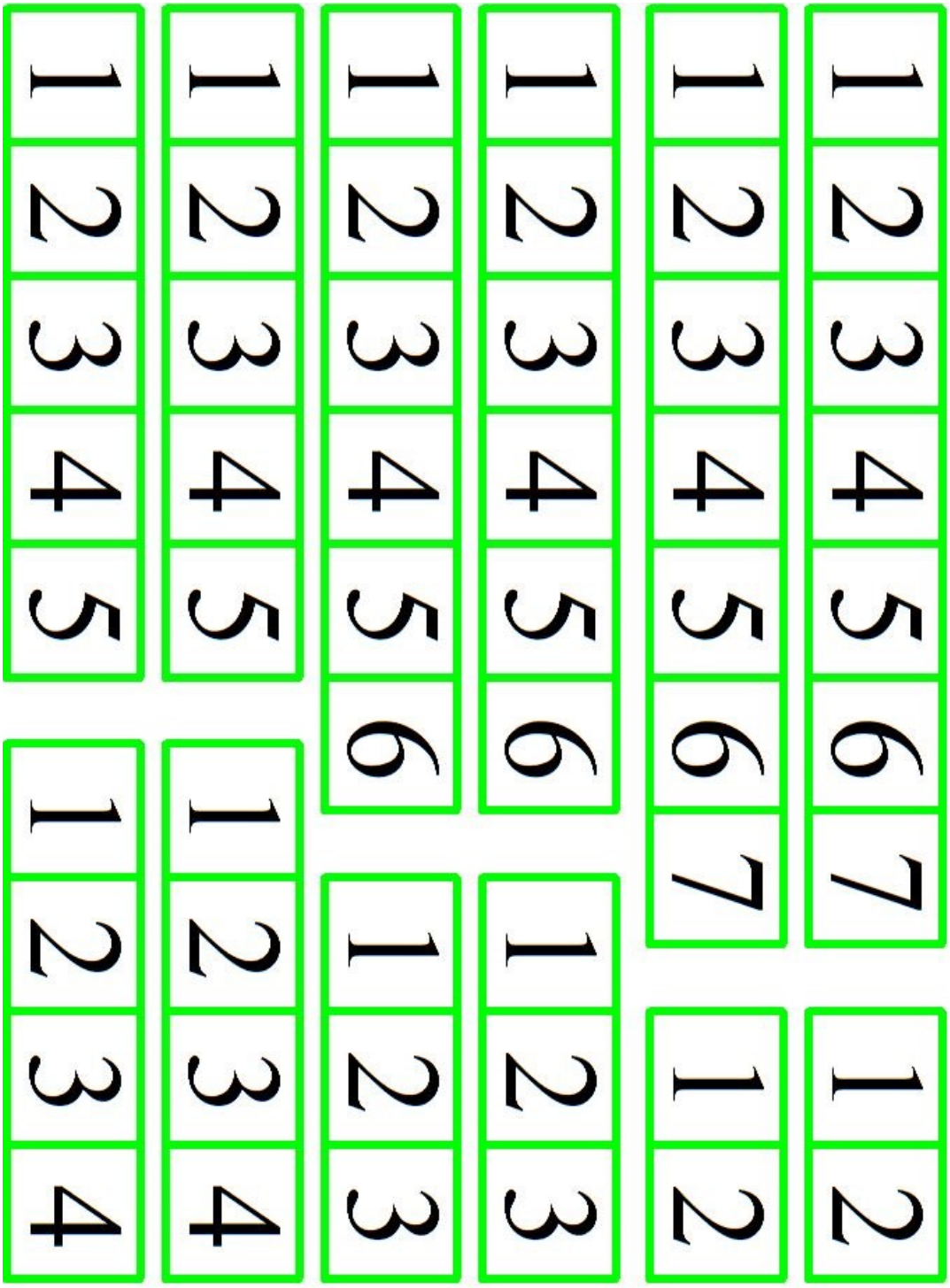
98, 99, 100! Ready or Not, Here I Come! *Slater*
100 Days of School *Harris*
100th Day Worries *Cuyler*
100 Ways to Get to 100 *Pallotta & Bolster*
A Cache of Jewels *Heller*
A Dozen Dozens *Ziefert*
Amazing & Incredible Counting Stories *Grover*
Anno's Flea Market *Anno*
"Band-aids" from Where the Sidewalk Ends *Silverstein*
Berlioz the Bear *Brett*
Blast Off! *Cole*
The Boy Who Was Followed Home *Mahy*
The Cake that Mack Ate *Robart*
Counting on Frank *Clement*
Count on Pablo *Derubertis*
Count on Your Fingers African Style *Zaslavsky*
Count Your Way Through...India, etc *Haskins*
The Crayon Counting Book *Ryan*
The First Dog *Brett*
How Many Feet? How Many Tails? *Burns*
How Much/Many/ Far/Heavy/Long/Tall is 1000? *Nolan*
The Looking Book: A Hide-n-Seek Counting Story *Hoberman*
Miss Bindergarten Celebrates the 100th Day of Kindergarten *Slate*
My Very Own Octopus *Most*
Ocean Parade (oop) *MacCarthy*
One Duck, Another Duck *Pomerantz*
One Hundred is a Family *Ryan*
One Moose, Twenty Mice *Beaton*
One Watermelon Seed *Lottridge*
Out For the Count *Cave & Riddell*
Reeses Pieces Count by Fives *Pallotta*
So Many Cats *Deregniers*
Ten Terrible Dinosaurs *Stickland*
When the King Rides By *Mahy*
The Wolf's Chicken Stew *Kasza*

Adding & Subtracting

26 Letters & 99 Cents by *Hoban*
The 329th Friend *Sharmat*
A Bag Full of Pups *Gackenbach*
A Collection for Kate *Derubertis*
Adding Alligators *Franco*
Addition Annie *Gisler*
A Fair Bear Share *Murphy*
Animals on Board *Murphy*
Annie's One to Ten *Owen*
Arithme-Tickle: An Even Number of Odd Riddle-Rhymes *Lewis*
Billy's Beetle *Inkpen*
Cats Add Up *Ochiltree*
Cat Up a Tree *Hassett*
Centipede's 100 Shoes *Ross*
Domino Addition *Long*
Each Orange Had 8 Slices *Giganti*
Eggs for Tea *Pienkowski*
Elevator Magic *Murphy*
George Washington's Teeth *Chandra*
Gingerbread Baby *Brett*
Handa's Surprise *Browne*
The Hershey's Kisses Subtraction Book *Pallotta*
Hippos Go Berserk *Boynton*
How Many Ants? *Brimner*
How Will We Get to the Beach? *Luciani*
I Know an Old Lady Who Swallowed a Fly *Hawkins & Hawkins*
Imogene's Antlers *Small*
Just Add Fun *Rocklin*
Keepers of the Earth *Caduto*
Light's Out *Derubertis*
Many Luscious Lollipops *Heller*
Mission: Addition *Leedy*
Monster Math Picnic *MacCarone*
Monster Musical Chairs *Murphy*
More, Fewer, Less *Hoban*
Number One Number Fun *Chorao*
One Less Fish *Toft*
One Riddle, One Answer *Thompson*
One is a Snail Ten is a Crab *Sayre & Sayre*
One, Two, Three, Going to Sea *Alain*
Quack and Count *Baker*
Ready, Set, Hop! *Murphy*
Rooster's Off to See the World *Carle*
Safari Park *Murphy*
Seven Candles for Kwanzaa *Pinkney*
Six Dogs, 23 Cats, 45 Mice, and 116 Spiders *Chalmers*
Stay in Line! *Slater*
Ten Flashing Fireflies *Sturges*
Ten for Dinner *Bogart*
Ten Little Mice *Dunbar*
The Bag I'm Taking to Grandma's *Neitzel*
The Seals on the Bus *Hort*
The Shark Swimathon *Murphy*
The Twelve Circus Rings *Chwast*
Twenty is Too Many *Duke*
The Untidy Little HedgeHog *Brett*
You Can't Buy a Dinosaur with a Dime *Ziefert*

Addition Chart

+	1	2	3	4	5	6	7	8	9	10
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										


1 2 3 4 5
1 2 3 4 5
1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6 7
1 2 3 4 5 6 7
1 2 3 4
1 2 3 4
1 2 3
1 2 3
1 2
1 2

1 2 3 4 5 6 7 8 9
10 11 12 13 14 15 16 17 18
1 2 3 4 5 6 7 8 9
1 2 3 4 5 6 7 8 9
1 2 3 4 5 6 7 8
1
1 2 3 4 5 6 7 8
1

1 + 1 =	2 + 1 =	3 + 1 =	4 + 1 =
5 + 1 =	6 + 1 =	7 + 1 =	8 + 1 =
9 + 1 =	10 + 1 =	2 + 2 =	3 + 2 =
4 + 2 =	5 + 2 =	6 + 2 =	7 + 2 =

8 + 2 =	3 + 3 =	4 + 3 =	5 + 3 =
6 + 3 =	7 + 3 =	4 + 4 =	5 + 4 =
6 + 4 =	5 + 5 =		

Addition Flashcards for Math 201.01

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Name _____ Date _____

Intro to Addition: Finger Math

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

1 + 1 =

2 + 1 =

3 + 1 =

4 + 1 =

5 + 1 =

6 + 1 =

7 + 1 =

8 + 1 =

9 + 1 =

2 + 2 =

3 + 2 =

4 + 2 =

5 + 2 =

6 + 2 =

7 + 2 =

8 + 2 =

3 + 3 =

4 + 3 =

5 + 3 =

6 + 3 =

7 + 3 =

4 + 4 =

5 + 4 =

5 + 5 =

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1 + 2 =	1 + 3 =	1 + 4 =	1 + 5 =
1 + 6 =	1 + 7 =	1 + 8 =	1 + 9 =
2 + 3 =	2 + 4 =	2 + 5 =	2 + 6 =
2 + 7 =	2 + 8 =	3 + 4 =	3 + 5 =

3 + 6 =	3 + 7 =	4 + 5 =	10 + 1 =
1 + 10 =	10 + 2 =	2 + 10 =	11 + 1 =
1 + 11 =	9 + 3 =	3 + 9 =	9 + 2 =
2 + 9 =	8 + 4 =	4 + 8 =	8 + 3 =

3 + 8 =	7 + 5 =	5 + 7 =	7 + 4 =
4 + 7 =	6 + 6 =	6 + 5 =	5 + 6 =

Addition Flashcards for Math 201.02

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Name _____ Date _____

Sums up to 12

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

6 + 6 =

6 + 5 =

7 + 5 =

7 + 4 =

8 + 4 =

8 + 3 =

9 + 3 =

9 + 2 =

10 + 2 =

10 + 1 =

4 + 2 =

2 + 4 =

2 + 1 =

1 + 2 =

5 + 2 =

2 + 5 =

6 + 4 =

4 + 6 =

5 + 3 =

3 + 5 =

2 + 3 =

3 + 2 =

6 + 3 =

3 + 6 =

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You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.02.

19 + 1 =	18 + 2 =	17 + 3 =	16 + 4 =
15 + 5 =	14 + 6 =	13 + 7 =	12 + 8 =
11 + 9 =	10 + 10 =	18 + 1 =	17 + 2 =
16 + 3 =	15 + 4 =	14 + 5 =	13 + 6 =

12 + 7 =	11 + 8 =	10 + 9 =	17 + 1 =
16 + 2 =	15 + 3 =	14 + 4 =	13 + 5 =
12 + 6 =	11 + 7 =	10 + 8 =	9 + 9 =
16 + 1 =	15 + 2 =	14 + 3 =	13 + 4 =

12 + 7 =	11 + 8 =	10 + 9 =	17 + 1 =
16 + 2 =	15 + 3 =	14 + 4 =	13 + 5 =
12 + 6 =	11 + 7 =	10 + 8 =	9 + 9 =
16 + 1 =	15 + 2 =	14 + 3 =	13 + 4 =

10 + 5 =	9 + 6 =	8 + 7 =	13 + 1 =
12 + 2 =	11 + 3 =	10 + 4 =	9 + 5 =
8 + 6 =	7 + 7 =	12 + 1 =	11 + 2 =
10 + 3 =	9 + 4 =	8 + 5 =	7 + 6 =

11 + 1 =	10 + 2 =	9 + 3 =	8 + 4 =
7 + 5 =	6 + 6 =	10 + 1 =	9 + 2 =
8 + 3 =	7 + 4 =	6 + 5 =	

Addition Flashcards for Math 201.03

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Name _____ Date _____

Sums up to 20 (page 1 of 3)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

7 + 7 =

6 + 6 =

12 + 1 =

10 + 1 =

11 + 2 =

9 + 2 =

10 + 3 =

8 + 3 =

9 + 4 =

7 + 4 =

8 + 5 =

6 + 5 =

7 + 6 =

11 + 1 =

10 + 2 =

9 + 3 =

8 + 4 =

7 + 5 =

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You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.03.

Name _____ Date _____

Sums up to 20 (page 2 of 3)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

11 + 6 =

10 + 7 =

9 + 8 =

15 + 1 =

14 + 2 =

13 + 3 =

12 + 4 =

11 + 5 =

10 + 6 =

9 + 7 =

8 + 8 =

14 + 1 =

13 + 2 =

12 + 3 =

11 + 4 =

10 + 5 =

9 + 6 =

8 + 7 =

13 + 1 =

12 + 2 =

11 + 3 =

10 + 4 =

9 + 5 =

8 + 6 =

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Name _____ Date _____

Sums up to 20 (page 3 of 3)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

7 + 7 =

6 + 6 =

12 + 1 =

10 + 1 =

11 + 2 =

9 + 2 =

10 + 3 =

8 + 3 =

9 + 4 =

7 + 4 =

8 + 5 =

6 + 5 =

7 + 6 =

11 + 1 =

10 + 2 =

9 + 3 =

8 + 4 =

7 + 5 =

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You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.03.

Name _____ Date _____

Sums up to 20 Mixed (page 1 of 3)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

14 + 1 =

11 + 4 =

12 + 2 =

12 + 3 =

12 + 4 =

14 + 2=

15 + 2 =

11 + 6 =

12 + 6 =

10 + 2 =

9 + 2 =

11 + 2 =

10 + 9 =

9 + 9 =

9 + 8 =

8 + 8 =

13 + 4 =

13 + 5 =

13 + 6 =

11 + 7 =

12 + 7 =

15 + 3 =

15 + 4 =

15 + 5 =

10 + 4 =

9 + 4 =

8 + 4 =

11 + 9 =

10 + 9 =

9 + 9 =

11 + 5 =

12 + 5 =

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You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.04.

Name _____ Date _____

Sums up to 20 Mixed (page 2 of 3)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

14 + 3 =

14 + 4 =

14 + 5 =

6 + 6 =

7 + 6 =

7 + 7 =

10 + 7 =

9 + 7 =

8 + 7 =

13 + 1 =

13 + 2 =

13 + 3 =

16 + 2 =

17 + 2 =

18 + 2 =

6 + 5 =

7 + 5 =

7 + 4 =

12 + 8 =

13 + 7 =

14 + 6 =

10 + 6 =

9 + 6 =

8 + 6 =

10 + 5 =

9 + 5 =

8 + 5 =

17 + 3 =

16 + 3 =

16 + 4 =

@2017 OnSchooler

You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.04.

Name _____ Date _____

Sums up to 20 Mixed (page 3 of 3)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

11 + 5 =

12 + 5 =

11 + 3 =

10 + 3 =

9 + 3 =

8 + 3 =

5 + 2 =

15 + 2 =

5 + 12 =

6 + 4 =

16 + 4 =

6 + 14 =

7 + 1 =

17 + 1 =

7 + 11 =

4 + 5 =

14 + 5 =

4 + 15 =

2 + 3 =

12 + 3 =

2 + 13 =

7 + 2 =

17 + 2 =

7 + 12 =

3 + 6 =

13 + 6 =

3 + 16 =

2 + 4 =

12 + 4 =

2 + 14 =

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You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.04

Name _____ Date _____

The Nines Trick (and Eights)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

10 + 1 =

9 + 1 =

8 + 1 =

10 + 10 =

9 + 10 =

8 + 10 =

10 + 8 =

9 + 8 =

8 + 8 =

10 + 5 =

9 + 5 =

8 + 5 =

10 + 2 =

9 + 2 =

8 + 2 =

10 + 9 =

9 + 9 =

8 + 9 =

10 + 6 =

9 + 6 =

8 + 6 =

10 + 3 =

9 + 3 =

8 + 3 =

10 + 7 =

9 + 7 =

8 + 7 =

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You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.05.

42 + 10 =	36 + 10 =	71 + 10 =	29 + 10 =
57 + 10 =	83 + 10 =	90 + 10 =	31 + 10 =
74 + 10 =	26 + 10 =	59 + 10 =	85 + 10 =

Addition Flashcards for Math 201.06

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Name _____ Date _____

Plus Tens

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

84 + 10 =

53 + 10 =

67 + 10 =

12 + 10 =

32 + 10 =

75 + 10 =

50 + 10 =

34 + 10 =

72 + 10 =

65 + 10 =

18 + 10 =

26 + 10 =

68 + 10 =

11 + 10 =

47 + 10 =

26 + 10 =

51 + 10 =

36 + 10 =

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Name _____ Date _____

Plus Nines

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

84 + 9 =

53 + 9 =

67 + 9 =

12 + 9 =

32 + 9 =

75 + 9 =

50 + 9 =

34 + 9 =

72 + 9 =

65 + 9 =

18 + 9 =

26 + 9 =

68 + 9 =

11 + 9 =

47 + 9 =

26 + 9 =

51 + 9 =

36 + 9 =

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You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.06.

Name _____ Date _____

Plus Eights

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

84 + 8 =

53 + 8 =

67 + 8 =

12 + 8 =

32 + 8 =

75 + 8 =

50 + 8 =

34 + 8 =

72 + 8 =

65 + 8 =

18 + 8 =

26 + 8 =

68 + 8 =

11 + 8 =

47 + 8 =

26 + 8 =

51 + 8 =

36 + 8 =

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You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.06.

Name _____ Date _____

Plus Nines & Eights Review

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

2 + 8 =

8 + 2 =

5 + 9 =

9 + 5 =

5 + 8 =

8 + 5 =

3 + 9 =

9 + 3 =

3 + 8 =

8 + 3 =

6 + 9 =

9 + 6 =

6 + 8 =

8 + 6 =

8 + 9 =

9 + 8 =

7 + 9 =

9 + 7 =

7 + 8 =

8 + 7 =

4 + 9 =

9 + 4 =

4 + 8 =

8 + 4 =

2 + 9 =

9 + 2 =

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You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.06.

Name _____ Date _____

Addition Word Problems (page 1 of 2)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

I ate an apple at lunch and one at dinner.
How many apples did I eat today?

I have three rocks in one pocket and four rocks in the other.
How many rocks do I have in my pockets?

He baked five pies for one customer and seven for another.
How many pies did he bake altogether?

We walked eight miles last week and four miles this week.
How many miles have we walked so far?

She finished nine lessons the first week and eleven lessons the second. How many lessons has she finished?

You read thirteen books last months and five so far this month.
How many books have you read since the start of last month?

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Name _____ Date _____

Addition Word Problems (page 2 of 2)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

My bath has been twenty-two minutes so far and I get ten more minutes. How many minutes long will my bath be?

You and I each have eight pencils. How many pencils do the two of us have together?

She has finished six questions on the quiz and has nine left. How many questions does the quiz have?

His birthday is on the eighth day of the month and mine is seven days later. On what day of the month is my birthday?

We have saved forty-three dollars and next week will earn nine more. How many dollars will we have then?

I have found seven socks and you have found four. How many socks have we found together?

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You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.07.

Name _____ Date _____

Addition “Sisters” and Subtraction “Brothers

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Write the answers.

3 + 2 =	2 + 3 =
5 - 2 =	5 - 3 =

6 + 8 =	8 + 6 =
14 - 6 =	14 - 8 =

9 + 3 =	3 + 9 =
12 - 9 =	12 - 3 =

4 + 7 =	7 + 4 =
11 - 4 =	11 - 7 =

5 + 9 =	9 + 5 =
14 - 9 =	14 - 5 =

Write the other problems & answers.

8 + 4 =

7 + 6 =

2 + 9 =

11 + 5 =

3 + 14 =

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You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.08.

Name _____ Date _____

Finger Subtraction

8 - 3 =	7 - 4 =
8 - 5 =	8 - 2 =
6 - 1 =	8 - 6 =
6 - 5 =	5 - 2 =
9 - 5=	5 - 3 =
9 - 4 =	9 - 7 =
7 - 2 =	9 - 2 =
7 - 5 =	6 - 2 =
10 - 5 =	6 - 4 =
8 - 4=	3 - 1 =
6 - 3 =	3 - 2 =
4 - 2 =	5 - 4 =
2 - 1 =	5 - 1 =
4 - 3 =	7 - 1 =
4 - 1 =	7 - 6 =
7 - 3 =	8 - 7 =

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You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.09.

Name _____ Date _____

Subtraction Brothers: The Ones

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

19 - 1 =

19 - 18 =

12 - 1 =

12 - 11 =

5 - 1 =

5 - 4 =

16 - 1 =

16 - 15 =

9 - 1 =

9 - 8 =

13 - 1 =

13 - 12 =

6 - 1 =

6 - 5 =

10 - 1 =

10 - 9 =

3 - 1 =

3 - 2 =

7 - 1 =

7 - 6 =

15 - 1 =

15 - 14 =

8 - 1 =

8 - 7 =

18 - 1 =

18 - 17 =

11 - 1 =

11 - 10 =

4 - 1 =

4 - 3 =

15 - 1 =

15 - 14 =

14 - 1 =

14 - 13 =

20 - 1 =

20 - 19 =

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You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.10.

Name _____ Date _____

Subtraction Brothers: The Nines and Tens

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

20 - 10 =	20 - 9 =
20 - 10 =	20 - 11 =
14 - 10 =	14 - 9=
14 - 4 =	14 - 5 =
12 - 10=	12 - 9 =
12 - 2 =	12 - 3 =
16 - 10 =	16 - 9 =
16 - 6 =	16 - 7 =
13 - 10 =	13 - 9 =
13 - 3 =	13 - 4 =

15 - 10 =	15 - 9 =
15 - 5 =	15 - 6 =
18 - 10=	18 - 9 =
18 - 18=	
11 - 10 =	11 - 9 =
11 - 1 =	11 - 2 =
15 - 10 =	15 - 9 =
15 - 5 =	15 - 6 =
19 - 9 =	
19 - 10 =	

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You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.10.

Name _____ Date _____

Subtraction Brothers: Small Numbers

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

8 - 6 =

8 - 2 =

7 - 4 =

7 - 3 =

9 - 6 =

9 - 3 =

7 - 5 =

7 - 2 =

6 - 2 =

6 - 4 =

5 - 2 =

5 - 3 =

9 - 5 =

9 - 4 =

8 - 3 =

8 - 5 =

10 - 6 =

10 - 4 =

9 - 7 =

9 - 2 =

10 - 3 =

10 - 7 =

4 - 2 =

6 - 3 =

8 - 4 =

10 - 5 =

12 - 6 =

14 - 7 =

16 - 8 =

18 - 9 =

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Name _____ Date _____

Teens Minus Single Digits (page 1 of 4)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

9 - 3 =

19 - 3 =

10 - 6 =

20 - 6 =

6 - 2 =

16 - 2 =

9 - 5 =

19 - 5 =

7 - 2 =

17 - 2 =

5 - 4 =

15 - 4 =

10 - 8 =

20 - 8 =

8 - 4 =

18 - 4 =

7 - 6 =

17 - 6 =

10 - 5 =

20 - 5 =

3 - 2 =

13 - 2 =

9 - 7 =

19 - 7 =

10 - 7 =

20 - 7 =

8 - 2 =

18 - 2 =

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You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.11.

Name _____ Date _____

Teens Minus Single Digits (page 2 of 4)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

7 - 3 =

17 - 3 =

10 - 2 =

20 - 2 =

4 - 2 =

14 - 2 =

6 - 4 =

16 - 4 =

10 - 3 =

20 - 3 =

6 - 3 =

16 - 3 =

17 - 12 =

20 - 13 =

5 - 1 =

15 - 11 =

10 - 2 =

20 - 12 =

9 - 4 =

19 - 14 =

10 - 4 =

20 - 14 =

8 - 3 =

18 - 13 =

9- 5 =

19 - 15 =

8 - 1 =

18 - 11 =

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You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.11.

Name _____ Date _____

Teens Minus Single Digits (page 3 of 4)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

9 - 2 =

19 - 12 =

7 - 1 =

17 - 11 =

9 - 3 =

19 - 13 =

8 - 2 =

18 - 12 =

9 - 1 =

19 - 11 =

Look how these problems are related:

13 - 10 =

10 - 8 =

13 - 8 =

11 - 10 =

10 - 6 =

11 - 6 =

12 - 10 =

10 - 5 =

12 - 5 =

14 - 10 =

10 - 8 =

14 - 8 =

15 - 10 =

10 - 8 =

15 - 8 =

11 - 10 =

10 - 4 =

11 - 4 =

@2017 OnSchooler

You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.11.

Name _____ Date _____

Teens Minus Single Digits (page 4 of 4)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

14 - 10 =

10 - 6 =

14 - 6 =

11 - 10 =

10 - 5 =

11 - 5 =

13 - 10 =

10 - 7 =

13 - 7 =

15 - 10 =

10 - 7 =

15 - 7 =

12 - 10 =

10 - 4 =

12 - 4 =

11 - 10 =

10 - 2 =

11 - 2 =

13 - 10 =

10 - 5 =

13 - 5 =

11 - 10 =

10 - 3 =

11 - 3 =

18 - 9 =

16 - 8 =

14 - 7 =

12 - 6 =

10 - 5 =

8 - 4 =

6 - 3 =

4 - 2 =

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You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.11.

Name _____ Date _____

Subtracting Close Numbers

Example: 15 - 13

Cover all the numbers after 15 with your right hand, so only 1-15 show.
Now take away the first 13 numbers by covering 1-13 with your left hand.
This leaves only the 14 and 15 showing, which is 2 numbers.

15 takeaway 13 leaves 2
15 - 13 = 2

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

18 - 16 =

14 - 11 =

15 - 12 =

19 - 17 =

14 - 12 =

12 - 9 =

20 - 18 =

20 - 17 =

17 - 15 =

16 - 14 =

18 - 14 =

17 - 13 =

16 - 12 =

17 - 14 =

12 - 8 =

19 - 16 =

18 - 15 =

16 - 13 =

20 - 16 =

11 - 7 =

11 - 9 =

16 - 11 =

10 - 7 =

12 - 7 =

10 - 8 =

11 - 8 =

13 - 11 =

13 - 9 =

15 - 13 =

@2017 OnSchooler

You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.12.

Name _____ Date _____

Subtraction Word Problems (page 1 of 2)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

There were four apples in the bowl before I ate one.
How many apples are left in the bowl?

I have seven rocks in my pockets. Three are in my left one.
How many rocks are in my right pocket?

He baked twelve pies and sold seven of them.
How many pies have not been sold yet?

We want to walk twelve miles but have only done four so far.
How many more miles do we need to walk?

She has finished twenty lessons, nine of them this week.
How many did she finish earlier?

Your goal is to read eighteen books this month, and you've already read thirteen. How many more do you want to read?

@2017 OnSchooler

You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.13

Name _____ Date _____

Subtraction Word Problems (page 2 of 2)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

My bath lasted thirty-two minutes but I was supposed to get out ten minutes ago. How many minutes should my bath have been?

We have sixteen pencils. If you hold eight, how many are left for me?

The quiz has fifteen questions and she has answered six of them. How many questions are left to answer?

My birthday was on the fifteenth and his was eight days earlier. On what day was his birthday?

When we earn nine more dollars, we'll have fifty-three. How many dollars do we have so far?

We have found eleven socks. If you found seven of them, how many did I find?

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You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.13

Name _____ Date _____

Math 201 Final Exam A (pretest)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

There are six bowls in one pile and nine in the other.
How many bowls are there altogether?

We made sixteen sandwiches and five are left.
How many sandwiches have been eaten already?

She finished twelve of the fifteen lessons.
How many lessons does she have left to finish?

He folded twelve shirts and six pairs of pants.
How many items of clothing did he fold?

8 + 7 =	7 - 4 =	10 +10 =	5 - 4 =
2 + 17 =	12 - 10 =	12 + 5 =	13 - 8 =
13 + 3 =	14 - 7 =	6 + 4 =	17 - 15 =

@2017 OnSchooler

You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.15.

Name _____ Date _____

Math 201 Final Exam B

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

I found eight shells yesterday and seven more today.
How many shells have I found?

They wrapped twelve of the sixteen presents.
How many presents are left to wrap?

He made nine bookmarks yesterday and the same number today.
How many did he make in the last two days?

She stacked up eighteen blocks and then knocked down sixteen of them. How many blocks are left on the stack?

9 + 7 =	8 - 4 =	10 +8 =	5 - 3 =
3 + 17 =	11 - 10 =	12 + 3 =	13 - 11 =
14 + 3 =	15 - 7 =	6 + 2 =	17 - 7 =

@2017 OnSchooler

You may make one copy of this worksheet for each student who has purchased the online lesson Math 201.15.

Communications 2.01: Overview & Prep Day

Objectives

By the end of this term each student will be able to:

- Spell words with simple phonics and common blends
- Print with good penmanship
- Write short, interesting sentences
- Read biographies and subject– matter books and discuss their contents
- Type the home row exercises without looking

Description

The computer lessons for the first five units cover basic spelling and grammar; more advanced spelling and vocabulary begin in unit six.

Each of the four 20-minute hands-on activities will be the same each day of Communications:

- Write interesting sentences with the spelling words.
- Read and discuss a biography or subject-area book.
- Typing practice.
- Spelling review.

On-Line Lessons	
Lesson #	Communications
201	**Phonics/Biographies**
201.01	-a- words
201.02	-e- words
201.03	-i- words
201.04	-o- words
201.05	-u- words
201.06	4-5 letter phonetic
201.07	4-5 letter phonetic
201.08	4-5 letter phonetic
201.09	sh, ch, tch
201.10	th, ck
201.11	ss, ll
201.12	ow, aw
201.13	ou, ew, ay, oy
201.14	ar, ir, er, ur, or
201.15	-e words

Prepping

1. Print a coy of this term's spelling words and put them in the Communications section of the notebook along with at least 15 blank sheets of paper.
2. For students with especially poor penmanship, use www.handwritingworksheets.com to make practice pages with the words from the first three lessons; all other students will progress directly to writing sentences.
3. Reserve and check out books from the library at each student's reading level or just above: biographies, and subject-matter books about the Middle East, simple machines, geology (including landforms and weather), and the Bible stories of Genesis-Leviticus. See also the Math section for a list of math-centric literature appropriate for this term.
4. Buy, check out or download some typing software and set it up.

Supplies

Books

Typing software

Communications 2.01: Hands-On Lesson Plans Overview

201	Activity 1	Activity 2	Activity 3	Activity 4
201.01	Creative Writing: Sentences	Book Club	Typing Practice	Spelling Review

Communications 2.01: Activities

Activity 1: Creative Writing: Sentences

This term we are working on good handwriting, sentence structure and interesting sentences. For lesson one, explain the instructions and help with the first few sentences then let each student complete the rest alone to collect a baseline; we'll compare it with the last lesson to measure each student's progress. After that, help students with spelling, punctuation and grammar as they write so that they don't have to go back and edit the whole page later.

WRONG:

It is bad.
I have a bag.
I have a bat.
I have a can.

RIGHT:

The storm is bad.
My favorite bag is purple.
The bat lives in a cave.
Put the money in the can.

Activity 2: Book Club

Provide a variety of interesting books about famous people that students may find interesting, plus subject-area books. Read the book to the students if working with a group, or have pairs read together, or have advanced readers read alone.

During the reading of the book, take time to point out interesting things in the pictures, comment on new information you or they found surprising, talk about unusual words and concepts and answer general questions about the book.

At the end of the book, probe for understanding by asking students questions about the characters, setting, theme, plot (if a biography or story), vocabulary, illustrations, and other ideas. Make notes about each student's comprehension skills in the first lesson or two, and repeat around lesson 7-8 and again around lesson 14-15. This is a good way to track improvement in students' general ability to pay attention to a story or information book, understand the content and be able to discuss it clearly.

Activity 3: Typing Practice

Have students take turns with the typing software to practice their typing skills. This is also an excellent activity for times when students finish other activities early.

Activity 4: Spelling Review

With lower-level writers, choose 5-9 tricky words from the word list and have students practice spelling them out loud or write them down.

With more advanced writers, take note of tricky words from the Creative Writing activity and use those for spelling practice.

Communications Word Lists, Quarter 201

Lesson 1
bad
bag
bat
can
cap
cat
dad
gap
gas
had
ham
hat
lap
mad
man
map
mat
nap
pad
pan
pat
rag
ram
ran
rat
sad
sat
tan
tap
van
wag
yam
sad
sat
tan
tap
van
wag
yam

Lesson 2
bed
beg
bet
den
get
hen
jet
let
led
leg
met
men
net
pet
peg
pen
red
set
ten
vet
wet
yet

Lesson 3
bib
big
bin
bit
did
dig
dim
dip
fig
fin
fit
hid
him
hip
hit
kid
lid
lip
lit
mix
pig
pin
pit
rid
rim
rip
sin
sip
sit
tin
tip
wig

Lesson 4
box
cob
cot
dog
dot
fog
God
got
hog
hop
hot
jog
log
lot
mob
mop
nod
not
pod
pop
pot
rob
rot
sod
sob
top
tot

Lesson 5
bud
bug
bun
bus
but
buzz
cub
cup
cut
dug
fun
fuzz
gum
gun
gut
hum
hut
jug
mud
nut
rub
run
rut
sun
tub
tug
yum

Lesson 6
act
add
band
bank
bell
best
blond
cabin
camp
can't
cent
class
clog
cost
cross
desk
dress
drop
dust
fast
fell
felt
fill
find
fist
flag

Lesson 7
flap
flat
flip
glad
glass
hand
held
help
hill
hiss
just
kept
kind
kiss
land
last
left
less
lift
list
lost
mass
milk
mess
miss
mitt
most
nest

Lesson 8
next
pass
past
plan
plant
post
rest
salt
sand
sell
send
sent
seven
skin
small
soft
spend
spent
spot
stand
step
stop
tent
test
tree
visit
west
wind

Lesson 9
cash
dash
dish
fish
rash
shed
shin
ship
shot
shut
wash
wish
bench
chin
chip
chop
inch
much

rich
such
batch
hatch
latch
match
patch
watch
ditch
fetch
hitch
itch
pitch
stitch

Lesson 10
bath
both
cloth
math
moth
path
than
that
them
then
this
thud
with
back
buck
check
deck
dock
duck
lack
lick
lock
luck
mock
neck
pack
peck
pick
puck
quick

rack
rock
sack
sick
sock
tack
tick
wick

Lesson 11
boss
floss
fuss
hiss
kiss
less
loss
mess
miss
moss
pass
toss
all
ball
bell
bill
bull
call
doll
dull
fall
full
gill
gull
hall
hill
hull
mall
mill
pill
pull
roll
sill
tall
tell
wall

well
will
yell

Lesson 12
bow
brown
clown
cow
crowd
crown
down
gown
bow
howl
now
plow
prowl
towel
town
wow
fawn
lawn
pawn
dawn
prawn
saw
raw
bow
crow
flow
grow
low
mow
row
show

Lesson 13
loud
proud
sound
foul
new
news
dew
flew

crew
few
pew
day
bay
gray
hay
lay
may
pay
ray
say
way
stay
boy
toy

Lesson 14
arm
art
bar
car
chart
dark
far
farm
mark
part
star
war
her
fir
sir
fur
hurt
born
corn
horn
torn
worn
cord
cork
fork
pork
port
form

Lesson 15
ace
broke
cane
cape
care
case
close
cube
cute
dice
drove
face
fine
fire
five
game
gave
hate
hole
home
hope
huge
lake
late
like
line
live

Name _____ Date _____

Culture 201 Prep Day

Objectives

By the end of this term each student will be able to:

- Draw a blank world map from memory
- Label the continents and oceans
- Add the equator, Prime Meridian and Int'l Date Line
- Label all the countries of the Middle East on a blank map
- Match the capital cities to the countries of the Middle East
- Label the major physical features of the Middle East

Description

The first six unit-units of Culture cover world geography, one continent at a time. By the end of unit six, each student will be able to label every country in the world on a blank map, along with major cities and physical features.

The first two lessons this unit will cover the basics of world geography: continents, oceans, latitude and longitude. The rest of the lessons work through the countries of the Middle East (a subsection of Asia).

Each student will make the first two sections of a Giant Atlas, learn the Middle East song, use the interactive map puzzles at Owl & Mouse (yourchildlearns.com), and watch informational videos about countries in the Middle East.

For cross-subject connections, the Arts lessons are tightly aligned with Culture for this first six unit-units. Projects from both Arts and Science will add to the Giant Atlas from Culture.

Prepping

1. Go to http://yourchildlearns.com and add it as a Favorite or start-up tab on your browser.
2. Print the giant maps of the World and the Middle East (see lessons 1 and 3) in the 3 x 3 sheet size.
3. Acquire an atlas and/or install Google Maps.
4. Check out books and videos about the countries in the Middle East, beginning with Turkey, Cyprus, Syria and Lebanon.
5. Put copies of the geography (and multiplication) songs on each computer; consider burning a CD with the songs for each student to listen to in the car.
6. Gather colored pencils, glitter glue and blue yarn for making the maps. Stencils may be helpful for making titles.
7. Print a copy of all the worksheets for this unit and have students place them in the Culture section of their school notebooks.

Supplies

Globe

Atlas (printed, online, CD, or install Google Maps)

2 Sheets posterboard

Colored Pencils

You may make one copy of this worksheet for each student who has purchased the online lesson Culture 201.01.

Culture 201 Hands-On Activities Overview

201	Activity 1	Activity 2	Activity 3	Activity 4
201.01	Atlas: World Section	Atlas: Latitude & Longitude	Atlas: Continents & Oceans	Atlas: Cover
201.02	Continents & Oceans Review	Map Game: Continents & Oceans	Major Cities: Latitude and Longitude	Atlas: Major Cities of the World
201.03	Middle East Song (4 countries)	Atlas: Middle East Section, Mediterranean Sea, Anatolian Plateau, Lebanon Mountains, Anti-Lebanon Mountains, Black Sea, Sea of Marmara, Aegean Sea, Lake Van, Mount Ararat, Taurus Mountains, Syrian Desert.	Map Game: Middle East	Atlas: Middle East Cover
201.04	Middle East Song (7 countries)	Atlas: Middle East, Golan Heights, West Bank, Gaza Strip, Sinai Peninsula, Asir Mountains, An Nafud Desert, Empty Unit, Lake Tiberias, Jordan River, Dead Sea, Gulf of Aqaba, Gulf of Suez, Red Sea, Gulf of Suez.	Map Game: Middle East	Video: Jerusalem
201.05	Middle East Song (10 countries)	Atlas: Middle East, Gulf of Aden, Gulf of Oman, Arabian Sea, Persian Gulf.	Map Game: Middle East	Google Maps: 12 Sites
201.06	Middle East Song (13 countries)	Atlas: Middle East	Middle East Flags	Continent & Oceans Review: Cards
201.07	Middle East Song (16 countries)	Atlas: Middle East, Tigris River, Euphrates River, Persian Gulf, Strait of Hormuz, Caspian	Middle East Flags	Continent & Oceans Review: Trace & Draw
201.08	Middle East Song (19 countries)	Atlas: Middle East, Amu Darya River, Pamir Mountains, Tien Shan Mountains.	Middle East Flags	Continent & Oceans Review: Trace & Draw
201.09	Middle East Song (22 countries)	Atlas: Middle East, Aral Sea, Syr Darya, Lake Balkhash, Irtysh River.	Middle East Review: Trace & Draw	Video Tour
201.10	Middle East Song (25 countries)	Atlas: Middle East, Lake Sevan, Caucasus Mountains, Kura River.	Middle East Review: Trace & Draw	Map Game: Without Outlines
201.11	Middle East Song & color countries	Middle East Pencil Game	Middle East Review: Trace & Draw	Map Game: Capital Cities
201.12	Middle East Song & color countries	Review Tricky Locations	Middle East Pencil Game	Map Game: Capital Cities
201.13	Color the Continents	Review Tricky Locations	Middle East Pencil Game	Video Tour
201.14	Atlas: Middle East—3D	Review Tricky Locations	Middle East Pencil Game	Video Tour
201.15	Atlas: Middle East—3D	Practice Test	Continent & Oceans Review: Trace & Draw	Video Tour

Name _____ Date _____

Culture 201.01

Activity 1: Start the Giant World Atlas

Over the next six terms, each student will be constructing a giant world atlas using seven sheets of poster board folded in half, for a total of 28 pages. This term we will be using the first two sheets of poster board: one for the world map and one for the Middle East map.

1. Put on the geography songs to listen to while working.
2. Fold the poster board in half (short end touches short end, folding the longest length in half).
3. Print the world map in 3 x 3 sheet size from http://www.yourchildlearns.com/megamaps/print-world-maps.html. We usually use configuration "World 1" but it's your choice.
4. Tape or paste the map into the inside two pages. ***Important Note:*** The maps do not print all the way to the edges of the paper. Therefore you will need a paper cutter or scissors to trim off the edges. Do not trim the edges on the center page. Adult help may be needed for this part.

Activity 2: Latitude and Longitude

Remember that ***latitude*** lines, like ***ladder*** rungs, are horizontal. The most important latitude line is the Equator, which separates the northern hemisphere from the southern hemisphere. The Equator is halfway between the north pole and the south.

Longitude lines, on the other hand, are drawn the ***long*** way from the top of the globe to the bottom. (This makes more sense when looking at a globe than a map; on a world map you can see all the way around to the backside of the globe so the latitude lines appear even longer than the longitude lines.)

1. On a globe, find the equator. Pick 5-10 specific places where the equator crosses the edges of the continents and mark them on your map.
2. Use a red string (glued down) or marker to connect the dots on the giant map.
3. Find the Prime Meridian on the globe: this is the longitude line labeled 0 degrees (it goes through Greenwich, England).
4. Mark the Prime Meridian on the giant map.

Activity 3: Continents and Oceans

Label the following areas on the map using careful lettering:

North America
South America
Africa
Europe
Asia
Australia
Antarctica

Arctic Ocean
Atlantic Ocean
Pacific Ocean
Southern Ocean
Indian Ocean
Caribbean Sea
Mediterranean Sea

Activity 4: The Cover

Make a title for the cover of the Giant Atlas. The title should remain in the top third of the front outside page of the first sheet of poster board. The student may draw the title freehand, use stencils or print something using a graphic arts program.

At this point, each student has one piece of poster board, folded in half to form four pages. Page one has the title, pages two and three have the world map, and page four is still blank.

You may make one copy of this worksheet for each student who has purchased the online lesson Culture 201.01.

Name _____ Date _____

Culture 201.02

Activity 1: Continents and Oceans Review with Map

Practice pointing to the correct areas on the giant map:

North America
South America
Africa
Europe
Asia
Australia
Antarctica

Arctic Ocean
Atlantic Ocean
Pacific Ocean
Southern Ocean
Indian Ocean
Caribbean Sea
Mediterranean Sea

Activity 2: Map Game

Go to http://www.yourchildlearns.com/map-puzzles.htm and play the World Continents Map Puzzle. Choose either of the two versions. To play, the student drags the continents to their approximate locations and then releases the mouse. If the continent is close enough, it will snap into place. Otherwise, it will disappear and a new continent will be presented. Have students practice this until confident.

Activity 3: Major Cities: Latitude & Longitude

On a sheet of notebook paper, list the major cities (found in Activity #4) and then find their approximate latitude and longitude on a globe or map.

Write the list in this format:

City, Country 00°N and 00°W

City, Country 00°S and 00°E

City, Country 00°N and 00°E

City, Country 00°S and 00°W

Play the geography songs in the background while doing activities 3 and 4.

Activity 4: Major Cities: Label

Label the following cities on the world map.

London	Jakarta	Johannesburg
Rome	Kinshasa	Dar es Salaam
Berlin	Mexico City	Los Angeles
Cairo	Lima	Cape Town
Jerusalem	New York City	Berlin
Istanbul	Bangkok	Kabul
Moscow	Tehran	Casablanca
Addis Ababa	Bogotá	Pyongyang
Shanghai	Ho Chi Minh City	Madrid
Karachi	Baghdad	Cape Town
Lagos	Rio de Janeiro	Buenos Aires
Delhi	Riyadh	
Tokyo	Singapore	
São Paulo	Saint Petersburg	
Beijing	Abidjan	
Seoul	Alexandria	
Lahore	Ankara	

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You may make one copy of this worksheet for each student who has

Name _____ Date _____

Culture 201.03

Activity 1: Middle East Song

1. Slow motion: Read the names of the countries from the song one at a time, giving every student time to find and point to it on a labeled map before continuing to the next. Repeat three times.
2. Regular speed: Play the Middle East song three times, having students try to point to the countries while listening.
3. Practice singing just the first four countries together. Repeat until each student can point to those four countries on a blank map while singing or saying the names.

Activity 2: Giant Map: Middle East

1. Print the Middle East map from http://yourchildlearns.com/megamaps.htm in the 3 x 3 pages size.
2. Fold the second sheet of poster board in half.
3. Tape or paste the Middle East map into the inside two pages.
4. Pinpoint and label these cities with very small letters: Ankara, Nicosia, Damascus, Beirut.
5. Label these countries with very small capital letters: Turkey, Cyprus, Syria, Lebanon.
6. Label these physical features: Mediterranean Sea, Anatolian Plateau, Lebanon Mountains, Anti-Lebanon Mountains, Black Sea, Sea of Marmara, Aegean Sea, Lake Van, Mount Ararat, Taurus Mountains, Syrian Desert.

Note: Consider using blue yarn for the cities, glitter glue for mountains and plateaus, and colored pencils for bodies of water. Physically tangible physical features make them more memorable for tactile learners.

Activity 3: Map Game: Continents

Go to http://www.yourchildlearns.com/map-puzzles.htm and play the Middle East Map Puzzle on the Easy setting (with borders). To play, students drag the continents to their approximate locations and then release the mouse. If the continent is close enough, it will snap into place. Otherwise, it will disappear and a new continent will be presented. Have students practice this until confident.

Activity 4: The Cover

Make a title for the cover of the Middle East section. It should stay within the top six inches of the poster board. The student may draw the title freehand, use stencils or print something using a graphic arts program.

Here are the pages you have so far:

1. Atlas cover
2. World Map
3. World Map
4. Blank
5. Cover for Middle East Section
6. Middle East Map
7. Middle East Map
8. Blank

We will not connect the poster board sections until term six; use binder clips or clothespins to store the sections together until

Name _____ Date _____

Culture 201.04

Activity 1: Middle East Song

1. Slow motion: Read the names of the countries from the song one at a time, giving every student time to find and point to it on a labeled map before continuing to the next. Repeat three times.
2. Regular speed: Play the Middle East song three times, having students try to point to the countries while listening.
3. Practice singing just the first seven countries together. Repeat until each student can point to those seven countries on a blank map while singing or saying the names.

Turkey, Cyprus, Syria, Lebanon

Israel, Jordan, Saudi Arabia

Activity 2: Giant Map: Middle East

1. Pinpoint and label these cities with very small letters: Jerusalem, Amman, Riyadh, Mecca, Medina.
2. Label these countries with very small capital letters: Israel, Jordan, Saudi Arabia.
3. Label these physical features: Golan Heights, West Bank, Gaza Strip, Sinai Peninsula, Asir Mountains, An Nafud Desert, Empty Unit, Lake Tiberias, Jordan River, Dead Sea, Gulf of Aqaba, Gulf of Suez, Red Sea, Gulf of Suez.

Activity 3: Map Game: Middle East

Go to http://www.yourchildlearns.com/map-puzzles.htm and play the Middle East Map Puzzle on the Easy setting (with borders). To play, students drag the countries to their approximate locations and then release the mouse. If the country is close enough, it will snap into place. Otherwise, it will disappear and a new country will be presented. Have students practice this until confident.

Activity 4: Jerusalem

Jerusalem is one of the oldest, most famous, most fought-over cities in the world. It is considered a holy site by three of the world's biggest religions: Judaism, Christianity and Islam.

Watch a video tour of Jerusalem to learn more about its history, geography, architecture and people.

Bonus: Watch video tours of each country in the Middle East as we study them!

You may make one copy of this worksheet for each student who has purchased the online lesson Culture 201.04.

Name _____ Date _____

Culture 201.06

Activity 1: Middle East Song

1. Slow motion: Read the names of the countries from the song one at a time, giving every student time to find and point to it on a labeled map before continuing to the next. Repeat three times.
2. Regular speed: Play the Middle East song three times, having students try to point to the countries while listening.
3. Practice singing just the first thirteen countries together. Repeat until each student can point to those thirteen countries on a blank map while singing or saying the names.

Turkey, Cyprus, Syria, Lebanon

Israel, Jordan, Saudi Arabia

Yemen, Oman, U.A.E.

Qatar, Bahrain, Kuwait

Activity 2: Giant Map: Middle East

1. Pinpoint and label these cities with very small letters: Doha, Manama, and Kuwait City
2. Label these countries with very small capital letters: Qatar, Bahrain and Kuwait.

Activity 3: Middle East Flags

1. Attach a blank map of the Middle East to a sheet of foam board or cork board.
2. Print the flags worksheet. Cut out each flag with the country name still attached and fold on the line between the flag and the name. Tape or glue each one to a toothpick.
3. Using a labeled map for reference, stick each flag into its country.
4. Repeat until the student can place each flag without looking at the labeled map.
5. Repeat until the student can place each flag without looking at the country name on the back.

Activity 4: Continents & Oceans Review

1. Print two sets each of the three-part continents and oceans cards from http://www.imagineourlife.com/printables/Continents-3-Part-Cards.pdf and http://www.imagineourlife.com/printables/Cards-Oceans.pdf.
2. These cards are part of the Montessori curriculum. To use them, watch https://www.youtube.com/watch?v=jJSszKN46wU
3. Have the student practice matching the names to the pictures with the 2-part cards and then checking the answers against the 1-part cards.

You may make one copy of this worksheet for each student who has purchased the online lesson Culture 201.06.

Name _____ Date _____

Culture 201.07

Activity 1: Middle East Song

1. Slow motion: Read the names of the countries from the song one at a time, giving every student time to find and point to it on a labeled map before continuing to the next. Repeat three times.
2. Regular speed: Play the Middle East song three times, having students try to point to the countries while listening.
3. Practice singing just the first sixteen countries together. Repeat until each student can point to those sixteen countries on a blank map while singing or saying the names.

Turkey, Cyprus, Syria, Lebanon

Israel, Jordan, Saudi Arabia

Yemen, Oman, U.A.E.

Qatar, Bahrain, Kuwait

Iraq, Iran, Pakistan

Activity 2: Giant Map: Middle East

1. Pinpoint and label these cities with very small letters: Baghdad, Tehran, and Islamabad
2. Label these countries with very small capital letters: Iraq, Iran, Pakistan
3. Label these physical features: Tigris River, Euphrates River, Persian Gulf, Strait of Hormuz, Caspian Sea, Indus River.

Activity 3: Middle East Flags

1. Using a labeled map for reference, stick each flag into its country. Repeat until the student can place each flag without looking at the labeled map.
2. Repeat until the student can place each flag without looking at the country name on the back.

Activity 4: Continents & Oceans Review

1. Give each student a map of the continents and oceans, three blank pieces of paper and a pencil.
2. First, have each student trace the continents by placing a blank sheet of paper over the printed map.
3. Second, have each student do a freehand drawing of the continents while looking at the printed map.
4. Finally, have each student draw the continents from memory. The teacher should do this also to demonstrate that results may be very wrong on the first try. Compare all the "memory" maps at the end and enjoy a good laugh at how different they all are.

You may make one copy of this worksheet for each student who has purchased the online lesson Culture 201.07.

Name _____ Date _____

Culture 201.08

Activity 1: Middle East Song

1. Slow motion: Read the names of the countries from the song one at a time, giving every student time to find and point to it on a labeled map before continuing to the next. Repeat three times.
2. Regular speed: Play the Middle East song three times, having students try to point to the countries while listening.
3. Practice singing just the first nineteen countries together. Repeat until each student can point to those nineteen countries on a blank map while singing or saying the names.

Turkey, Cyprus, Syria, Lebanon
Israel, Jordan, Saudi Arabia
Yemen, Oman, U.A.E.
Qatar, Bahrain, Kuwait
Iraq, Iran, Pakistan
Afghanistan, Tajikistan, Kyrgyzstan

Activity 2: Giant Map: Middle East

1. Pinpoint and label these cities with very small letters: Kabul, Dushanbe, Bishkek.
2. Label these countries with very small capital letters: Afghanistan, Tajikistan, Kyrgyzstan
3. Label these physical features: Amu Darya River, Pamir Mountains, Tien Shan Mountains.

Activity 3: Middle East Flags

1. Using a labeled map for reference, stick each flag into its country. Repeat until the student can place each flag without looking at the labeled map.
2. Repeat until the student can place each flag without looking at the country name on the back.

Activity 4: Continents & Oceans Review

1. Give each student a map of the continents and oceans, three blank pieces of paper and a pencil.
2. First, have each student trace the continents by placing a blank sheet of paper over the printed map.
3. Second, have each student do a freehand drawing of the continents while looking at the printed map.
4. Finally, have each student draw the continents from memory. The teacher should do this also to demonstrate that results may be very wrong on the first try. Compare all the "memory" maps at the end and enjoy a good laugh at how different they all are.

You may make one copy of this worksheet for each student who has purchased the online lesson Culture 201.08.

Name _____ Date _____

Culture 201.09

Activity 1: Middle East Song

1. Slow motion: Read the names of the countries from the song one at a time, giving every student time to find and point to it on a labeled map before continuing to the next. Repeat three times.
2. Regular speed: Play the Middle East song three times, having students try to point to the countries while listening.
3. Practice singing just the first 22 countries together. Repeat until each student can point to those 22 countries on a blank map while singing or saying the names.

Turkey, Cyprus, Syria, Lebanon
Israel, Jordan, Saudi Arabia
Yemen, Oman, U.A.E.
Qatar, Bahrain, Kuwait
Iraq, Iran, Pakistan
Afghanistan, Tajikistan, Kyrgyzstan
Kazakhstan, Uzbekistan, Turkmenistan

Activity 2: Giant Map: Middle East

1. Pinpoint and label these cities with very small letters: Astana, Tashkent, Ashgabat.
2. Label these countries with very small capital letters: Kazakhstan, Uzbekistan, Turkmenistan
3. Label these physical features: Aral Sea, Syr Darya, Lake Balkhash, Irtysh River.

Activity 3: Middle East Review (Trace & Draw)

1. Give each student a map of the Middle East, three blank pieces of paper and a pencil.
2. First, have each student trace the Middle East and its countries by placing a blank sheet of paper over the printed map.
3. Second, have each student do a freehand drawing of the Middle East and its countries while looking at the printed map.
4. Finally, have each student draw the Middle East and its countries from memory. The teacher should do this also to demonstrate that results may be very wrong on the first try. Compare all the "memory" maps at the end and enjoy a good laugh at how different they all are.

Activity 4: Video Tour

1. Choose some videos about countries in the Middle East and watch them.
2. Begin making a list of places you would like to visit if you were a tourist in the Middle East.

You may make one copy of this worksheet for each student who has purchased the online lesson Culture 201.09.

Name _____ Date _____

Culture 201.10

Activity 1: Middle East Song

1. Slow motion: Read the names of the countries from the song one at a time, giving every student time to find and point to it on a labeled map before continuing to the next. Repeat three times.
2. Regular speed: Play the Middle East song three times, having students try to point to the countries while listening.
3. Practice singing all 25 countries together. Repeat until each student can point to those 25 countries on a blank map while singing or saying the names.

Turkey, Cyprus, Syria, Lebanon
Israel, Jordan, Saudi Arabia
Yemen, Oman, U.A.E.
Qatar, Bahrain, Kuwait
Iraq, Iran, Pakistan
Afghanistan, Tajikistan, Kyrgyzstan
Kazakhstan, Uzbekistan, Turkmenistan
Azerbaijan, Armenia, Georgia

Activity 2: Giant Map: Middle East

1. Pinpoint and label these cities with very small letters: Baku, Yerevan, Tbilisi.
2. Label these countries with very small capital letters: Azerbaijan, Armenia, Georgia
3. Label these physical features: Lake Sevan, Caucasus Mountains, Kura River.

Activity 3: Middle East Review (Trace & Draw)

1. Give each student a map of the Middle East, three blank pieces of paper and a pencil.
2. First, have each student trace the Middle East and its countries by placing a blank sheet of paper over the printed map.
3. Second, have each student do a freehand drawing of the Middle East and its countries while looking at the printed map.
4. Finally, have each student draw the Middle East and its countries from memory. The teacher should do this also to demonstrate that results may be very wrong on the first try. Compare all the "memory" maps at the end and enjoy a good laugh at how different they all are.

Activity 4: Map Game: Middle East w/o Outlines

Go to http://www.yourchildlearns.com/map-puzzles.htm and play the Middle East Map Puzzle on the Easy setting (with borders) then the Hard setting. To play, students drag the countries to their approximate locations and then release the mouse. If the country is close enough, it will snap into place. Otherwise, it will disappear and a new country will be presented. Have students practice this until confident.

You may make one copy of this worksheet for each student who has purchased the online lesson Culture 201.10.

Name _____ Date _____

Culture 201.11

Activity 1: Color in Countries in Giant Atlas

1. Have students begin coloring in the countries VERY LIGHTLY with colored pencils. Demonstrate before beginning to ensure that they color very lightly and use different colors for adjacent countries.
2. While students are coloring, test each student on the continents, oceans, 25 countries of the Middle East and major physical features. Use the review chart to spot problem areas and plan a review for the next class period.
3. Students will likely not finish coloring in the countries during this class period; this is a great activity for students to do when they finish other work early.

Activity 2: Middle East Pencil Game

1. Grouping students by 3's or 4's, give each group two blank maps (World and Middle East), two reference maps, a printout page of the political and features they should know, a bag, scissors and a different colored pencil for each student.
2. Have students cut up the page of political and physical features into little slips of paper, fold them in half and put them into the bag.
3. The first student draws a slip of paper and uses his or her pencil to point to that item's location. If correct, he or she colors in the feature and keeps the slip of paper. If not correct, the slip passes to the left and continues until someone finds the correct location. In case of dispute, the student to the right of the guesser may consult the reference map.
4. The student with the most slips of paper at the end wins.

Activity 3: Middle East Review (Trace & Draw)

1. Give each student a map of the Middle East, three blank pieces of paper and a pencil.
2. First, have each student trace the Middle East and its countries by placing a blank sheet of paper over the printed map.
3. Second, have each student do a freehand drawing of the Middle East and its countries while looking at the printed map.
4. Finally, have each student draw the Middle East and its countries from memory. The teacher should do this also to demonstrate that results may be very wrong on the first try. Compare all the "memory" maps at the end and enjoy a good laugh at how different they all are.

Activity 4: Map Game: Middle East Capital Cities

Go to http://www.yourchildlearns.com/map-puzzles.htm and play the Middle East Map Puzzle on the Capitals, Easy setting then with the Hard setting. To play, students drag the cities to their approximate locations and then release the mouse. If the city is close enough, it will snap into place. Otherwise, it will disappear and a new country will be presented. Have students practice this until confident.

You may make one copy of this worksheet for each student who has purchased the online lesson Culture 201.11.

Name _____ Date _____

Culture 201.12

Activity 1: Color in Countries in Giant Atlas

1. Have students begin coloring in the countries VERY LIGHTLY with colored pencils. Demonstrate before beginning to ensure that they color very lightly and use different colors for adjacent countries.
2. While students are coloring, test each student on the continents, oceans, 25 countries of the Middle East and major physical features. Use the review chart to spot problem areas and plan a review for the next class period.
3. Students will likely not finish coloring in the countries during this class period; this is a great activity for students to do when they finish other work early.

Activity 2: Middle East Tricky Spots Review

1. Using the chart you completed over the last two class periods to find weak spots, review the physical and political features that are causing the most problems for the students.
2. Using that same chart, spend some extra time reviewing physical and political features with students who are struggling the most. Other students may move on to other activities, help with the review, or watch a Video Tour.

Activity 3: Middle East Pencil Game

1. Grouping students by 3's or 4's, give each group two blank maps (World and Middle East), two reference maps, a printout page of the political and features they should know, a bag, scissors and a different colored pencil for each student.
2. Have students cut up the page of political and physical features into little slips of paper, fold them in half and put them into the bag.
3. The first student draws a slip of paper and uses his or her pencil to point to that item's location. If correct, he or she colors in the feature and keeps the slip of paper. If not correct, the slip passes to the left and continues until someone finds the correct location. In case of dispute, the student to the right of the guesser may consult the reference map.
4. The student with the most slips of paper at the end wins.

Activity 4: Map Game: Middle East Capital Cities

Go to http://www.yourchildlearns.com/map-puzzles.htm and play the Middle East Map Puzzle on the Capitals, Easy setting then with the Hard setting. To play, students drag the cities to their approximate locations and then release the mouse. If the city is close enough, it will snap into place. Otherwise, it will disappear and a new country will be presented. Have students practice this until confident.

You may make one copy of this worksheet for each student who has purchased the online lesson Culture 201.12

Name _____ Date _____

Culture 201.13

Activity 1: Color in Continents in Giant Atlas

1. Have students begin coloring in the continents VERY LIGHTLY with colored pencils. Demonstrate before beginning to ensure that they color very lightly and use different colors for adjacent countries.
2. Use the following colors for each continent:

North America— orange
South America—pink
Europe— red
Asia— yellow
Middle East—purple
Africa—green
Australia—brown
Antarctica—white

Activity 2: Review Tricky Locations

1. Continue to check for weak spots, both for the whole group and for individual students.
2. Review the tricky locations, ideally focusing on just 3-5 of them per day and really making sure every student masters them.

Activity 3: Middle East Pencil Game

1. Grouping students by 3's or 4's, give each group two blank maps (World and Middle East), two reference maps, a printout page of the political and features they should know, a bag, scissors and a different colored pencil for each student.
2. Have students cut up the page of political and physical features into little slips of paper, fold them in half and put them into the bag.
3. The first student draws a slip of paper and uses his or her pencil to point to that item's location. If correct, he or she colors in the feature and keeps the slip of paper. If not correct, the slip passes to the left and continues until someone finds the correct location. In case of dispute, the student to the right of the guesser may consult the reference map.
4. The student with the most slips of paper at the end wins.

Activity 4: Video Tour

1. Choose some videos about countries in the Middle East and watch them.
2. Begin making a list of places you would like to visit if you were a tourist in the Middle East.

You may make one copy of this worksheet for each student who has purchased the online lesson Culture 201.13

Name _____ Date _____

Culture 201.14

Activity 1: Atlas: Middle East: 3D

1. Help more tactile learners review the physical features by making them three-dimensional. All locations should already be labeled by now. This is a two-day project.
2. Glue blue yarn to each river.
3. Add brown glitter glue to mountains and mountain ranges (be sure to add a VERY THIN layer or it will take a long time to dry).

Activity 2: Review Tricky Locations

1. Continue to check for weak spots, both for the whole group and for individual students.
2. Review the tricky locations, ideally focusing on just 3-5 of them per day and really making sure every student masters them.

Activity 3: Middle East Pencil Game

1. Grouping students by 3's or 4's, give each group two blank maps (World and Middle East), two reference maps, a printout page of the political and features they should know, a bag, scissors and a different colored pencil for each student.
2. Have students cut up the page of political and physical features into little slips of paper, fold them in half and put them into the bag.
3. The first student draws a slip of paper and uses his or her pencil to point to that item's location. If correct, he or she colors in the feature and keeps the slip of paper. If not correct, the slip passes to the left and continues until someone finds the correct location. In case of dispute, the student to the right of the guesser may consult the reference map.
4. The student with the most slips of paper at the end wins.

Activity 4: Video Tour

1. Choose some videos about countries in the Middle East and watch them.
2. Begin making a list of places you would like to visit if you were a tourist in the Middle East.

You may make one copy of this worksheet for each student who has purchased the online lesson Culture 201.14

Name _____ Date _____

Culture 201.15

Activity 1: Atlas: Middle East: 3D

1. Help more tactile learners review the physical features by making them three-dimensional. All locations should already be labeled by now. This is a two-day project.
2. Glue blue yarn to each river.
3. Add brown glitter glue to mountains and mountain ranges (be sure to add a VERY THIN layer or it will take a long time to dry).

Activity 2: Practice Test

1. Give students Version A of the final exam for Culture 201.
2. Students who pass Version A with 90% or above today do not need to take an additional final exam during finals week; they have already passed.
3. Students who do not pass Version A with 90% or above today need to focus on studying all missed questions and take Version B of the final exam during finals week. The two exams are virtually identical; the order of the questions and the labels on the maps are just mixed around.

Activity 3: Continents & Oceans Review

1. Give each student a map of the continents and oceans, three blank pieces of paper and a pencil.
2. First, have each student trace the continents by placing a blank sheet of paper over the printed map.
3. Second, have each student do a freehand drawing of the continents while looking at the printed map.
4. Finally, have each student draw the continents from memory. The teacher should do this also to demonstrate that results may be very wrong on the first try. Compare all the "memory" maps at the end and enjoy a good laugh at how different they all are.

Activity 4: Video Tour

1. Choose some videos about countries in the Middle East and watch them.
2. Begin making a list of places you would like to visit if you were a tourist in the Middle East.

You may make one copy of this worksheet for each student who has purchased the online lesson Culture 201.15

Science 2.01: Overview & Prep Day

Objectives

By the end of this term each student will be able to:

- Demonstrate how the earth moves around the sun and how this creates day & night, seasons, and years
- Illustrate the composition of the earth, especially the rocks, water and land-forms of the crust
- Describe how wind is created and how this affects weather, including hurricanes and tornadoes
- Explain how different weather, seasons and biomes are created

Description

In The Knowledge Series, students rotate three times through four science topics: geology, biology, physics and botany. Geology is covered in units 1, 5 and 9, each time at a deeper and more comprehensive level.

Most science courses for students of this age are taught informationally only: this is what we know. We are trying to balance that with a more...scientific approach to knowledge. We want students to observe, question, experiment, measure, diagram, analyze, and draw conclusions on their own. This will happen a lot more in Tier Three; this unit we are just starting to lay the groundwork for those skills.

Prepping

On-Line Lessons	
Lesson #	Science
201	**Geology**
201.01	Geology overview
201.02	Our solar system
201.03	The Earth
201.04	Rocks, minerals and soil
201.05	Earthquakes
201.06	Volcanoes
201.07	Mts., hills, plateaus, glaciers
201.08	Water
201.09	Oceans
201.10	Seas & lakes
201.11	Rivers
201.12	Floods & glaciers
201.13	Wind
201.14	Hurricanes
201.15	Weather, seasons, biomes

Supplies

Lamp

Inflatable Globe

Styrofoam Ball

Dowel

Clay, at least 3 colors per student

Rock Samples Kit

Magnifying Glass

Volcano Kit/Supplies

Mud

Sticks

Small Swimming Pool or other large water container

Small Fan

Ice

Suggested Field Trips

Obervatories (with telescopes to look at the stars)

College geology departments

Rock & mineral shops

Local geological features

Wave research labs / pools with wave machines

Windmills / wind turbine farms

Science 2.01: Hands-On Activities

Lesson #				
201	**Topic**	**Activity 1**	**Activity 2**	**Activity 3**
201.01	The Earth and the Sun	Question: Sun's Motion	Observe: Shadow Chart	Model: Axis & Spin
201.02	The Stars and the Planets	Question: Wanderers	Diagram: Constellations	Model: Planets
201.03	Model of the Earth	Question: Core & Crust	Model: Three Layers	Experiment: Tectonics
201.04	Rock Samples	Measure: Rock Properties	Diagram: Color & Shape	Categorize: Types
201.05	Earthquake Drill	Create: Rock Houses	Experiment: Shaking	Practice: Safety Plan
201.06	Volcano Model	Model: Volcano	Diagram: Flows	Observe: Video Clips
201.07	Landforms Project	Model: Landforms	Categorize: Giant Atlas	Observe: Real Examples
201.08	Boiling & Freezing	Experiment: Boiling	Experiment: Freezing	Experiment: Salt Water
201.09	Topographic Map	Observe: Google Maps	Model: 3-D Map	Question: Abstracting
201.10	Water Currents Project	Experiment: Heat	Experiment: Wind	Experiment: Waves
201.11	Stream Table	Experiment: Erosion	Model: Landforms	Observe: Real Examples
201.12	Cornstarch Glacier	Experiment: Flow	Experiment: Dam	Experiment: Boulders
201.13	Wind Spinners	Experiment: Pinwheel	Model: Anemometer	Measure: Wind Vane
201.14	Lightning & Vortexes	Model: Lightning	Model: Vortex	Observe: Video Clips
201.15	Weather Station	Measure: Temperature	Measure: Air Pressure	Analyze: Forecasting

Science 201.01

Topic: The Earth and the Sun

People used to think that the sun went around the earth, but now we know the opposite is true.

Discuss how recently this discovery was made and how.

Create a primitive sun dial to observe the Sun's shadow for several weeks or the whole year at different times of day.

Model the motion of the earth (a) spinning on its axis and (b) orbiting the sun to understand the concepts of day & night, seasons and years.

Activity 1: Discuss

Talk about what you see the sun do during the day. If possible, stand high up and look out to the horizons.

What does the relationship between the sun and earth seem to be?

In Tier Three we'll get into this more, but most people thought the Sun went around the earth until about three hundred years ago!

This belief started to change in 1543 when Copernicus wrote a book that better explained the movements of the stars and planets in relation to the earth. Galileo provided further evidence in 1632 based on observations from a new invention: the refracting telescope. In both of these cases, the Catholic Church (a powerful force in Europe, where they lived) tried to keep anyone from discussing these ideas. The final proof came from Sir Isaac Newton with new calculations from his reflecting telescope. People really started to believe when Edmund Halley , using Newton's equations, predicted the return of a comet in 1758 (now called Halley's comet).

Activity 2: Observe: Shadow Chart

1. Put a thick dowel deep into the ground perfectly vertically (use a level) with at least two feet sticking up, or use a flagpole or other fixed object.
2. Use markers (painted stone, plastic toothpicks, etc.) to mark the tip of the pole's shadow every day at 9:00, noon, 3:00 and 6:00. Set a reminder so you don't forget.
3. Draw a diagram of the shadow and markers.
4. Does the shadow end at the same point every day? Is it the same length all the time?
5. Continue this experiment all year and see. If you know someone living far away, ask them to do the same experiment and compare results. How does Daylight Savings time affect the experiment?
6. Advanced: Research sundials and make one of your own.

Activity 3: Model: Axis & Spin

1. In order to demonstrate how the earth rotates creating night and day, you will need to use the flashlight and the globe.
2. Have the student locate the north and south poles, as well as the equator. Next, have the student spin the globe on its axis with the north and south poles being relatively vertical. Ask the student to illuminate the globe with the flashlight near the equator. Do this from about 2 feet away in a darkened room.
3. Discuss how the earth's rotation creates day and night with the sun's light.. Also discuss why it's warmer and days are longer at the equator than the poles.
4. Tilt the globe a little and have it continue spinning on its axis while also orbiting the lamp (shade off). Repeat a few times to observe before discussing.
5. Discuss how the earth's position around the sun, combined with the tilt of the axis, create the four seasons.

Science 201.02

Topic: The Stars and the Planets	**Activity 1: Question: Wanderers**
Activity 2: Diagram: Constellations	**Activity 3: Model: Planets**

Science 201.03

Topic: Model of the Earth	**Activity 1: Question: Core & Crust**
Activity 2: Model: Three Layers	**Activity 3: Experiment: Tectonics**

Science 201.04

Topic: Rock Samples	**Activity 1: Measure: Rock Properties**
Activity 2: Diagram: Color & Shape	**Activity 3: Categorize: Types**

Science 201.05

Topic: Earthquake Drill	**Activity 1: Create: Rock Houses** 1. Fill the cookie sheet with dirt to simulate the crust of the earth. 2. Have your child make a house of sticks, rocks, and mud and let it dry.
Activity 2: Experiment: Shaking 3. Shake the cookie sheet until the house collapses. Observe how the shaking motion damages the structure of the house.	**Activity 3: Safety Plan** 4. Discuss the earthquake safety guide with your child. 5. Go through your home and areas where your child spends a lot of time and practice having earthquake drills. Designate a safe spot to meet outside after any emergency.

Science 201.06

Topic: Volcano Model	**Activity 1: Model: Volcano**
There are so many types of volcano models to choose from—visit Volcano World at the University of North Dakota to pick the one you like the most. http://volcano.und.nodak.edu/vwdocs/volc_models/models.html.	
Activity 2: Diagram: Flows	**Activity 3: Observe: Video Clips**

Science 201.07

Topic: Landforms Project	**Activity 1: Model: Landforms**
Activity 2: Categorize: Giant Atlas	**Activity 3: Observe: Real Examples**

Science 201.08

Topic: Boiling, Freezing and Salt Water

Activity 1: Boiling

1. First of all discuss any safety issues regarding the thermometer, such as the dangers of the mercury inside.
2. Discuss the temperature at which water freezes or boils (this will depend on whether your thermometer measures degrees in Celsius or Fahrenheit, or both).
3. Explain that until water reaches these temperatures it will not change "states" from a liquid to a solid or from a liquid to a gas.
4. Practice heating up water to boiling, and assist them with safely taking the temperature every 5 minutes while wearing protection on their hand. Help them keep track of how quickly the water heated on a sheet of paper.
5. Have the student watch as the boiling water turns into a gas. Help them hold a glass object above the boiling water so that they can watch the steam stick to the glass, cool down, and turn back into water.
6. Have a discussion about which areas on the map might have warm water in their ocean or rivers. Look up information on Hot Springs together and talk about how they are formed and what keeps the water so warm.

Activity 2: Freezing

1. Assist the student with filling up half of the tray with water only half filling each space. Fill the other half all of the way.
2. Every 30 minutes assist the student with measuring the temperature of the water in each side of the ice cube tray. Write down the results. The student should also write down the first time that they begin to see crystals forming in the water.
3. Did the half-filled spaces freeze first? Discuss with the student reasons why the smaller spaces of water froze first.
4. Discuss places in the world where water is really cold and why. Look on a map for the North Pole and Antarctica.

Activity 3: Salt Water

For this activity you will need two large clear glasses of water, one teaspoon of salt, and a long spoon to stir with.

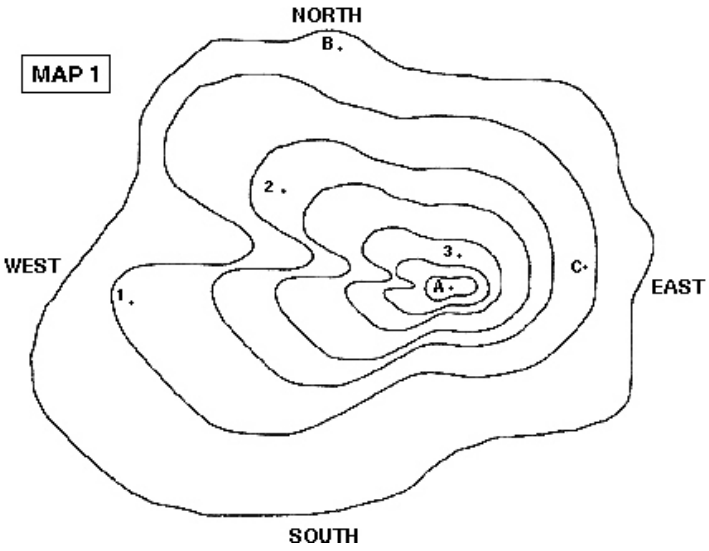
1. Assist the student with measuring out 1 tsp. of salt and pouring it into one of the clear glass. Have them watch closely until all of the salt has dissolved into the water. Take note that the water in both glasses should be clear.

2. Discuss the difference between the fresh water in most rivers and lakes and the salt water in the ocean. Have the student take a small sip of the fresh water, and then a small sip of the salt water.

Explain that salt water is okay for humans and land animals in small amounts, but that our bodies cannot process all of the salt in large amounts. This is why people who are traveling across the ocean on a boat, they always have to carry fresh water along.

Science 201.09

Topic: Landforms Project



Activity 1: Observe: Google Maps

Activity 2: Model: 3-D Map

1. Place the first photocopy of the landform on top of the black construction paper. Carefully cut along the contour line representing the lowest elevation (outside line). Label the center of the construction paper with a "1."
2. Place the photocopy of the landform on top of a different color of construction paper and carefully cut around the next contour line. Label the center of thec onstruction paper with a "2". This is the second level of your model.
3. Repeat this procedure until you have cut out all of the contour lines. Don't forget to label the layer with the appropriate number.
4. Now you are ready to build your 3-D model. Using the second photocopy as a guide, take layer number 2 and glue the spacers to the bottom of the construction paper. Glue layer 2 onto the top of the first layer.
5. Repeat with the rest of your layers until you have built your model.

Activity 3: Abstracting

If black (the first layer of your model) is sea level, what elevation is each of the following points? (the contour interval = 10 ft.)

A _____ B _____ C _____

1 _____ 2 _____ 3 _____

2) Which is the steepest slope on the hill? (north, south, east, or west?) How do you know?

3) What is the difference in elevation between the second and fourth layers of your model?

4) If you were to build a house on this hill, where is the flattest part of the land form? Draw a house on the topographic map.

Science 201.10

Topic: Water Current Project

Objective: To become familiar with the movement of water in the ocean.

Materials:

Large water container (small swimming pool, large bin, etc.)

Twigs and other small floating objects

Small fan (not a box fan)

Four bags of ice

Sand

Activity 1: *Heat currents*

Pour two bags of ice into your pool at one end, and two at the other end. These are the polar ice caps. Fill the rest of the pool to about two inches deep with water from the hose. Scatter your floating objects (twigs, paper "boats", etc.) all over the surface of the water; the more pieces, the easier it will be to see the movement. Over the next 20 minutes, observe how the "boats" move over the surface of the water. Since they are not self-propelled, they are moving with the currents created by the cold water (from the ice) and the regular water trading places.

Activity 2: *Wind currents*

Choose a location to set up the small fan; ensure that it cannot fall into the water by shortening the cord. Turn it on to the lowest setting and observe any changes in the currents. Change the direction and strength of the wind from the fan as desired.

Activity 3: *Waves*

Create a continent in your ocean by pouring in some of the sand until some of it is above the surface of the water. Shape it like your favorite continent or any shape you choose. Observe any changes in movement caused by the location of your continent. Simulate the tidal effect of the moon by gently sloshing one edge of your pool in a slow, rhythmic movement. This will cause waves to begin to accumulate. Observe how these affect your continent. Try making an extra continent with a solid center (rocks, bricks, etc.).

Science 201.11

Description: *Stream Table*

Materials:

Sand (large quantity)

Watering can & water

Paper & pencil

Activity 1: Experiment: Erosion

Make a large pile of sand on a sloped surface (such as a driveway or large board). Use the watering can to "rain" on the pile of sand. Observe the streams that develop and what happens to the sand.

Use your finger to make a winding, meandering channel. Pour a steady trickle of water down this channel; observe where erosion and deposition occurs in the streambed. Make a sketch of the streambed and label areas of erosion and deposition. Then pour a lot of water down and observe the stream under flood conditions; draw and label a diagram of the flooded stream during and after the flood.

Activity 2: Model: Landforms

Experiment with more than one water source. Try to create braided streams and oxbow lakes, observing the conditions that result in these.

Pile the sand back up and make a ridge along the center. "Rain" above the ridge and observe the two different watersheds.

Make one steeper than the other and observe the effect.

Activity 3: Observe: Real Examples

Visit or look at pictures of various rivers. Look for unusual features and think about how these might have developed, based on your experiments.

Science 201.12

Topic: Cornstarch Glacier

Because it takes an enormous amount of mass to make a real glacier creep downhill, scientists

often rely on substitute materials to make a model of fluid flow in glaciers. In this activity, you'll

make a highly viscous suspension of cornstarch and water to simulate a glacier, and track the way

that it flows down a "valley."

Materials:

plastic shoe box
one 16-oz box of cornstarch
one to two cups of water
one 2-qt mixing bowl
5 wooden toothpicks
5-6 large pebbles
one 5" x 7" inch index card
pencil

Activity 1: Flow

1. Mix the cornstarch and water together in the bowl to form a suspension with the consistency of

toothpaste. (It should not be runny or wet.)

2. Lay the pencil flat on the table and place one end of the shoe box on top of it to give the box a

slight tilt. Begin pouring the cornstarch mixture into the box at the raised end and observe what

happens.

Activity 2: Dam

3. After the mixture has flowed through the entire box, scrape it up with your hand and pile it in

the raised end of the box. Use the index cards to make a "dam" across the shoe box valley to hold

the mixture back. Lay the five toothpicks across the front of the mixture so that they are one inch

apart and parallel to each other. Remove the dam and observe the way the toothpicks move as the

glacier flows.

Activity 3: Boulders

4. After you have tracked the flow of the glacier with the tooth-picks, repeat the experiment, but

this time place a few large pebbles on the bottom of the shoe box to make obstructions in the

valley. Allow the glacier to flow again and observe what happens when it interacts with the

obstructions.

Questions

1. When the cornstarch mixture initially flowed through the box, what shape did the front take?

Science 201.13

Description: Wind Spinners

Activity One: Pinwheel

Materials

a pin

a square piece of construction paper (about 8.5" x 8.5")

a sharpened pencil with an eraser

Scissors

Activity Two: Anemometer

Materials

five 3 ounce paper Dixie cups

two straight plastic soda straws

a pin

scissors

paper punch

small stapler

sharp pencil with an eraser

Activity 2: *Activity Two: Anemometer*

Take four of the Dixie cups. Using the paper punch, punch one hole in each, about a half inch below the rim. Take the fifth cup. Punch four equally spaced holes about a unit inch below the rim. Then punch a hole in the center of the bottom of the cup.

Take one of the four cups and push a soda straw through the hole. Fold the end of the straw, and staple it to the side of the cup across from the hole. Repeat this procedure for another one -hole cup and the second straw. Now slide one cup and straw assembly through two opposite holes in the cup with four holes.

Push another one-hole cup onto the end of the straw just pushed through the four-hole cup. Bend the straw and staple it to the one-hole cup, making certain that the cup faces in the opposite direction from the first cup. Repeat this procedure using the other cup and straw assembly and the remaining one-hole cup.

Align the four cups so that their open ends face in the same direction (clockwise or counterclockwise) around the center cup. Push the straight pin through the two straws where they intersect. Push the eraser end of the pencil through the bottom hole in the center cup. Push the pin into the end of the pencil eraser as far as it will go. Your anemometer is ready to use.

Your anemometer is useful because it rotates with the wind. To calculate the velocity at which your anemometer spins, determine the number of revolutions per minute (RPM). Next calculate the circumference (in feet) of the circle made by the rotating paper cups. Multiply your RPM value by the circumference of the circle, and you will have an approximation of the velocity of at which your anemometer spins (in feet per minute). (Note: Other forces, including drag and friction, influence the calculation but are being ignored for this elementary illustration. The velocity at which your anemometer spins is not the same as wind speed.)

The anemometer is an example of a vertical-axis wind collector. It need not be pointed into the wind to spin. (Note: This paper cup anemometer will produce a reasonable approximation of circumferential velocity, but should not be used for any purpose other than elementary illustration.)

Science 201.13

Activity 1: ***Activity One: Pinwheel***

Lay the square of paper flat on a table and draw a line diagonally from each corner to the opposite corner. Mark the center of the square where the two lines cross and punch a small hole through it with the pencil tip. Next, cut along each line stopping about an inch from the hole in the center of the square. Take the pin and punch a hole in the top left corner of each of the four flaps. (No two holes should be next to each other.) Pick up a flap at a punched corner and carefully curve it over toward the center hole, securing it with the pin. Repeat this for the other flaps.

When all four flaps are held by the pin, carefully lift the paper without letting the flaps unfurl. Lay the pencil flat on a table and carefully push the point of the pin into the side of the eraser.

You now have a simple wind collector. The pinwheel is an example of a horizontal-axis active wind collector. It must be pointed into the wind in order to spin.

Activity 3: ***Activity Three: Wind Vane***

Before You Start...

A weather vane is also called a wind vane. It is a tool for measuring wind direction. It spins on a rod and points in the direction from which the wind comes.

The weather vane is one of the oldest weather tools. The part of the vane that turns into the wind is usually shaped like an arrow. The other end is wide so it will catch the smallest breeze. The

breeze turns the arrow until it catches both sides of the wide end equally. The arrow always points into the wind. The arrow tells you the direction from which the wind is coming.

Materials

Scissors, cardboard, compass, plastic soft drink bottle, plastic drinking straw, shallow pan filled with rocks, felt marking pen

Procedure

What is a weather vane? When have you seen weather vanes? Write down your answers. Draw a picture of a weather vane.

With the scissors, carefully cut an arrow with a tab from the tag board, as shown. Remember that scissors are sharp, so handle them carefully. Bend the tab slightly so the arrow turns easily when you put it in one end of the straw. Put the other end of the straw in the bottle. Remove enough rocks from the pan to make room for the bottle. Pile the rocks back around the bottle so it won't be blown over. (See illustrations above.)

A compass always point north. Use your compass to find north, and then mark the four sides of the bottle E, W, N, and S with a felt pen. Set your weather vane in a high place such as the top of a playhouse or a slide. Make sure it does not wobble or tilt, and that it catches the slightest breeze.

Watch your weather vane closely and then describe how it works. Test it on windy days and again when there is just a light breeze.

Background Information

A weather vane is a tool used to tell which direction the wind is coming from. Weather vanes are usually found on top of buildings so they will catch an open breeze. Look for them on top of barns, houses, weather stations, hardware stores, and other places that sell or use weather tools.

The part of the vane that turns into the wind is usually shaped like an arrow. The other end is wide so it will catch the smallest breeze. Sometimes a metal rooster or other animal sits on top of the weather vane.

You have made a weather vane! If the wind is blowing from the south, the wind is usually warm.

If the wind is blowing from the north, the wind is usually cooler.

Some weather vanes have directional strips underneath the arrow to make it easier to read. Your markings on the bottle do the same thing. The breeze turns the arrow on the weather vane until it catches both sides of the wide equally. The arrow always points into the wind.

It is easier to see how the energy from the wind moves your weather vane if it is up high and in an open area. You might also want to experiment by putting it on the ground.

A weather vane is one of the oldest weather tools. It is still used today to measure the direction of the wind. Weather vanes can only measure wind direction a few yards (meters) off the ground.

Large, helium-filled weather balloons are used to measure winds high above the earth's surface.

The balloons move with the same speed and direction as the wind.

Science 201.14

Activity 1: *Simulating Lightning*

Lightning is one of natures most exciting phenomena and it can also be a topic for an engaging lesson for students. Unfortunately, it can be hard to schedule a storm to coincide with your weather unit.

This activity allows students to create lightning with two common objects and observe the colorful "discharge" of electrons on a smaller scale. By exploring the phenomena of static electricity, students can begin to relate the knowledge they gain to the real-life weather phenomena of lightning.

Materials:

light bulb (clear, unfrosted glass)

10 oz. clear plastic jar (polyethylene) (An empty food container works well.)

a dark room.

Procedures:

1. Pass out one light bulb and one plastic jar per group of 5 people.
2. Demonstrate how to create lightning in a jar. Hold the light bulb at its base. Place the light bulb inside the jar and begin rubbing the glass of the bulb against the plastic jar. Rub vigorously for at least two minutes. (The room must be very dark.) Have the students describe what they are seeing. (They should see purplish miniature flashes.)
3. Ask, "Where do the flashes occur?" They should see it on the surface of the glass bulb. This is similar to cloud-to-cloud lightning.
4. After rubbing the bulb on the inside surface of the jar for several more minutes, move the bulb in and out of the jar's opening. Ask, "What do you see?" The students should see branches jumping between the walls of the light bulb and the filament. This represents cloud-to-ground lightning.

Activity 2: *Making a Vortex*

Special thanks to Iowa State University and U.S. Department of Agriculture cooperating.

Materials: Plastic pop or water bottles (will be made into tornado tubes), washers with 3/8" hole (2 per tube), 2" length of one-inch diameter clear plastic tubing (1 per tube), various food colorings, towels for clean-up.

What to Do: First note - , you can use a washer and a piece of clear plastic tubing instead of having to purchase expensive tornado tubes. The plastic tubing will fit tightly around either the two liter bottles, or the smaller plastic pop bottles. The plastic tubing needs to be one inch in diameter and comes by the foot.

The washers have a 3/8-inch hole. Both of these items may be purchased at a "Farm & Home" type store. The costs of the washers are approximately $2.00/lb., which is a lot of washers. The tubing is approximately $.75/foot. Cut tubing to 2" length pieces – one per tornado tube.

NOW: 1. Remove the caps from two empty soft drink bottles.

2. Fill one bottle half-full with water. Add a drop or two of food coloring if available.

3. Slide the plastic tube with the washer, over the top opening of the bottle containing water (This will goon much easier if it is warm. You can hold it under hot water to soften in necessary).

4. Turn the other bottle over and place the top of it into the other end of the connector tube.

5. Turn the bottles over so the full bottle is on the top; lightly shake the bottles in a circle so the water begins to swirl.

6. Place the bottles on a table. Watch the water drain from the top bottle to the bottom.

Observations: What did you see? How long did it take the water to drain?

Try flipping the bottles without swirling the bottle. Does a vortex still form? (A vortex is a funnel of swirling water.) If not, what happens? Does it take more time or less time for the water to drain?

Science 201.15

Description: Weather Station	**Activity 1: *Weather Station*** Materials: Thermometer This is the last science lesson for this unit. Next week will be final exams, followed by the two-week vacation. Consider having your child make a weather station and record data for the next three weeks. Choose four daily times that your child can take measurements, such as 8 a.m., noon, 4 p.m., and 8 p.m. Take the temperature. Record the wind speed by measuring how many times the anemometer spins per minute. Measure the air pressure using the activity below. This is an excellent integration with mathematics. Make a chart that records all three indices; you could even graph the data at the end of the project.
Activity 2: *Measuring Air Pressure* Cover a glass jar (like a canning jar) with a thin piece of rubber, like a balloon that has been cut into a flat shape. Stretch the rubber very tightly across the mouth of the jar (like a drum) and hold in place with rubber bands. Place one end of a plastic straw in the center of the circle, with the other end sticking out past the jar, horizontally. Tape the straw in place along the edge of the jar. Fold a piece of paper in thirds (like mailing a letter), form into a triangle and stand on one side. Mark the place where the straw touches the paper. Using a ruler, mark above and below the that spot in ¼" intervals. Label the center line 0, and label +1, +2, +3, etc. above it and -1, -2, -3, etc. below it. When the air pressure is higher, it will push down on the rubber jar lid; the end of the straw that is in the center will go down with it, but the other end will move up on your scale. The opposite will happen when the air pressure is lower than the day you made this.	**Activity 3: Analyze: Forecasting**

Science 2.01 Study Guide

LESSON 1: OVERVIEW

Geology is the study of the earth. A person who studies the earth is called a geologist.

A star is a giant ball of gas. A planet is a giant ball of rock, metal, or gas that orbits a star. A group of planets which all orbit the same star is called a solar system. A moon orbits a planet.

The earth has three main sections: the core, the mantle, and the crust. The earth is made of metal and rock. On the crust, small rock pieces mix with plant and animal materials and become soil.

The crust is not one continuous piece; it is broken into "plates" which slowly move around. When plates run into each other, they often pile up the rocks, forming mountains. Places where the crust is thin are usually filled with water--these are oceans and lakes.

The air above the surface of the earth is called the atmosphere. When the air moves around, this is called wind.

The earth moves around the sun once each year. The earth also tilts on its axis, and spins all the way around this axis once each day. Because the earth tilts and circles the sun, different areas of the earth are heated differently; this creates seasons and climates.

The warmest season anywhere is called Summer; this is followed by Autumn (also called Fall). The coldest season is called Winter; this is followed by Spring.

LESSON 2: OUR SOLAR SYSTEM

At the center of our solar system is the Sun. Nine planets, including the Earth, orbit the Sun. One moon orbits the Earth.

The planets orbit the Sun because of gravity. This means that the Sun is so big that it pulls everything else toward it.

Asteroids are broken-up rocks that circle a star or planet, usually in an "asteroid belt" with lots of asteroids together. Comets are like dirty snowballs, with ice and dust mixed together.

The Inner Planets (Mercury, Venus, Earth, and Mars) are small and made mostly of solid rock and iron. The Earth is the third planet from the Sun.

The Outer Planets (Jupiter, Saturn, Uranus, and Neptune) are bigger and mostly made of gas. The last planet, Pluto, doesn't fit into either group--it is a small icy rock.

At night, our star (the Sun) is on the other side of the Earth, and in the darkness we can see about 3,000 other stars which seem small because they are far away. We can see even more with a telescope.

Stars are grouped into organized clusters called galaxies. Our Sun is in the Milky Way Galaxy and is shaped like a giant pin-wheel. All the galaxies together, and all of space, is called the universe.

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A dot-to-dot picture drawn with some of the brightest stars is called a constellation. The most famous constellation is the Big Dipper.

In a telescope, the hottest stars look blue, medium look yellow (like the Sun) and cooler stars look red. Stars are bright because they are giant balls of burning hydrogen.

LESSON 3: THE EARTH

The earth is shaped like a ball (not a flat circle) and is called a sphere. A picture of the earth is called a globe. A flat picture of the earth is called a map, but a map has to stretch out some parts of the picture to make it flat.

The Earth spins on its axis. The part facing toward the Sun has day; the part away from the Sun has night. The axis is an invisible line; the top is called the North Pole and the bottom is called the South Pole.

Halfway between the North and South Poles, we draw a line going around the center of the Earth, called the Equator.

The Earth is big, and pulls things toward it; this is called gravity. This is why you stay on the surface of the Earth even while it is spinning around very quickly.

The core of the Earth is made of solid metal and is about 4,000 miles below the surface. It is very hot and is tightly packed because of all the weight of the Earth pushing down on it.
The heat from the core heats up the mantle, melting the rock there. The part of the mantle highest up (closest to the crust) has less gravity and pressure, and moves around the most.

Hot, liquid rock below the crust is called magma. When it escapes through a crack in the crust, this same liquid rock is called lava. The lava often stacks up above a crack or hole, creating a volcano.

The crust is a thin layer on the Earth made mostly of cooled down rock. The thick parts of the crust form continents and islands, and are usually about 25 miles thick. The thin parts of the crust are under oceans and lakes and are only about 3-6 miles thick.

LESSON 4: ROCKS, MINERALS, AND SOIL

There are three types of rocks: igneous, sedimentary, and metamorphic.

Igneous rocks are "fire rocks." The are all formed from magma, which becomes lava when it reaches the surface and then cools and hardens into rock. Some types of igneous rocks are obsidian, basalt, pumice, and granite.

Sedimentary rocks are formed from little bits of other rocks (like sand) that get squeezed together. This type of rock often has stripes from the different layers of sediment that get stacked on top of each other. Lime and mud glues it all together until it's solid. Some types of sedimentary rocks are shale, sandstone, and conglomerates.

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Metamorphic rocks are made from igneous and sedimentary rocks. When these other two types of rocks are deep beneath the earth's surface, the heat and pressure melts and twists the rocks until they become a new type of rock. Some types of metamorphic rocks are gneiss, marble, and slate.

Rocks are formed from minerals. There are about 1,500 different types of minerals, but only about 200 are common. The most common mineral is quartz, which is sparkly.

Other types of minerals include sulphur (which smells like rotten eggs) and potassium (which is also used in your heart).

Tiny bits of rocks are broken off and become sand. But when the tiny bits are mixed with special minerals, it becomes soil. Soil is what plants grow in, and good soil can also hold water and air in little spaces. Land with soil (instead of sand) is called "arable", which means that it is good for farming.

LESSON 5: EARTHQUAKES

An earthquake is when the ground shakes. This happens when a section of the earth's crust moves. People who study earthquakes are called seismologists.

Earthquakes usually happen near volcanoes or along a fault line, which is where the edges of two plates meet.

Earthquakes create waves in the ground. The strength of an earthquakes is its "magnitude," which is a number from 1 to 9, with 9 being the strongest.

Many earthquakes occur under the ocean, making giant waves called tsunamis. They can hit beaches hundreds of miles away and be 20 feet or higher.

A seismograph records information about an earthquake. If it draws big lines, the magnitude is high. If it draws them close together, then the earth is shaking quickly.

These days, we make buildings to be safer during earthquakes. However, if there is an earthquake, get under a strong piece of furniture and stay away from windows. If you are outside, stay away from buildings, trees, and power lines.

LESSON 6: VOLCANOES

When magma reaches the earth's surface it becomes lava and starts cooling. When it's cold, it becomes igneous rock. About 80% becomes basalt.

Sometimes when the lava comes out, there is an explosion; this is called a "pyroclastic eruption." Other times, it just comes out gently; this is called a "pyroclastic flow." Either way, the lava moves really quickly and can even bury cities. The most famous city to be buried was Pompeii, which was buried by Mount Vesuvius.

There are three types of volcanoes. Shield volcanoes are shaped like an upside-down bowl when the lava flows out slowly. Tephra cones are made from eruptions and are tall and steep. Strato volcanoes are the biggest and have both eruptions and flows.

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The hole in the volcano where the lava comes out is called the crater. Sometimes the sides of the volcano fall into the crater, making a bowl-shaped caldera. If mover lava comes out after there is a caldera, it makes a resurgent dome, like with Wizard Island in the middle of Crater Lake in Oregon.

If the lava comes out of a long crack in the ground, called a fissure, the lava will flow flat along the ground and form "plateau basalts." If lava comes out under the ocean, it will cool very quickly in the water, forming "pillow basalts."

LESSON 7: MOUNTAINS, HILLS, PLATEAUS, GLACIERS

Big mounds of earth are called hills. If they are taller than 1000 feet, they are called mountains.

Some mountains are formed during volcanic eruptions. Others are called "fold and thrust" mountains because they are formed when plates of the earth's crust run into each other and push up rocks and dirt into mountains.

A mountain with a pointy top has a "peak." A mountain with a line for a top has a "ridge." A low part between two high parts is a "valley." A hill or a mountain is a plateau.

Since mountains are so high, they often have snow on them all year long. If it stays there long enough and keep stacking up, the bottom ice turns into solid ice and becomes a glacier. The continent of Antarctica is also very cold and is covered with a gigantic glacier.

A valley glacier is formed in a valley. A fjord glacier is sliding into a lake or ocean. A piedmont glacier spreads out as it comes down the mountain (like an upside-down spoon with the handle on the mountain). An ice cap sits on the peak of the mountain (like a hat), covering it all around.

LESSON 8: WATER

Water covers about 3/4 of the surface of the earth. Like everything else, water can be in solid (ice), liquid (water), or gas (vapor) state.

People, animals, and plants need water. If there is not enough water somewhere on Earth, that area is having a drought. Other times, it will rain a lot in a "monsoon" season, which can cause floods.

There are two types of water on the Earth: fresh and salt water. The oceans are full of salt water, which you cannot drink. Rivers and most lakes have fresh water.

Most fresh water is "potable", which means you can drink it, but sometimes it is unpotable because it has mud, bacteria, or chemicals in it.

LESSON 9: OCEANS

About 75% of the Earth is covered with water; most of this water is in the oceans, which cover 70% of the surface of the Earth.

The two biggest oceans are the Atlantic and the Pacific. In the north is the Arctic Ocean; in the south is the Southern Ocean.

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The Indian Ocean is east of Africa, near the country of India. The Mediterranean Sea is between Europe and Africa. The Caribbean Sea is between North and South America.

All of the oceans and seas are connected, including many other smaller seas.

The parts of the ocean near the poles are cold, because they get the least sun. The parts of the ocean near the equator are the warmest. The warm water is always flowing toward the poles, and the cold water is always flowing toward the equator.

Water moving in the ocean is called "currents." These are like rivers of water moving through the other water in the ocean.

The moon has gravity and pulls things toward it, especially the ocean. Since the moon is moving around the earth and always pulling on the ocean, this causes the water to slosh.

When the water is generally sloshing high on the beach, it is called high tide. Six hours later, it will be low tide. Six hours later, it is high tide again.

Ocean water also is moved by the wind, causing waves in the middle of the ocean. So, the water can be moved by temperature differences, the moon, and the wind.

The place where the ocean meets a continent or island is called the coastline. One common type of coastline is a sandy beach. Another type is a tide pool, which is rockier and holds a little bit of water even at low tide.

LESSON 10: SEAS, LAKES, AND COASTLINES

Seas are part of the ocean or connected to the ocean. Seas are salty, just like the ocean. Lakes are not connected to the ocean and are usually freshwater, but a few are saltwater.

Since all the oceans and seas are connected, the top of the water is about the same all around the world. So we can measure how tall things are by saying that they are, for example, 500 feet above sea level.

Coastlines can have different shapes. A curved section which is filled with water and surrounded by land on three sides is a "bay." A section of land sticking out into the water is a "peninsula."

A narrow strip of land connecting two bigger pieces, with water on both sides, is an "isthmus." A small area of land, surrounded by water, is an "island."

While beaches and tidal pools are very close to sea level, a sea cliff is where the land is high above sea level and drops down straight into the water. A sea cave is at the bottom of a sea cliff, and is a space that is hollowed out by the water. A sea arch is a hole that goes all the way through a section of rock that sticks out into the ocean.

Spits are tiny peninsulas made of sand or gravel that stick out from the beach. Beach ridges are hills of sand that separate the beach from the rest of the continent. Barrier islands are near the edge of a continent and protect the coastline of the continent from big waves.

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Lakes can be found anywhere in the world; most of them are in the mountains. The country of Canada has almost half the lakes in the whole world.

LESSON 11: RIVERS

The water in rivers comes from a "headwater" where water flows out from below the ground, and from precipitation (rain and snow).

The water in rivers is always moving, or flowing. The water flows downhill and ends in a lake or ocean. When the water falls off a high area and drops to a lower area, this is called a waterfall.

The river water flows in the riverbed, and is held in by the banks of the river, which are higher than the riverbed.

Wind, glaciers, and rivers cause erosion, which means that they break little bits off the rocks and move them to other places. Rivers carry a lot of sediment like sand, mud, and gravel. The rivers also erode their beds, so over time the riverbed becomes much lower than the banks, like in the Grand Canyon.

Fast water carries the most sediments. When the water slows down or reaches the ocean, the sediments often drop to the bottom, creating sand bars and sandy beaches.

Some areas of the river move faster than others. An area where the water moves very quickly and flows over rocks is called "rapids." This creates turbulent "whitewater" areas.

Rivers are rated from 1 to 6, with the number meaning how hard it is to take a boat on the river. A class 1 river is calm, while a class 6 river has a lot of rapids and is too dangerous to use a boat on.

LESSON 12: FLOODS AND GLACIERS

Floods are caused by too much precipitation, like rain or snow. When the water flows downhill toward rivers and lakes, this is called runoff. If there is too much water to fit in the riverbed, this causes a flood.

The areas near a river are expected to flood sometimes. Some areas even have a special title, like "10-year floodplain" or "100-year floodplain," which tells how often you should expect that area to flood.

Floods are most common in the spring, when there is water from old precipitation (melting snow and ice) and new precipitation (lots of rain). Floods can be powerful enough to wash away trees, houses, and boulders.

People try to build things to keep floods from damaging their houses. Dams hold the water in a reservoir, then let the extra water out a little at a time. Levees make the banks of the river higher to try to keep the water in the riverbed. Floodways are deep ditches for holding extra water that won't fit in the riverbed. Planting extra trees near rivers also helps, because the roots hold the soil together and soak up some of the water.

Some people like floods. Farmers gets lots of extra sediments when a flood covers their fields, making the soil better. Some crops, like rice and cranberries, grow underwater.

Science 2.01 Study Guide

In cold areas, the precipitation often freezes instead of becoming runoff. You have already learned about five different types of glaciers. There are also ice sheets, which cover Greenland and Antarctica. Ice shelves are edges of glaciers that float on water. Icebergs are pieces of glaciers the break off and float in the water.

Glaciers are very heavy and the ice at the bottom are pressed and twisted so much that it becomes "hard ice", which is considered a metamorphic rock. When a glacier shrinks, it "retreats." When it gets bigger, it "advances."

Glaciers move downhill with gravity. While they move, they scrape the rock underneath, leaving deep grooves and long smooth spots. A really fast glacier "surges" ahead at 5 miles per year.

LESSON 13: WIND AND DESERTS

Wind is the movement of air. Just like in the ocean, the air near the equator gets the most heat from the sun, and the air near the North and South Poles stays very cold. The warm and cold air area always trying to switch places, and this movement is called wind.

In addition, warm air rises, or gets farther away from the Earth. Cold air sinks down toward the ground. So the air at the equator moves up and away from the equator. Other air sinks down and moves toward the equator. It all flows in giant air circles.

In fact, there are six wind circles on the Earth. These six directions of wind are called the trade winds. The polar rings keep their air inside their rings all the time, so this air stays very cold.

If the soil does not get enough water, it can get very dry and blow away in dust storms. Areas which get less than 10 inches of rain in a whole year are called deserts.

The wind moves around the sand and soil in deserts all the time. Transverse dunes look like sharp waves in an ocean of sand. Longitudinal dunes are long and straight.

LESSON 14: THUNDERSTORMS, TORNADOES, AND HURRICANES

When it is hot for several days, a lot of water will turn into water vapor and then clump together in the air to form clouds. When a lot of little clouds smash into each other and form big clouds, you could have a thunderstorm!

The water molecules get smashed against each other over and over, and this changes them. Some of the molecules get a positive charge and float to the top of the cloud; others get a negative charge and sink to the bottom of the cloud. The two parts are attracted to each other, and when they rush back together you see lightning.

If the positive and negative parts of a cloud neutralize each other, you will see sheet lightning inside the cloud. Sometimes the bottom part of the cloud (which is negative) will neutralize with the ground (which is positive) and you will see fork lightning in the sky between the ground and the cloud.

Science 2.01 Study Guide

A lightning bolt is hot--hotter than the surface of the Sun! This makes the air next to the lightning bolt heat up and move away very quickly. This sudden movement makes the air smash into other air molecules, and you get a loud noise called thunder.

The light from the lightning travels to you faster than the sound of the thunder, even though they happen at the same time. Here's a neat trick to tell how far away the lightning is: After you see the lightning flash, count how many seconds it takes before you hear the thunder. If it takes five seconds, the lightning is one mile away. If it takes ten seconds, the lightning is two miles away. For every five seconds you count, the lightning is one mile further away.

One really cool thing that lightning can make is fulgurites. When lightning hits sand, it heats up the sand so much that it melts and then hardens again in funny lightning shapes.

Tornadoes are also called whirlwinds and twisters. When hot and cold air meet up, they sometimes start flowing around each other in a circle.

The air on the edge of the circle is moving really fast and has high pressure. The air in the middle is moving slowly and has low pressure, so it's constantly getting sucked toward the edges. This creates a vacuum that can pull the roof right off a house!

Tornadoes are invisible until they suck up lots of dirt and other things. One area of the United States gets so many tornadoes that it is called Tornado Alley. The best place to be during a tornado is underground.

Hurricanes and tornadoes both come down from thunderclouds and both have air that moves in a circle. However, hurricanes are much bigger and are over water.

Hurricanes are called cyclones in the Indian Ocean, typhoons in the Pacific Ocean, willy-willies near Australia, and hurricanes in the Atlantic Ocean.

In a hurricane, the calm part is in the "eye" and the strong winds are on the outside. A hurricane can be up to 400 miles across and last for several days. Hurricanes are the most powerful and dangerous types of storms.

LESSON 15: WEATHER, SEASONS, AND BIOMES

Weather is all about the atmosphere, which is all the air around the Earth. Important weather factors are temperature, wind speed, air pressure, clouds, humidity, and precipitation.

Temperature can be measured using the Fahrenheit scale or the Celcius scale. In the Fahrenheit scale, water boils freezes at 32 degrees and boils at 220 degrees. In the Celcius scale, water freezes at 0 degrees and boils at 100 degrees.

Wind speed is measured using the Beaufort scale. This ranges from 1 (leaves are still) to 12 (hurricane strength). Also, when the wind is blowing, it creates a "wind chill" factor that can make it seem colder than it really is.

Science 2.01 Study Guide

If a lot of air is moving to one place, this creates high pressure. If the air is mostly moving away from a place, this creates low pressure. During low pressure, the air is warm and make a lot of water evaporate, so it will rain soon. During high pressure, the air will press together and cool down (like an ice cube), meaning no clouds and nicer weather.

Mr. Howard came up with the cloud names we use today. Cumulus clouds are fluffy. Cirrus clouds are wispy like cotton candy and are made of ice crystals. Stratus clouds are flat and cover the sky. Cumulonimbus clouds are thunderclouds; they start low in the sky but stack up high before a thunderstorm.

Humidity means how much water vapor is in the air. High humidity means a lot of water vapor and happens in warm places. Low humidity means not much vapor; Antarctica has very dry air, or low humidity.

When there is a lot of water vapor in the air, it clumps back together into liquid water; this is called condensation. You can see condensation in clouds, on the mirror in your bathroom, and on the grass in the morning.

The weather is also affected by the seasons. Remember that the Earth is tilted; sometimes the continent you are on will be tilted toward the Sun, and half a year later it will be tilted away.

When your area is tilted toward the sun, it is summer; it will be hot and dry. Three months later it will be fall, and things will be cooling down. Another three months later you will be tilted away from the sun, and it is winter; it will be cold. Three months after that it will be spring; things will be warming up and plants will start growing again.

Remember, when the northern hemisphere is tilted toward the Sun, the southern hemisphere is tilted away. This means that North America has summer while South America has winter!

Different areas of each continent are different biomes, meaning they have different types of weather from each other. A rainforest gets at least 100 inches of rain each year; rainforests near the equator may get 400 inches per year.

The temperate zone has four obvious seasons and gets about 60 inches of rain per year. The grasslands and the taiga both get about 30 inches per year and are good for either farms or forests.

A desert gets less than 10 inches of rain per year, like the Sahara in Africa and the polar ice cap in Antarctica. The tundra also gets less than 10 inches of rain per year, but a few things grow here; the tundra is located all around the north pole, especially in Russia and Canada.

Unit One Final Exam -- Science

INSTRUCTIONS: Write the number next to the word which should be there.

LESSON 1: OVERVIEW

Word List:

Atmosphere	Axis	Crust
Day	Fall	Geologist
Geology	Heated	Moon
Mountains	Planet	Plates
Rock	Soil	Solar
Spring	Star	Summer
Wind	Winter	Year

1 is the study of the earth. A person who studies the earth is called a **2**.

A **3** is a giant ball of gas. A **4** is a giant ball of rock, metal, or gas that orbits a star. A group of planets which all orbit the same star is called a **5** system. A **6** orbits a planet.

The earth has three main sections: the core, the mantle, and the crust. The earth is made of metal and **7**. On the crust, small rock pieces mix with plant and animal materials and become **8**.

The crust is not one continuous piece; it is broken into "**9**" which slowly move around. When plates run into each other, they often pile up the rocks, forming **10**. Places where the **11** is thin are usually filled with water--these are oceans and lakes.

The air above the surface of the earth is called the **12**. When the air moves around, this is called **13**.

The earth moves around the sun once each **14**. The earth also tilts on its **15**, and spins all the way around this axis once each **16**. Because the earth tilts and circles the sun, different areas of the earth are **17** differently; this creates seasons and climates.

The warmest season anywhere is called **18**; this is followed by Autumn (also called **19**). The coldest season is called **20**; this is followed by **21**.

LESSON 2: OUR SOLAR SYSTEM

Asteroids	Big Dipper	Burning
Comets	Constellation	Galaxies
Gas	Gravity	Inner
Milky Way	Moon	Outer
Planets	Pluto	Rock
Stars	Sun	Third
Universe	Yellow	

At the center of our solar system is the **1**. Nine **2**, including the Earth, orbit the Sun. One **3** orbits the Earth.

The planets orbit the Sun because of **4**. This means that the Sun is so big that it pulls everything else toward it.

5 are broken-up rocks that circle a star or planet, usually in an "asteroid belt" with lots of asteroids together. **6** are like dirty snowballs, with ice and dust mixed together.

The **7** Planets (Mercury, Venus, Earth, and Mars) are small and made mostly of solid **8** and iron. The Earth is the **9** planet from the Sun.

The **10** Planets (Jupiter, Saturn, Uranus, and Neptune) are bigger and mostly made of **11**. The last planet, **12**, doesn't fit into either group--it is a small icy rock.

At night, our star (the Sun) is on the other side of the Earth, and in the darkness we can see about 3,000 **13** stars which seem small because they are far away. We can see even more with a telescope.

Stars are grouped into organized clusters called **14**. Our Sun is in the **15** Galaxy and is shaped like a giant pin-wheel. All the galaxies together, and all of space, is called the **16**.

A dot-to-dot picture drawn with some of the brightest stars is called a **17**. The most famous constellation is the **18**.

In a telescope, the hottest stars look blue, medium look **19** (like the Sun) and cooler stars look red. Stars are bright because they are giant balls of **20** hydrogen.

LESSON 3: THE EARTH

Axis	Continents	Crust	Day
Equator	Globe	Gravity	Lava
Magma	Map	Melts	Metal
Moves	Night	North	Oceans
South	Sphere	Stay	Volcano

The earth is shaped like a ball (not a flat circle) and is called a **1**. A picture of the earth is called a **2**. A flat picture of the earth is called a **3**, but it has to stretch out some parts of the picture to make it flat.

The Earth spins on its **4**. The part facing toward the Sun has **5**; the part away from the Sun has **6**. The axis is an invisible line; the top is called the **7** Pole and the bottom is called the **8** Pole. Halfway between the North and South Poles, we draw a line going around the center of the Earth, called the **9**.

The Earth is big, and pulls things toward it; this is called **10**. This is why you **11** on the surface of the Earth even while it is spinning around very quickly.

The core of the Earth is made of solid **12** and is about 4,000 miles below the surface. It is very hot and is tightly packed because of all the weight of the Earth pushing down on it. The heat from the core **13** the rock in the mantle. The part of the mantle highest up has less gravity and pressure, and **14** around the most.

Hot, liquid rock below the crust is called **15**. When it escapes through a crack in the crust, this same liquid rock is called **16**. The lava often stacks up above a crack or hole, creating a **17**.

The **18** is a thin layer on the Earth made mostly of cooled down rock. The thick parts of the crust form **19** and islands, and are usually about 25 miles thick. The thin parts of the crust are under **20** and lakes and are only about 3-6 miles thick.

LESSON 4: ROCKS, MINERALS, AND SOIL

200	Arable	Igneous
Lava	Layers	Magma
Melts	Metamorphic	Minerals
Mud	Potassium	Quartz
Rocks	Sand	Sedimentary
Soil	Sulphur	

1 rocks are "fire rocks." The are all formed from **2**, which becomes **3** when it reaches the surface and then cools and hardens into rock. Some types of **1** rocks are obsidian, basalt, pumice, and granite.

4 rocks are formed from little bits of other rocks (like sand) that get squeezed together. This type of rock often has stripes from the different **5** of sediment that get stacked on top of each other. Lime and **6** glues it all together until it's solid. Some types of **4** rocks are shale, sandstone, and conglomerates.

5 rocks are made from igneous and sedimentary **6**. When these other two types of rocks are deep beneath the earth's surface, the heat and pressure **7** and twists the rocks until they become a new type of rock. Some types of **5** rocks are gneiss, marble, and slate.

Rocks are formed from **6**. There are about 1,500 different types of minerals, but only about **7** are common. The most common mineral is **8**, which is sparkly.

Other types of minerals include **9** (which smells like rotten eggs) and **10** (which is also used in your heart).

Tiny bits of rocks are broken off and become **11**. But when the tiny bits are mixed with special minerals, it becomes **12**. "**13**" land is good for farming.

LESSON 5: EARTHQUAKES

Big	Close	Crust
Fault	Magnitude	Seismologists
Shakes	Tsunamis	Waves

An earthquake is when the ground **1**. This happens when a section of the earth's **2** moves. People who study earthquakes are called **3**. Earthquakes usually happen near volcanoes or along a **4** line, which is where the edges of two plates meet. Earthquakes create **5** in the ground. The strength of an earthquakes is its "**6**," which is a number from 1 to 9, with 9 being the strongest.

Many earthquakes occur under the ocean, making giant waves called **7**. They can hit beaches hundreds of miles away and be 20 feet or higher. A seismograph records information about an earthquake. If it draws **8** lines, the magnitude is high. If it draws them **9** together, then the earth is shaking quickly.

LESSON 6: VOLCANOES

When magma reaches the earth's surface it becomes **1** and starts cooling. When it's cold, it becomes **2** rock. About 80% becomes basalt. Sometimes when the lava comes out, there is an explosion; this is called a "pyroclastic **3**." Other times, it just comes out gently; this is called a "pyroclastic **4**." Either way, the lava moves really quickly and can even bury cities. The most famous city to be buried was **5**, which was buried by Mount **6**.

Caldera	Crater	Eruption	Fissure
Flow	Igneous	Lava	Pillow
Plateau	Pompeii	Shield	Strato
Tephra	Vesuvius	Wizard	

There are three types of volcanoes. **7** volcanoes are shaped like an upside-down bowl when the lava flows out slowly. **8** cones are made from eruptions and are tall and steep. **9** volcanoes are the biggest and have both eruptions and flows. The hole in the volcano where the lava comes out is called the **10**. Sometimes the sides of the volcano fall into the crater, making a bowl-shaped **11**. If more lava comes out after there is a caldera, it makes a resurgent dome, like with **12** Island in the middle of Crater Lake in Oregon.

If the lava comes out of a long crack in the ground, called a **13**, the lava will flow flat along the ground and form "**14** basalts." If lava comes out under the ocean, it will cool very quickly in the water, forming "**15** basalts."

LESSON 7: MOUNTAINS, HILLS, PLATEAUS, GLACIERS

Antarctica	Fjord	Fold	Glacier
High	Hills	Ice cap	Mountains
Peak	Piedmont	Plateau	Ridge
Valley	Valley	Volcanic	

Big mounds of earth are called **1**. If they are taller than 1000 feet, they are called **2**. Some mountains are formed during **3** eruptions. Others are called "**4** and thrust" mountains because they are formed when plates of the earth's crust run into each other and push up rocks and dirt into mountains. A mountain with a pointy top has a "**5**." A mountain with a line for a top has a "**6**." A low part between two high parts is a "**7**." A flat hill or a mountain is a **8**.

Since mountains are so **9**, they often have snow on them all year long. If it stays there long enough and keep stacking up, the bottom ice turns into solid ice and becomes a **10**. The continent of **11** is also very cold and is covered with a gigantic glacier. A **12** glacier is formed in a valley. A **13** glacier is sliding into a lake or ocean. A **14** glacier spreads out as it comes down the mountain (like an upside-down spoon with the handle on the mountain). An **15** sits on the peak of the mountain (like a hat), covering it all around.

LESSON 8: WATER

Drought	Fresh	Ice
Monsoon	Potable	Salt
Vapor	Water	Water

1 covers about 3/4 of the surface of the earth. Like everything else, water can be in solid (**2**), liquid (**3**), or gas (**4**) state.

People, animals, and plants need water. If there is not enough water somewhere on Earth, that area is having a **5**. Other times, it will rain a lot in a "**6**" season, which can cause floods.

The oceans are full of **7** water, which you cannot drink. Rivers and most lakes have **8** water.

Most fresh water is "**9**", which means you can drink it, but sometimes it isn't because it has mud, bacteria, or chemicals in it.

LESSON 9: OCEANS

Arctic	Atlantic	Caribbean	Coastline
Connected	Currents	Indian	Mediterranean
Moon	Oceans	Pacific	Rivers
Southern	Tide	Waves	

1 cover 70% of the surface of the Earth. The two biggest oceans are the **2** and the **3**. In the north is the **4** Ocean; in the south is the **5** Ocean. The **6** Ocean is east of Africa, near the country of India. The **7** Sea is between Europe and Africa. The **8** Sea is between North and South America. All of the oceans and seas are **9**, including many other smaller seas.

Water moving in the ocean is called "**10**." These are like **11** of water moving through the ocean. The **12** has gravity and pulls things toward it, especially the ocean. When the water is generally high on the beach, it is called high **13**. Ocean water also is moved by the wind, causing **14** in the middle of the ocean. The place where the ocean meets a continent or island is called the **15**.

LESSON 10: SEAS, LAKES, AND COASTLINES

Barrier islands	Bay	Beach ridges	Canada
Island	Isthmus	Lakes	Mountains
Peninsula	Sea arch	Sea cave	Sea cliff
Sea level	Seas	Spits	

1 are salty, just like the ocean. **2** are not connected to the ocean and are usually freshwater. We can measure how tall things are by saying that they are, for example, 500 feet above **3**. A curved coastline which is filled with water and surrounded by land on three sides is a "**4**." A section of land sticking out into the water is a "**5**." A narrow strip of land connecting two bigger pieces, with water on both sides, is an "**6**." A small area of land, surrounded by water, is an "**7**."

A **8** is where the land is high above sea level and drops down straight into the water. A **9** is at the bottom of a sea cliff, and is a space that is hollowed out by the water. A **10** is a hole that goes all the way through a section of rock that sticks out into the ocean. **11** are tiny peninsulas made of sand or gravel that stick out from the beach. **12** are hills of sand that separate the beach from the rest of the continent. **13** are near the edge of a continent and protect the coastline of the continent from big waves.
Lakes can be found anywhere in the world; most of them are in the **14**. The country of **15** has almost half the lakes in the whole world.

LESSON 11: RIVERS

Banks	Dangerous	Downhill	Erosion
Fast	Flowing	Grand Canyon	Headwater
Precipitation	Rapids	Riverbed	Sand bars
Sediment	Waterfall	Whitewater	

The water in rivers comes from a "**1**" where water flows out from below the ground, and from **2** (rain and snow). The water in rivers is always moving, or **3**. The water flows **4** and ends in a lake or ocean. When the water falls off a high area and drops to a lower area, this is called a **5**. The river water flows in the **6**, and is held in by the **7** of the river.

Wind, glaciers, and rivers cause **8**, which means that they break little bits off the rocks and move them to other places. Rivers carry a lot of **9** like sand, mud, and gravel. The rivers also erode their beds, so over time the riverbed becomes much lower than the banks, like in the **10**.

11 water carries the most sediments. When the water slows down or reaches the ocean, the sediments often drop to the bottom, creating **12** and sandy beaches. An area where the water moves very quickly and flows

over rocks is called "**13**." This creates turbulent "**14**" areas. A class 1 river is calm, while a class 6 river has a lot of rapids and is too **15** to use a boat on.

LESSON 13: WIND AND DESERTS

Circles	Deserts	Dust
Equator	Longitudinal	Poles
Rises	Sinks	Switching
Trade	Transverse	Wind

1 is the movement of air. Just like in the ocean, the air near the **2** gets the most heat from the sun, and the air near the North and South **3** stays very cold. Wind is the warm and cold air **4** places.

In addition, warm air **5**, and cold air **6** down toward the ground. There are six wind **7** on the Earth, called the **8** winds.

If the soil does not get enough water, it can get very dry and blow away in **9** storms. Areas which get less than 10 inches of rain in a whole year are called **10**. **11** dunes look like sharp waves in an ocean of sand. **13** dunes are long and straight.

LESSON 12: FLOODS AND GLACIERS

Advances	Dams	Farmers	Flood
Floodplain	Floodways	Gravity	Ice sheets
Ice shelves	Icebergs	Levees	Metamorphic rock
Precipitation	Retreats	Rice	Runoff
Spring	Surges	Trees	

Floods are caused by too much **1**, like rain or snow. When the water flows downhill toward rivers and lakes, this is called **2**. If there is too much water to fit in the riverbed, this causes a **3**.

Areas near a river often have a name like "10-year **4**" or "100-year **4**," which tells how often you should expect that area to flood. Floods are most common in the **5**, when there is water from old precipitation (melting snow and ice) and new precipitation (lots of rain).

6 hold the water in a reservoir, then let the extra water out a little at a time. **7** make the banks of the river higher to try to keep the water in the riverbed. **8** are deep ditches for holding extra water that won't fit in the riv-

erbed. Planting extra **9** near rivers also helps, because the roots hold the soil together and soak up some of the water.

10 like the sediments from floods. Some crops, like **11** and cranberries, grow underwater.

12, which cover Greenland and Antarctica. **13** are edges of glaciers that float on water. **14** are pieces of glaciers the break off and float in the water.

Glaciers are very heavy and the ice at the bottom are pressed and twisted so much that it becomes "hard ice", which is considered a **15**. When a glacier shrinks, it "**16**." When it gets bigger, it "**17**."

Glaciers move downhill with **18**. While they move, they scrape the rock underneath, leaving deep grooves and long smooth spots. A really fast glacier "**19**" ahead at 5 miles per year.

LESSON 14: THUNDERSTORMS, TORNADOES, AND HURRICANES

400	Attracted	Bigger	Clouds
Cyclones	Eye	Faster	Five
Fork	Fulgurites	High	Hotter
Hurricanes	Invisible	Lightning	Low
Negative	Positive	Sheet	Smashed
Thunder	Thunderstorm	Tornado Alley	Tornadoes
Underground	Vacuum	Vapor	Water
Willy-willies			

When it is hot for several days, a lot of water will turn into water **1** and then clump together in the air to form clouds. When a lot of little clouds smash into each other and form big **2**, you could have a **3**! The water molecules get **4** against each other over and over, and this changes them. Some of the molecules get a **5** charge and float to the top of the cloud; others get a **6** charge and sink to the bottom of the cloud. The two parts are **7** to each other, and when they rush back together you see **8**.

If the positive and negative parts of a cloud neutralize each other, you will see **9** lightning inside the cloud. Sometimes the bottom part of the cloud (which is negative) will neutralize with the ground (which is positive) and you will see **10** lightning in the sky between the ground and the cloud. A lightning bolt is **11** than the surface of the Sun! This makes the air next to the lightning bolt heat up and move away very quickly, and you get a loud noise called **12**.

The light from the lightning travels to you **13** than the sound of the thunder, even though they happen at the same time. After you see the lightning flash, count how many seconds it takes before you hear the thunder. For every **14** seconds you count, the lightning is one mile further away. One really cool thing that lightning can make is **15**. When lightning hits sand, it heats up the sand so much that it melts and then hardens again in funny lightning shapes.

16 are also called whirlwinds and twisters. When hot and cold air meet up, they sometimes start flowing around each other in a circle. The air on the edge of the circle is moving really fast and has **17** pressure. The air in the middle is moving slowly and has **18** pressure, so it's constantly getting sucked toward the edges. This creates a **19** that can pull the roof right off a house!

Tornadoes are **20** until they suck up lots of dirt and other things. One area of the United States gets so many tornadoes that it is called **21**. The best place to be during a tornado is **22**. Hurricanes and tornadoes both come down from thunderclouds and both have air that moves in a circle. However, hurricanes are much **23** and are over **24**.

Hurricanes are called **25** in the Indian Ocean, typhoons in the Pacific Ocean, **26** near Australia, and hurricanes in the Atlantic Ocean.

In a hurricane, the calm part is in the "**27**" and the strong winds are on the outside. A hurricane can be up to **28** miles across and last for several days. **29** are the most powerful and dangerous types of storms.

LESSON 15: WEATHER, SEASONS, AND BIOMES

Winter	100	220	30
0			
32	Africa	Antarctica	Away
Biomes	Cirrus	Cloud	Condensation
Cool	Cumulonimbus	Cumulus	Desert
Fall	High	Hurricane	Low
Rain	Rainforest	Spring	Still
Stratus	Summer	Temperate	Temperature
Tundra	Vapor	Warm	Warm
Weather	Wind	Wind chill	

1 is all about the atmosphere, which is all the air around the Earth. **2** can be measured using the Fahrenheit scale or the Celcius scale. In the Fahrenheit scale, water freezes at **3** degrees and boils at **4** degrees. In the Celcius scale, water freezes at **5** degrees and boils at **6** degrees.

7 speed is measured using the Beaufort scale. This ranges from 1 (leaves are **8**) to 12 (**9** strength). Also, when the wind is blowing, it creates a "**10**" factor that can make it seem colder than it really is. If a lot of air is moving to one place, this creates **11** pressure. If the air is mostly moving away from a place, this creates **12** pressure. During low pressure, the air is **13** and make a lot of water evaporate, so it will **14** soon. During high pressure, the air will press together and **15** down.

Mr. Howard came up with the **16** names we use today. **17** clouds are fluffy. **18** clouds are wispy like cotton candy and are made of ice crystals. **19** clouds are flat and cover the sky. **20** clouds are thunderclouds; they start low in the sky but stack up high before a thunderstorm.

Humidity means how much water **21** is in the air. High humidity means a lot of water vapor and happens in **22** places. Low humidity means not much vapor; **23** has very dry air, or low humidity. When there is a lot of water vapor in the air, it clumps back together into liquid water; this is **24**.

When your area is tilted toward the sun, it is **25**; it will be hot and dry. Three months later it will be **26**, and things will be cooling down. Another three months later you will be tilted away from the sun, and it is **27**; it will be cold. Three months after that it will be **28**; things will be warming up and plants will start growing again. When the northern hemisphere is tilted toward the Sun, the southern hemisphere is tilted **29**.

Different areas of each continent are different **30**, meaning they have different types of weather from each other. A **31** gets at least 100 inches of rain each year. The **32** zone has four obvious seasons and gets about 60 inches of rain per year. The grasslands and the taiga both get about **33** inches per year and are good for either farms or forests. A **34** gets less than 10 inches of rain per year, like the Sahara in **35** and the polar ice cap in Antarctica. The **36** also gets less than 10 inches of rain per year, but a few things grow here; it is located all around the north pole, especially in Russia and Canada.

Personal Development 2.01: Overview & Prep Day

Objectives

By the end of this term each student will be able to:

- Describe and demonstrate valuable character traits
- Improve physical fitness from baseline measurements

Description

The activities for Personal Development are all physical education. Choose a few activities to focus on this unit (i.e. running speed, jump rope endurance, consecutive free throws) and collect some baseline measurements on day one. Work on these skills a little each day (just like the MathGame even if it's not a Math day). Collect new measurements at lessons 5 and 10.

Prepping

Choose physical fitness categories

Collect Measurements

Supplies

Varies by activity

On-Line Lessons	
Lesson #	Personal Development
201	**Character**
201.01	Honesty
201.02	Wisdom
201.03	Love
201.04	Joy
201.05	Peace
201.06	Patience
201.07	Goodness
201.08	Kindness
201.09	Gentleness
201.10	Self Control

Bible 2.01: Overview & Prep Day

Objectives

By the end of this term each student will be able to:

- Name the major characters of Genesis, Exodus and Leviticus and explain their importance
- Find each character in the Giant Family tree and explain their relationships
- Be able to describe key Bible events such as creation, the great flood, Passover, the exodus from Egypt, the giving of the Ten Commandments, etc.
- Be able to say all ten memory verses without mistakes

On-Line Lessons	
Lesson #	Bible
201	**Genesis-Leviticus**
201.01	Genesis 1-15
201.02	Genesis 16-26
201.03	Genesis 27-36
201.04	Genesis 37-50
201.05	Exodus 1-10
201.06	Exodus 11-23
201.07	Exodus 24-32
201.08	Exodus 33-40
201.09	Leviticus 1-15
201.10	Leviticus 16-27

Description

This unit covers the first three books of the Bible: Genesis, Exodus and Leviticus. Genesis contains many of the Bible's most famous stories and many key concepts such as original sin, worldwide judgement, and the creation of the twelve tribes of Israel. Exodus describes the formation of the nation of Israel as they left Egypt and received the laws of God from Mt. Sinai through Moses. And Leviticus goes into more detail about the religious activities: creating the tabernacle as a place of worship, the activities and requirements of the priests, and all the various rules and regulations that would set Israel apart.

Prepping

Attach the giant paper or cloth (must be something you can write on) to the wall or roll/fold it and find a good place to store it between classes. We will be making a giant Family Tree from Adam & Eve down through the time of Moses to help keep track of the characters in the Bible, their importance and their relationships.

We'll also be adding locations from these Bible stories to our Giant Atlas. You can use the Middle East map or make a separate section just for the Bible stories since some of the countries no longer exist and it can be a little messy using both ancient and modern names at the same time.

Supplies

Yardstick or meterstick (for drawing straight lines)

Giant paper or cloth for Giant Family Tree project

Bible 2.01: Hands-On Activities

Lesson #					
201	**Topic**	**Activity 1**	**Activity 2**	**Activity 3**	**Activity 4**
201.01	Genesis 1-15	1-2 Creation	4-5,10-11 Family Tree	6-9 Noah	Verse: Genesis 1:1
201.02	Genesis 16-26	12-18 Abraham	16-25 Giant Family Tree	24-27 Isaac	Verse: Genesis 12:2-3
201.03	Genesis 27-36	25-36 Jacob & Esau	26-26 Giant Family Tree	29-30 Leah & Rachel	Verse: Genesis 29:18
201.04	Genesis 37-50	37-41 Joseph	37-50 Giant Family Tree	42-50 Joseph	Verse: Genesis 45:7
201.05	Exodus 1-10	1-6 Moses	6 Giant Family Tree	7-10 The Plagues	Verse: Exodus 4:22-23
201.06	Exodus 11-23	11-12 Passover	13-18 Leaving Egypt	19-23 The Laws	Verse: Exodus 20:2-3
201.07	Exodus 24-32	24-27 Furniture	28-29 Priests	30-31 Rituals	Verse: Exodus 24:7
201.08	Exodus 33-40	32-34 Golden Calf	35-38 Furniture	39-40 Last Details	Verse: Exodus 32:1
201.09	Leviticus 1-15	1-7 Offerings	7-10 Priests	11-15 Uncleanness	Verse: Leviticus 11:45
201.10	Leviticus 16-27	16-22 Punishments	23-25 Holidays	26-27Devotion	Verse: Leviticus 18:24-5

Bible 201 Verses

Genesis 1:1
In the beginning, God created the heavens and the earth.

Genesis 12:2-3
I will make of you a great nation. I will bless you and make your name great. You will be a blessing. I will bless those who bless you, and I will curse him who treats you with contempt. All the families of the earth will be blessed through you.

Genesis 29:18
Jacob loved Rachel. He said, “I will serve you seven years for Rachel, your younger daughter.”

Genesis 45:7
God sent me before you to preserve for you a remnant in the earth, and to save you alive by a great deliverance.

Exodus 4:22-23
You shall tell Pharaoh, ‘Yahweh says, Israel is my son, my firstborn, [2]and I have said to you, “Let my son go, that he may serve me;” and you have refused to let him go. Behold, I will kill your firstborn son.’ ”

Exodus 20:2-3
I am Yahweh your God, who brought you out of the land of Egypt, out of the house of bondage. You shall have no other gods before me.

Exodus 24:7
He took the book of the covenant and read it in the hearing of the people, and they said, “We will do all that Yahweh has said, and be obedient.”

Exodus 32:1
When the people saw that Moses delayed coming down from the mountain, the people gathered themselves together to Aaron, and said to him, “Come, make us gods, which shall go before us; for as for this Moses, the man who brought us up out of the land of Egypt, we don’t know what has become of him.”

Leviticus 11:45
For I am Yahweh who brought you up out of the land of Egypt, to be your God. You shall therefore be holy, for I am holy.

Leviticus 18:24-25

Don’t defile yourselves in any of these things; for in all these the nations which I am casting out before you were defiled. The land was defiled. Therefore I punished its iniquity, and the land vomited out her inhabitants.

Bible 201.01

Activity 1:	**Activity 2:**
Activity 3:	**Activity 4:**

Bible 201.02

Activity 1:	**Activity 2:**
Activity 3:	**Activity 4:**

Bible 201.03

Activity 1:	**Activity 2:**
Activity 3:	**Activity 4:**

Bible 201.04

Activity 1:	**Activity 2:**
Activity 3:	**Activity 4:**

Bible 201.05

Activity 1: Exodus 1-3 Giant Atlas

In your Giant Atlas, add the following locations from Exodus chapters 1 through 3 to the Middle East Map:

Pithom (Egypt)
Rameses (Egypt)
Nile River

Midian
Mt. Horeb

Activity 2: Exodus 6 Giant Family Tree: Add People

Levi
- Gershon
  - Libni
  - Shimei
- Kohath
  - Amram—Jochebed
    - Aaron—Elisheba
      - Nadab
      - Abihu
      - Eleazar
        - Phinehas
      - Ithamar
    - Moses—Zipporah
      - Gershom
  - Izhar
    - Korah
      - Assir
      - Elkanah
      - Abiasaph
    - Nepheg
    - Zicri
  - Hebron
  - Uzziel
- Merari
  - Mahli
  - Mushi

Activity 3: Exodus 7-10 The Plagues

Make a chart with the ten plagues. Draw an illustration to help understand each one:

Blood
Frogs
Gnats
Flies
Livestock
Boils
Hail
Locusts
Darkness
Firstborn

Activity 4: Verse: Exodus 4:22-23

Practice each section of the verse, then say it from the beginning through that section; repeat until you have memorized all the sections to the end.

Then practice all the verses from this unit so far and read ahead the rest of this unit's verses.

You shall tell Pharaoh, 'Yahweh says,
Israel is my son, my firstborn, and I have said to you,
"Let my son go, that he may serve me;"
and you have refused to let him go.
Behold, I will kill your firstborn son.' "

(Exodus 4:22-23)

Bible 201.06

Activity 1:	**Activity 2:**
Activity 3:	**Activity 4:**

Bible 201.07

Activity 1:	**Activity 2:**
Activity 3:	**Activity 4:**

Bible 201.08

Activity 1:	**Activity 2:**
Activity 3:	**Activity 4:**

Bible 201.09

Activity 1:	**Activity 2:**
Activity 3:	**Activity 4:**

Bible 201.10

Activity 1:	**Activity 2:**
Activity 3:	**Activity 4:**

Unit One Study Guide:: Bible

God created everything in six days and rested on the seventh. Adam was the first man; his wife's name was Eve, and she was made from one of his ribs. They lived in the Garden of Eden. Their only rule was to not eat from the tree in the center of the garden. The serpent tempted Eve, saying that if she ate she would be wise like God. She ate, and so did Adam.

Everyone had consequences. Adam and Eve were kicked out of the garden. Adam had to work the land—and it wouldn't be easy anymore. Eve would have pain in childbirth and couldn't rule over her husband. The serpent had to crawl on its belly and eat dust, and would be enemies with people.

Adam and Eve had two sons, Cain and Abel. When they took offerings to God, Abel's offering was liked better. Cain got mad and killed Abel; God sent him far away from his family.

After there were many people on the earth, they started to do evil. Only Noah was found to be righteous, so God told him to build an ark. Noah took his wife, his three sons, and his sons' wives in the ark, plus two of every animal to save (plus some extra ones). It rained for 40 days and 40 nights, and the water covered the tops of the mountains; everyone outside the ark died.

After it stopped raining, it took a long time for the water to go down; Noah sent out birds to see when the ground would be dry. When a dove came back with an olive leaf, he knew it was dry. God let them come out of the ark, and Noah made a sacrifice. God told them that the rainbow meant that he would never destroy the whole earth with a flood again. He also said that people could now eat meat.

Noah's three sons were named Shem, Ham, and Japheth. Almost everyone else in the Bible is a descendant of Shem. Hams' son was named Canaan. Noah's sons' families repopulated the earth. Some began to build a city with a tower to the heavens; God confused their language, so that place is called Babel.

God called Abram (who's wife was Sarai) to leave his family and go to Canaan's land. His nephew Lot went too. Abram and Lot grew rich and had huge crops, so they had to split up to avoid crowding. Lot moved toward Sodom, while Abram was given the rest of the land by God. Abram rescued Lot when he was taken prisoner by some kings who conquered the area he lived in.

Abram and Sarai had no children, but God promised them a son. Since they were getting old and Sarai didn't think she could have kids anymore, she told Abram to marry her servant, Hagar. Abram had a son with her and named him Ishmael. But Sarai did get pregnant later, and had Isaac. She sent Hagar and Ishmael away.

God decided to destroy Sodom because the people there were evil; Abram asked him to spare the city if only ten righteous men could be found there, and God agreed. But there were not even ten righteous; angels went to rescue Lot and his family. Lot's wife looked back and turned into a pillar of salt. Lot and his two daughters moved to the mountains, and his daughters got him drunk and had children by him. Their descendants became the Moabites and the Ammonites, who were later enemies of the Israelites.

God promised Abram that he would have the land of Canaan, and that his descendants would fill it. He also changed their names to Abraham and Sarah. All of Abraham's male descendants had to be circumcised forever after.

Later, God told Abraham to take his son Isaac and sacrifice him on Mt. Moriah. At the last second, God told him to stop, that now he knew that Abraham loved God more than even his only son. He gave him a ram to sacrifice instead.

Later, Sarai grew old and died; Abraham bought land to bury her. He also sent his servant back to his relatives to get a wife for Isaac. The servant's prayer to find the right woman was answered when Rebekah offered to get water for him and his camels.

Isacca and Rebekah had twin sons, Esau and Jacob. Esau was really born first, but he sold his birthright to Jacob for a bowl of lentils. Later, Jacob stole his blessing too, by pretended to be Esau. Esau wanted to kill Jacob, so Jacob ran away to his uncle Laban's house (his mother's brother). On the way, Jacob saw a ladder to heaven with angels going up and down.

Jacob fell in love with his cousin Rachel, and agreed to work for Laban for seven years to marry her. On the wedding night, Laban tricked Jacob and gave him the older sister Leah instead. Jacob agreed to work another seven years to marry Rachel too. Since Leah was not loved, God gave her four sons. Rachel was jealous, and gave Jacob her servant for another wife. Later Leah did the same, and in the end Rachel had kids too. In the end, Jacob had 12 sons and one daughter.

God blessed Jacob and he became rich even though Laban kept trying to change his wages. So Jacob ran away with all his wives and children. Laban chased them, but God told him not to say anything to Jacob. So they made an agreement not to fight. Jacob was still scared of his brother Esau, and split up his family into two camps the night before they met.

That same night, a man wrestled with Jacob all night and wrenched Jacob's hip socket. He blessed Jacob and gave him a new name: Israel. The next day, Jacob sent lots and lots of gifts to his brother Esau, and they made peace.

Rachel died after giving birth to the last son, Benjamin. Her other son, Joseph, was hated by all his brothers because their fathers loved him the most. They tricked their dad into thinking he was dead when they really sold him to some Ishmaelites.

Joseph was taken to Egypt and worked for Potiphar. God blessed everything he did, and Potiphar put him in charge of everything he owned. But Potiphar's wife kept trying to get Joseph to sleep with her, and when he refused she accused him of doing wrong anyway. Joseph was sent to prison even though he had done nothing wrong. While there, he told the meanings of the dreams of two of Pharaoh's servants.

Later, Pharaoh (which means "king" in Egypt) had two dreams and nobody could say what they meant. His servant remembered Joseph, who said that God would tell him the meaning of the dreams. Pharaoh was so impressed that he put Joseph in charge of all of Egypt. This was good timing, because the dreams with the wheat and the cows meant that there would be seven good years and seven bad years coming.

Joseph saved up extra food for seven years so the people could use it during the next seven years. The people of Egypt were starving, and sold him everything, even their land, so they could buy food and eat. Joseph's brothers also came to Egypt to buy food, but they didn't recognize Joseph.

Joseph acted very tricky to get them to bring his brother Benjamin down to, and finally told them who he was. He told them that God had sent him ahead of them into Egypt to save all their lives. His father Jacob (also called Israel) and all the Israelites moved to Egypt, to the land of Goshen.

Later, other Pharaohs who did not remember Joseph decided to make the Israelites slaves. They worked very hard building cities for the Egyptians. But the Egyptians didn't like it that there were so many Israelites, so they tried to get the midwives to kill all the baby boys. One woman had a baby boy and named him Moses; she hid him in the Nile River in a basket. Moses was found by one of the princesses and she adopted him, so Moses was raised in the palace like the sons of Pharaoh.

Later, Pharaoh saw an Egyptian beating an Israelite; he killed the Egyptian and buried him in the sand. When he realized that other people had seen him, he ran away and hid in another country. After he had been there for a while, God appeared to him in a bush that burned but did not burn up. God told him to go back and tell Pharaoh to let the Israelites go, but Moses did not want to and made lots of excuses. God sent his brother Aaron to help him out.

Pharaoh did not want to let the Israelites go, so God sent ten plagues to change his mind. In the last plague, the firstborn sons of all the Egyptians died. The Israelites were saved from this plague by putting lamb's blood on the vertical and horizontal parts of their doorframes. This event is still celebrated today on Passover, for when the angel of death passed over their homes.

After this Pharaoh sent the Israelites out, but later changed his mind and chased them with the army. The Israelites seemed to be trapped at the Red Sea, but God sent a powerful wind all night to push the waters back; over a million Israelites passed over on dry land to the Sinai Peninsula. The Egyptian army drowned when they tried to follow and God let the water rush back.

Once out of Egypt, the Israelites could not stop complaining. Nevertheless, God provided food and water for them. He called Moses up to Mount Sinai to receive the Ten Commandments and instructions for building the tabernacle. Though the people had agreed to follow God, after a while they decided that maybe Moses had died up there because he was taking so long. They asked Moses' brother Aaron to make them a new "god," and he made a golden calf out of their gold jewelry.

This made God so mad that he didn't want to travel any further with the Israelites. Moses smashed the stone tablets of the Ten Commandments and made the people drink the dust. He begged God to give the people yet another chance. The people built the tabernacle and traveled slowly through the desert.

The tabernacle was a special place to offer sacrifices and worship God. It had walls all around, an altar for sacrifices, a basin for holding water, special tools for cleaning out ashes, and a lampstand. A curtain inside separated a most holy section from everything else, and the ark of the covenant stayed here. Two golden angels covered the lid of the ark, and the stone tablets of the Ten Commandments were inside, along with some manna so the people would remember how God fed them in the desert.

When they reached the edge of the Promised Land (remember, Canaan's land that God had promised to Abraham), Moses sent in 12 spies. Ten came back with a bad report, saying that the people were giants and the walls around the cities were too thick. Only Joshua and Caleb were excited about the Promised Land. When the people started grumbling AGAIN and talked about going back to Egypt, God decided that none of them (except Joshua and Caleb) would get to see the Promised Land. They wandered around in the desert for another 40 years.

This gave them plenty of time to study all the laws and rules that God had given them on Mt. Sinai. The most important of these was to love God with all your heart, your soul, your strength, and your mind. The Ten Commandments also instructed people to rest on the Sabbath day, honor their father and mother, and not lie, steal, or murder, amongst other things.

There were lots of rules for the priests. They had to wash before doing anything holy and wear special clothes. The high priest got a special breastplate with 12 stones on it, one for each of the tribes of Israel (remember the 12 brothers). The priests were in charge of making the sacrifices of the animals and cleaning up afterward. They also did special ceremonies; for example, every year they had to put the sins of the Israelites onto one goat, and send the scapegoat out into the desert.

Genesis (which means creation) covers the stories from Adam to Joseph. Exodus is about the people leaving (exiting) Egypt. Leviticus gives the rules for the Levites (the tribe that was in charge of doing holy work).

Unit One Bible Test

Write the number next to the word which belongs in that space.

Abel	Adam	Ate	Cain
Consequences	Crawl	Dust	Eden
Enemies	Eve	Family	Garden
Offerings	Pain	Rested	Ribs
Rule	Serpent	Six	Sons
Tree	Wise	Work	

God created everything in **1** days and **2** on the seventh. **3** was the first man; his wife's name was **4**, and she was made from one of his **5**. They lived in the Garden of **6**. Their only rule was to not eat from the **7** in the center of the garden. The **8** tempted Eve, saying that if she ate she would be **9** like God. She **10**, and so did Adam.

Everyone had **11**. Adam and Eve were kicked out of the **12**. Adam had to **13** the land—and it wouldn't be easy anymore. Eve would have **14** in childbirth and couldn't **15** over her husband. The serpent had to **16** on its belly and eat **17**, and would be **18** with people.

Adam and Eve had two **19**. When they took **20** to God, he liked Abel's better. **21** got mad and killed **22**; God sent him far away from his **23**.

Animal	Ark	Babel	Birds
Canaan	Died	Evil	Meat
Mountains	Noah	Olive	Rainbow
Rained	Sacrifice	Shem	Sons
Tower	Water		

After there were many people on the earth, they started to do **1**. Only **2** was found to be righteous, so God told him to build an **3**. Noah took his wife, his three **4**, and his sons' wives in the ark, plus two of every **5** to save (plus some extra ones). It **6** for 40 days and 40 nights, and the water covered the tops of the **7**; everyone outside the ark **8**.

After it stopped raining, it took a long time for the **9** to go down; Noah sent out **10** to see when the ground would be dry. When a dove came back with an **11** leaf, he knew it was dry. God let them come out of the ark, and Noah made a **12**. God told them that the **13** meant that he would never destroy the whole earth with a flood again. He also said that people could now eat **14**.

Noah's three sons were named Shem, Ham, and Japheth. Almost everyone else in the Bible is a descendant of **15**. Ham's son was named **16**. Noah's sons' families repopulated the earth. Some began to build a city with a **17** to the heavens; God confused their language, so that place is called **18**.

Abram	Angels	Away	Canaan's
Children	Circumcised	Destroy	Enemies
God	Hagar	Isaac	Ishmael
Kings	Lot	Loved	Mountains
Promised	Ram	Rescued	Rich
Sacrifice	Salt	Sarah	Sarai
Sodom	Son	Ten	

God called **1** (who's wife was Sarai) to leave his family and go to **2** land. His nephew **3** went too. Abram and Lot grew **4** and had huge herds, so they had to split up to avoid crowding. Lot moved toward **5**, while Abram was given the rest of the land by **6**. Abram **7** Lot when he was taken prisoner by some **8** who conquered the area he lived in.

Abram and Sarai had no children, but God promised them a **9**. Since they were getting old and **10** didn't think she could have kids anymore, she told Abram to marry her servant, **11**. Abram had a son with her and named him **12**. But Sarai did get pregnant later, and had **13**. She sent Hagar and Ishmael **14**.

God decided to **15** Sodom because the people there were evil; Abram asked him to spare the city if only **16** righteous men could be found there, and God agreed. But there were not even ten righteous; **17** went to rescue Lot and his family. Lot's wife looked back and turned into a pillar of **18**. Lot and his two daughters moved to the **19**, and his daughters got him drunk and had **20** by him. Their descendants became the Moabites and the Ammonites, who were later **21** of the Israelites.

God **22** Abram that he would have the land of Canaan, and that his descendants would fill it. He also changed their names to Abraham and **23**. All of Abraham's male descendants had to be **24** forever after.

Later, God told Abraham to take his son Isaac and **25** him on Mt. Moriah. At the last second, God told him to stop, that now he knew that Abraham **26** God more than even his only son. He gave him a **27** to sacrifice instead.

Agreement	Angels	Birthright	Blessed
Camels	Camps	Chased	Gifts
Hip	Israel	Kill	Laban's
Land	Prayer	Pretending	Rachel
Scared	Servant	Seven	Sons
Tricked	Twelve	Twin	Wife
Wrestled	Years		

Later, Sarai grew old and died; Abraham bought **1** to bury her. He also sent his **2** back to his relatives to get a wife for Isaac. The servant's **3** to find the right woman was answered when Rebekah offered to get water for him and his **4**.

Isacca and Rebekah had **5** sons, Esau and Jacob. Esau was really born first, but he sold his **6** to Jacob for a bowl of lentils. Later, Jacob stole his blessing too, by **7** to be Esau. Esau wanted to **8** Jacob, so Jacob ran away to his uncle **9** house (his mother's brother). On the way, Jacob saw a ladder to heaven with **10** going up and down.

Jacob fell in love with his cousin **11**, and agreed to work for Laban for **12** years to marry her. On the wedding night, Laban **13** Jacob and gave him the older sister Leah instead. Jacob agreed to work another seven **14** to marry Rachel too. Since Leah was not loved, God gave her four **15**. Rachel was jealous, and gave Jacob her servant for another **16**. In the end, Jacob had **17** sons and one daughter.

God **18** Jacob and he became rich even though Laban kept trying to change his wages. So Jacob ran away with all his wives and children. Laban **19** them, but God told him not to say anything to Jacob. So they made an **20** not to fight. Jacob was still **21** of his brother Esau, and split up his family into two **22** the night before they met.

That same night, a man **23** with Jacob all night and wrenched Jacob's **24** socket. He blessed Jacob and gave him a new name: **25**. The next day, Jacob sent lots and lots of **26** to his brother Esau, and they made peace.

Benjamin	Brothers	Cows	Dead
Died	Dreams	Egypt	Food
God	Israelites	Joseph	Loved
Owned	Pharaoh	Prison	Save
Starving	Wife		

Rachel **1** after giving birth to the last son, Benjamin. Her other son, Joseph, was hated by all his brothers because their fathers **2** him the most. They tricked their dad into thinking he was **3** when they really sold him to some Ishmaelites.

Joseph was taken to **4** and worked for Potiphar. God blessed everything he did, and Potiphar put him in charge of everything he **5**. But Potiphar's **6** kept trying to get Joseph to sleep with her, and when he refused she accused him of doing wrong anyway. Joseph was sent to **7** even though he had done nothing wrong. While there, he told the meanings of the **8** of two of Pharaoh's servants.

Later, **9** (which means "king" in Egypt) had two dreams and nobody could say what they meant. His servant remembered Joseph, who said that **10** would tell him the meaning of the dreams. Pharaoh was so impressed that he put **11** in charge of all of Egypt. This was good timing, because the dreams with the wheat and the **12** meant that there would be seven good years and seven bad years coming.

Joseph saved up extra **13** for seven years so the people could use it during the next seven years. The people of Egypt were **14**, and sold him everything, even their land, so they could buy food and eat. Joseph's **15** also came to Egypt to buy food, but they didn't recognize Joseph.

Joseph acted very tricky to get them to bring his brother **16** down too, and finally told them who he was. He told them that God had sent him ahead of them into Egypt to **17** all their lives. His father Jacob (also called Israel) and all the **18** moved to Egypt, to the land of Goshen.

Army	Basket	Blood	Boys
Brother	Building	Bush	Country
Drowned	Excuses	Firstborn	Go
Killed	Million	Passover	Plagues
Princesses	Red	Slaves	Wind

Later, other Pharaohs who did not remember Joseph decided to make the Israelites **1**. They worked very hard **2** cities for the Egyptians. But the Egyptians didn't like it that there were so many Israelites, so they tried to get the midwives to kill all the baby **3**. One woman had a baby boy and named him Moses; she hid him in the Nile River in a **4**. Moses was found by one of the **5** and she adopted him, so Moses was raised in the palace like the sons of Pharaoh.

Later, Moses saw an Egyptian beating an Israelite; he **6** the Egyptian and buried him in the sand. When he realized that other people had seen him, he ran away and hid in another **7**. After he had been there for a while, God appeared to him in a **8** that burned but did not burn up. God told him to go back and tell Pharaoh to let the Israelites **9**, but Moses did not want to and made lots of **10**. God sent his **11** Aaron to help him out.

Pharaoh did not want to let the Israelites go, so God sent ten **12** to change his mind. In the last plague, the **13** sons of all the Egyptians died. The Israelites were saved from this plague by putting lamb's **14** on the vertical and horizontal parts of their doorframes. This event is still celebrated today on **15**, for when the angel of death passed over their homes.

After this Pharaoh sent the Israelites out, but later changed his mind and chased them with the **16**. The Israelites seemed to be trapped at the **17** Sea, but God sent a powerful **18** all night to push the waters back; over a **19** Israelites passed over on dry land to the Sinai Peninsula. The Egyptian army **20** when they tried to follow and God let the water rush back.

Altar	Angels	Calf	Chance
Commandments	Complaining	Curtain	Died
Drink	Mad	Manna	Sinai
Smashed	Tabernacle	Water	

Once out of Egypt, the Israelites could not stop **1**. Nevertheless, God provided food and **2** for them. He called Moses up to Mount **3** to receive the Ten **4** and instructions for building the tabernacle. Though the people had agreed to follow God, after a while they decided that maybe Moses had **5** up there because he was taking so long. They asked Moses' brother Aaron to make them a new "god," and he made a golden **6** out of their gold jewelry.

This made God so **7** that he didn't want to travel any further with the Israelites. Moses **8** the stone tablets of the Ten Commandments and made the people **9** the dust. He begged God to give the people yet another **10**. The people built the tabernacle and traveled slowly through the desert.

The **11** was a special place to offer sacrifices and worship God. It had walls all around, an **12** for sacrifices, a basin for holding water, special tools for cleaning out ashes, and a lampstand. A **13** inside separated a most holy section from everything else, and the ark of the covenant stayed here. Two golden **14** covered the lid of the ark, and the stone tablets of the Ten Commandments were inside, along with some **15** so the people would remember how God fed them in the desert.

Bad	Clothes	Egypt	Exodus
Forty	Genesis	Giants	Joshua
Laws	Leviticus	Love	Priests
Promised	Sabbath	Sacrifices	Scapegoat
Stones			

When they reached the edge of the **1** Land (remember, Canaan's land that God had promised to Abraham), Moses sent in 12 spies. Ten came back with a **2** report, saying that the people were **3** and the walls around the cities were too thick. Only **4** and Caleb were excited about the Promised Land. When the people started grumbling AGAIN and talked about going back to **5**, God decided that none of them (except Joshua and Caleb) would get to see the Promised Land. They wandered around in the desert for another **6** years.

This gave them plenty of time to study all the **7** and rules that God had given them on Mt. Sinai. The most important of these was to **8** God with all your heart, your soul, your strength, and your mind. The Ten Commandments also instructed people to rest on the **9** day, honor their father and mother, and not lie, steal, or murder, amongst other things.

There were lots of rules for the **10**. They had to wash before doing anything holy and wear special **11**. The high priest got a special breastplate with twelve **12** on it, one for each of the tribes of Israel (remember the 12 brothers). The priests were in charge of making the **13** of the animals and cleaning up afterward. They also did special ceremonies; for example, every year they had to put the sins of the Israelites onto one goat, and send the **14** out into the desert.

The book of **15** (which means creation) covers the stories from Adam to Joseph. **16** is about the people leaving (exiting) Egypt. **17** gives the rules for the Levites (the tribe that was in charge of doing holy work).