Course Title/ Course #: Math Grade 6

Unit Title/ Marking Period # (MP): 2

Start day:

Meetings (Length of Unit): 6 days

Desired Results ~ What will students be learning?

Standards of Learning/ Standards

6.2 The student will

a) investigate and describe fractions, decimals and percents as ratios;
b) identify a given fraction, decimal or percent from a representation;
c) demonstrate equivalent relationships among fractions, decimals, and percents; and
d) compare and order fractions, decimals, and percents.

Essential Understandings/ Big Ideas

- What is the relationship among fractions, decimals and percents?

Fractions, decimals, and percents are three different ways to express the same number. A ratio can be written using fraction form ($\frac{2}{3}$), a colon (2:3), or the word *to* (2 to 3). Any number that can be written as a fraction can be expressed as a terminating or repeating decimal or a percent.

- *Percent* means "per 100" or how many "out of 100 or the whole"; *percent* is another name for *hundredths*.
- A number followed by a percent symbol (%) is equivalent to that number with a denominator of 100 (e.g., 30% = $\frac{30}{100}$ = $\frac{3}{10}$ = 0.3).
- Percents can be expressed as fractions with a denominator of 100 (e.g., 75% = $\frac{75}{100}$ = $\frac{3}{4}$).
- Percents can be expressed as decimal (e.g., 38% = $\frac{38}{100}$ = 0.38).

- Some fractions can be rewritten as equivalent fractions with denominators of powers of 10, and can be represented as decimals or percents (e.g., $\frac{3}{5} = \frac{6}{10} = \frac{60}{100} = 0.60 = 60\%$).
- Decimals, fractions, and percents can be represented using concrete materials (e.g., Base-10 blocks, number lines, decimal squares, or grid paper).
- Percents can be represented by drawing shaded regions on grids or by finding a location on number lines.
- Percents are used in real life for taxes, sales, data description, and data comparison.
- Fractions, decimals and percents are equivalent forms representing a given number.
- The decimal point is a symbol that separates the whole number part from the fractional part of a number.
- The decimal point separates the whole number amount from the part of a number that is less than one.
- The symbol • can be used in Grade 6 in place of "x" to indicate multiplication.
- Strategies using 0, $\frac{1}{2}$ and 1 as benchmarks can be used to compare fractions.
- When comparing two fractions, use $\frac{1}{2}$ as a benchmark. Example: Which is greater, $\frac{4}{7}$ or $\frac{3}{9}$?

$\frac{4}{7}$ is greater than $\frac{1}{2}$ because 4, the numerator, represents more than half of 7, the denominator. The denominator tells the number of parts that make the whole. $\frac{3}{9}$ is less than $\frac{1}{2}$ because 3, the numerator, is less than half of 9, the denominator, which tells the number of parts that make the whole. Therefore, $\frac{4}{7} > \frac{3}{9}$.

- When comparing two fractions close to 1, use distance from 1 as your benchmark. Example: Which is greater, $\frac{6}{7} or \frac{8}{9}$? $\frac{6}{7}$ is $\frac{1}{7}$ away from 1 whole. $\frac{8}{9} is \frac{1}{9}$ away from 1 whole. Since $\frac{1}{7} > \frac{1}{9}$, then $\frac{6}{7}$ is a greater distance away from 1 whole than $\frac{8}{9}$ so $\frac{8}{9} > \frac{6}{7}$.

- Students should have experience with fractions such as $\frac{1}{8}$, whose decimal representation is a terminating decimal (e. g., $\frac{1}{8}$ = 0.125) and with fractions such as $\frac{2}{9}$, whose decimal representation does not end but continues to repeat (e. g., $\frac{2}{9} = 0.222\ldots$). The repeating decimal can be written with ellipses (three dots) as in $0.222\ldots$ or denoted with a bar above the digits that repeat as in $0.\overline{2}$

Key Essential Skills and Knowledge

- Identify the decimal and percent equivalents for numbers written in fraction form including repeating decimals.
- Represent fractions, decimals, and percents on a number line.
- Describe orally and in writing the equivalent relationships among decimals, percents, and fractions that have denominators that are factors of 100.
- Represent, by shading a grid, a fraction, decimal, and percent.
- Represent in fraction, decimal, and percent form a given shaded region of a grid.
- Compare two decimals through thousandths using manipulatives, pictorial representations, number lines, and symbols ($<, \leq, \geq, >, =$).
- Compare two fractions with denominators of 12 or less using manipulatives, pictorial representations, number lines, and symbols ($<, \leq, \geq, >, =$).
- Compare two percents using pictorial representations and symbols ($<, \leq, \geq, >, =$).
- Order no more than 3 fractions, decimals, and percents (decimals through thousandths, fractions with denominators of 12 or less), in ascending or descending order.

Vocabulary

Academic Vocabulary	**Content Vocabulary**

Percent Fraction Decimal Repeating Decimal	Terminating Decimal Denominator Numerator	Convert Simplify

Assessment Evidence ~ What is evidence of mastery? What did the students master & what are they missing?

Assessment/ Evidence

Interactive Achievement
Formative Assessment - Graphic Organizer

Learning Plan ~ What are the strategies and activities you plan to use?

Learning Experiences/ Best Practice

Make a memory match game using index cards showing a variety of decimals, fractions, and percents.

Basketball Toss Game – Students are divided into teams and given a container and a ball (can also use a paper ball). They will each shoot 5 times. The group will take their shoots hit and missed and turn it into a fraction. They will then convert the fraction to a decimal and a percent. The next round each person shoots 10 times and finds the decimal, fraction, and percent. The person with the highest percentage made in each group can have a "playoff" round.

Picture Perfect
Use three different colored pencils to create a design on grid paper, coloring individual blocks one of the three different colors. You must color at least 75% of your square. Once your design is finished, complete the information below.
Color 1: _____ Percent: _____ Fraction: _____ Decimal: _____
Color 2: _____ Percent: _____ Fraction: _____ Decimal: _____
Color 3: _____ Percent: _____ Fraction: _____ Decimal: _____
Total Colored: Percent: _____ Fraction: _____ Decimal: _____

Tagging Along – Placing Fractions, Percents, and Decimal cards on a string number line to show order.

Text

Virginia Math Connects, Course 1, ©2012, Glencoe/McGraw-Hill
page(s) 210 -213 (Percents as Fractions)
214 – 217 (Fractions as Percents)
218 – 221 (Percents and Decimals)
227 – 241 (Compare and Order Fractions, Decimals, and Percents)
Extra Practice page –EP 9 – 11 Lessons 4-1, 4-2, and 4-3
Coach book, 6th Grade Virginia Gold Edition
6.2a – page(s) 20 – 25 (also includes ratios)
6.2b and 6.2c 12 - 19
6.2d - page(s) 26 – 32

Technology Integrations

Resources

Smart Exchange - interactive skill practice
Fractions, Decimals, and Percents [SMART Notebook lesson]
Percent Jeopardy Game [SMART Notebook lesson]
Gizmo – Part, Part, Whole - interactive instructional resource
Gizmo – Fraction, Decimal, Percent - interactive instructional resource
Brain Pop – Converting fractions and decimals - interactive skill practice

Virginia Department of Education
Rational Speed Matching – lesson plan
SOL 6.2 a –c – lesson plan
SOL 6.2a, 7.4 - lesson plan
SOL 5.2b, 6.2d, 7.1c, 8.1b - lesson plan

Other Sites
http://studyjams.scholastic.com/studyjams/jams/math/decimals-percents/decimal-fraction-percent-equivs.htm
Interactivesites weebly - Fractions
https://jeopardylabs.com/play/decimals-fractions-percents7
https://jeopardylabs.com/play/enter-title117005

Cross Curricular Connection

Reading – *Twizzlers Percentages book* by Jerry Pallotta

Piece=Part=Portion by Scott Gifford
Fractions,Decimals,and Percents by David Adler
Science and Language Arts - Games, Games, Games

Materials

Manipulatives	**Technology Resources**	**Student Supplies**
Color tiles, Cubes, Decimal squares Geoboards Fraction models Containers Balls Index cards String Clothespins or paperclips	LCD Projector Speakers Computer w/Internet Connection	Interactive Notebooks Copy paper Color pencils or crayons

Course Title/ Course #: Math Grade 6

Unit Title/ Marking Period # (MP): 2

Start day:

Meetings (Length of Unit): 5 days

Desired Results ~ What will students be learning?
Standards of Learning/ Standards
6.4 The student will demonstrate multiple representations of multiplication and division of fractions.
Essential Understandings/ Big Ideas
• When multiplying fractions, what is the meaning of the operation? When multiplying a whole by a fraction such as 3 x $\frac{1}{2}$, the meaning is the same as with multiplication of whole numbers: 3 groups the size of $\frac{1}{2}$ of the whole. When multiplying a fraction by a fraction such as $\frac{2}{3}\cdot\frac{3}{4}$, we are asking for part of a part. When multiplying a fraction by a whole number such as $\frac{1}{2}$ x 6, we are trying to find a part of the whole. • What does it mean to divide with fractions? For measurement division, the divisor is the number of groups and the quotient will be the number of groups in the dividend. Division of fractions can be explained as how many of a given divisor are needed to equal the given dividend. In other words, for $\frac{1}{4}\div\frac{2}{3}$ the question is, "How many $\frac{2}{3}$ make $\frac{1}{4}$?" For partition division the divisor is the size of the group, so the quotient answers the question, "How much is the whole?" or "How much for one?" • Using manipulatives to build conceptual understanding and using pictures and sketches to link concrete examples to the symbolic enhance students' understanding of operations with fractions and help students connect the meaning of whole number computation to fraction computation. • Multiplication and division of fractions can be represented with arrays, paper folding, repeated addition, repeated subtraction, fraction strips, pattern blocks and area models.

- When multiplying a whole by a fraction such as $3 \times \frac{1}{2}$, the meaning is the same as with multiplication of whole numbers: 3 groups the size of $\frac{1}{2}$ of the whole.
- When multiplying a fraction by a fraction such as $\frac{2}{3} \cdot \frac{3}{4}$, we are asking for part of a part.
- When multiplying a fraction by a whole number such as $\frac{1}{2} \times 6$, we are trying to find a part of the whole.
- For measurement division, the divisor is the number of groups. You want to know how many are in each of those groups. Division of fractions can be explained as how many of a given divisor are needed to equal the given dividend. In other words, for $\frac{1}{4} \div \frac{2}{3}$, the question is, "How many $\frac{2}{3}$ make $\frac{1}{4}$?"
- For partition division the divisor is the size of the group, so the quotient answers the question, "How much is the whole?" or "How much for one?"

Key Essential Skills and Knowledge

- Demonstrate multiplication and division of fractions using multiple representations.
- Model algorithms for multiplying and dividing with fractions using appropriate representations.

Vocabulary

Academic Vocabulary		Content Vocabulary
Division	Dividend	Strategy
Numerator	Fraction	Simplify
Fractional Part	Quotient	Estimation
Mixed Number	Product	Mixed Number
Divisor	Denominator	Problem Solving

Assessment Evidence ~ What is evidence of mastery? What did the students master & what are they missing?

Assessment/ Evidence

Interactive Achievement
Formative Assessment - Modeling

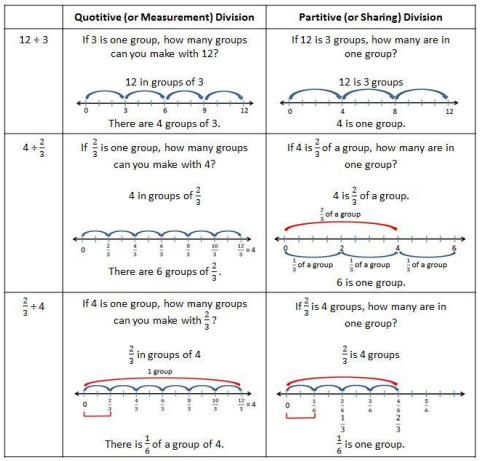
Learning Plan ~ What are the strategies and activities you plan to use?

Learning Experiences/ Best Practice

Action with Fraction Models

Model how to draw models of the fractions and how to determine the answers to the problems.

Use number lines to divide fractions.



Text

Virginia Math Connects, Course 1, ©2012, Glencoe/McGraw-Hill

page(s) 96 -101 and 104 - 115 -Multiplication

page(s) 117 – 133– Division

Extra Practice page –EP5 - 7 Lessons 2-1, 2-2, and 2-3

Coach book, 6th Grade Virginia Gold Edition

6.4 and 6.6a – page(s) 69 – 75 (multiplication) 76 – 82 (division)

Technology Integrations

Smart Exchange - interactive skill practice

Introduction to Multiplying Mixed Numbers [SMART Notebook lesson]

Multiplication of Fractions [SMART Notebook lesson]

Dividing fractions [SMART Notebook lesson]

Gizmos – Dividing Fractions - interactive instructional resource

Gizmos –Multiplying Fractions - interactive instructional resource

Gizmos – Dividing Mixed Numbers - interactive instructional resource
Gizmos – Multiplying Mixed Numbers - interactive instructional resource
Brain Pop – Multiplying and Dividing Fractions - interactive skill practice

Resources

Virginia Department of Education
Modeling Multiplication of Fractions - lesson plan
Modeling Division of Fractions – lesson plan

Cross Curricular Connection

None

Materials

Manipulatives	**Technology Resources**	**Student Supplies**
Pattern Blocks Fraction Models Color Tiles Grid Paper Color Pencils or Crayons Number lines	LCD Projector Speakers Computer w/Internet Connection	Interactive Notebooks

Course Title/ Course #: Math Grade 6

Unit Title/ Marking Period # (MP): 2

Start day:

Meetings (Length of Unit): 5 days

Desired Results ~ What will students be learning?

Standards of Learning/ Standards

6.6 The student will

a) multiply and divide fractions and mixed numbers; and

b) estimate solutions and then solve single-step and multistep practical problems involving addition, subtraction, multiplication, and division of fractions.

Essential Understandings/ Big Ideas

- How are multiplication and division of fractions and multiplication and division of whole numbers alike? Fraction computation can be approached in the same way as whole number computation, applying those concepts to fractional parts.
- What is the role of estimation in solving problems? -Estimation helps determine the reasonableness of answers.
- Simplifying fractions to simplest form assists with uniformity of answers.
- Addition and subtraction are inverse operations as are multiplication and division.
- It is helpful to use estimation to develop computational strategies. For example,
- $2\frac{7}{8}\cdot\frac{3}{4}$ is about $\frac{3}{4}$ of 3, so the answer is between 2 and 3.
- When multiplying a whole by a fraction such as $3\cdot\frac{1}{2}$, the meaning is the same as with multiplication of whole numbers: 3 groups the size of $\frac{1}{2}$ of the whole.
- When multiplying a fraction by a fraction such as $\frac{2}{3}\cdot\frac{3}{4}$, we are asking for part of a part.
- When multiplying a fraction by a whole number such as $\frac{1}{2}\cdot 6$, we are trying to find a part of the whole.

Key Essential Skills and Knowledge

- Multiply and divide with fractions and mixed numbers. Answers are expressed in simplest form.
- Solve single-step and multistep practical problems that involve addition and subtraction with fractions and mixed numbers, with and without regrouping, that include like and unlike denominators of 12 or less. Answers are expressed in simplest form.
- Solve single-step and multistep practical problems that involve multiplication and division with fractions and mixed numbers that include denominators of 12 or less. Answers are expressed in simplest form.

Vocabulary

Academic Vocabulary		Content Vocabulary
Division	Dividend	Strategy
Numerator	Estimation	Problem Solving
Fraction	Divisor	Simplest Form
Denominator	Quotient	Simplify
Fractional Part	Product	
Mixed Number		

Assessment Evidence ~ What is evidence of mastery? What did the students master & what are they missing?

Assessment/ Evidence

Interactive Achievement
Formative Assessment - Modeling

Learning Plan ~ What are the strategies and activities you plan to use?

Learning Experiences/ Best Practice

Number line – estimation and division
Recipes – Ask students to bring in their favorite recipe. They can then divide the measurements to make the servings less or multiply them to increase the amount of servings.
Models – Students draw and explain multiplication and division of fractions and mixed number models.
Foldable – Steps for adding, subtraction, multiplying, and dividing.
Fraction strips to add and subtract fractions.

Text

Virginia Math Connects, Course 1, ©2012, Glencoe/McGraw-Hill
page(s) 96 -101 and 104 - 115 -Multiplication
page(s) 117 – 133– Division

Extra Practice page –EP5 - 7 Lessons 2-1, 2-2, and 2-3
Coach book, 6th Grade Virginia Gold Edition
6.4 and 6.6a – page(s) 69 – 75 (multiplication) 76 – 82 (division)
6.6b – page(s) 62 – 68 and 83 – 89

Technology Integrations

Smart Exchange - interactive skill practice
Introduction to Multiplying Mixed Numbers [SMART Notebook lesson]
Multiplication of Fractions [SMART Notebook lesson]
Dividing fractions [SMART Notebook lesson]
Gizmos – Dividing Fractions - interactive instructional resource
Gizmos –Multiplying Fractions - interactive instructional resource
Gizmos – Dividing Mixed Numbers - interactive instructional resource
Gizmos – Multiplying Mixed Numbers - interactive instructional resource
Brain Pop – Multiplying and Dividing Fractions - interactive skill practice

Resources

Other Sites
Interactivesites weebly - Fractions

Cross Curricular Connection

Fractions – (Use Lesson 3)
Language/Geometry – Mega-Fun Fractions (Lots of activities, browse and find your favorite)

Materials

Manipulatives	**Technology Resources**	**Student Supplies**
Color Tiles	LCD Projector	Interactive Notebooks
Fraction Circles and Rings	Speakers	Copy paper
Number Lines	Computer w/Internet Connection	
Copy paper		
Color pencils or crayons		

Course Title/ Course #: Math Grade 6

Unit Title/ Marking Period # (MP): 2

Start day:

Meetings (Length of Unit): 6 days

Desired Results ~ What will students be learning?

Standards of Learning/ Standards

6.16 The student will

a) compare and contrast dependent and independent events; and

b) determine probabilities for dependent and independent events.

Essential Understandings/ Big Ideas

- How can you determine if a situation involves dependent or independent events?

  Events are independent when the outcome of one has no effect on the outcome of the other. Events are dependent when the outcome of one event is influenced by the outcome of the other.

- The probability of an event occurring is equal to the ratio of desired outcomes to the total number of possible outcomes (sample space).
- The probability of an event occurring can be represented as a ratio or the equivalent fraction, decimal, or percent.
- The probability of an event occurring is a ratio between 0 and 1.
- A probability of 0 means the event will never occur.
- A probability of 1 means the event will always occur.
- A simple event is one event (e.g., pulling one sock out of a drawer and examining the probability of getting one color).
- Events are independent when the outcome of one has no effect on the outcome of the other. For example, rolling a number cube and flipping a coin are independent events.
- The probability of two independent events is found by using the following formula:
- $P(A \text{ and } B) = P(A) \cdot P(B)$
- Ex: When rolling two number cubes simultaneously, what is the probability of rolling a 3 on one cube and a 4 on the other?

$$P(3 \text{ and } 4) = P(3) \cdot P(4) = \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$$

- Events are dependent when the outcome of one event is influenced by the outcome of the other. For example, when drawing two marbles from a bag, *not* replacing the first after it is drawn affects the outcome of the second draw.
- The probability of two dependent events is found by using the following formula:
  $P(A \text{ and } B) = P(A) \cdot P(B \text{ after } A)$
  Ex: You have a bag holding a blue ball, a red ball, and a yellow ball. What is the probability of picking a blue ball out of the bag on the first pick and then *without* replacing the blue ball in the bag, picking a red ball on the second pick?
  $P(\text{blue and red}) = P(\text{blue}) \cdot P(\text{red after blue}) = \frac{1}{3} \cdot \frac{1}{2} = \frac{1}{6}$

Key Essential Skills and Knowledge

- Determine whether two events are dependent or independent.
- Compare and contrast dependent and independent events.
- Determine the probability of two dependent events.
- Determine the probability of two independent events.

Vocabulary

Academic Vocabulary		Content Vocabulary	
Probability	Dependent Event	Odds	Tree Diagram
Independent Event	Fundamental Counting Principle	Sample Space	Fair
		Outcomes	Unfair

Assessment Evidence ~ What is evidence of mastery? What did the students master & what are they missing?

Assessment/ Evidence

Interactive Achievement
Formative Assessment - Muddiest Point

Learning Plan ~ What are the strategies and activities you plan to use?

Learning Experiences/ Best Practice

Stations – Use spinners, cards, dice, color cubes, and coins. Give each station a scenario to find the probability of that event occurring. For Example – What is the probability of pulling a black 3 and a red Jack from a deck of cards.
What's the Chance of that – Using dice and spinners have students find out what's the chance of spinning a specific number or color and rolling a specific number.
Coin Flips – Use plastic coins to determine if the number of flips will change the probability of getting a head or a tail.
Cube Bags – Place different amounts of colored cubes in paper bags. Students count the amount of cubes they have and how many of each color they have. Teacher asks students to shake the bag and without looking pull out a cube. They will determine what the probability of pulling that specific color are. The teacher can then ask them to replace the cube or keep it out changing the scenario from independent to dependent. Students have to determine probability and if it is an independent or dependent event.

Text

Virginia Math Connects, Course 1, ©2012, Glencoe/McGraw-Hill
page(s) – 702 -712
Extra Practice page –EP 33-34 Lessons 12-1 and 12-2
Coach book, 6th Grade Virginia Gold Edition
page(s) 217 – 223

Technology Integrations

Smart Exchange - interactive skill practice
Probability [SMART Notebook lesson]
Possible Outcomes [SMART Notebook lesson]
Gizmos – Spin the Big Wheel - interactive instructional resource
Brain Pop – Independent and Dependent - interactive skill practice

Resources

Virginia Department of Education
It Could Happen – lesson plan
SOL 5.14, 6.16a,b – lesson plan
Interactivesites weebly - Probability

Cross Curricular Connection

Science – American Idol
Language and Science – Probability in Action

Reading – *Conned Again Watson, Cautionary Tales of Logic, Math, and Probability* by Colin Bruce		
Materials		
Manipulatives Coins Playing Cards Spinners Color Cubes Dice Paper bags	**Technology Resources** LCD Projector Speakers Computer w/Internet Connection	**Student Supplies** Interactive Notebooks

Course Title/ Course #: Math Grade 6

Unit Title/ Marking Period # (MP): 2

Start day:

Meetings (Length of Unit): 7 days

Desired Results ~ What will students be learning?

Standards of Learning/ Standards

6.14 The student, given a problem situation, will

a) construct circle graphs;
b) draw conclusions and make predictions, using circle graphs; and
c) compare and contrast graphs that present information from the same data set.

Essential Understandings/ Big Ideas

- What types of data are best presented in a circle graph?
  Circle graphs are best used for data showing a relationship of the parts to the whole.
- To collect data for any problem situation, an experiment can be designed, a survey can be conducted, or other data-gathering strategies can be used. The data can be organized, displayed, analyzed, and interpreted to answer the problem.
- Different types of graphs are used to display different types of data.
- Bar graphs use categorical (discrete) data (e.g., months or eye color).
- Line graphs use continuous data (e.g., temperature and time).
- Circle graphs show a relationship of the parts to a whole.
- All graphs include a title, and data categories should have labels.
- A scale should be chosen that is appropriate for the data.
- A key is essential to explain how to read the graph.
- A title is essential to explain what the graph represents.
- Data are analyzed by describing the various features and elements of a graph.

Key Essential Skills and Knowledge

- Collect, organize and display data in circle graphs by depicting information as fractional.
- Draw conclusions and make predictions about data presented in a circle graph.
- Compare and contrast data presented in a circle graph with the same data represented in other graphical forms.

Vocabulary

Academic Vocabulary		Content Vocabulary
Data	Parts to Whole	Scale
Graph	Fractional Parts	Title
Pie Chart	Percent	Sector
Circle Graph	Bar Graph	
Histogram	Stem and Leaf Plot	

Assessment Evidence ~ What is evidence of mastery? What did the students master & what are they missing?

Assessment/ Evidence

Interactive Achievement
Formative Assessment - Modeling

Learning Plan ~ What are the strategies and activities you plan to use?

Learning Experiences/ Best Practice

Guided Notes – How to create a circle graph.
Review types of graphs foldable
Use magazine or newspaper articles that use different types of graphs to show data and have students make predictions based on the information provided.
Cereal Graphs – Use multi-color cereal to create a bar graph based on color and then turn the bar graph into a circle graph. Each student will receive a random amount of cereal. The student will sort the cereal by color and count how many of each they have. They will create a bar graph on construction paper using their data. They can glue the cereal on the paper or use color pencils. They will then use paper plates and the formula to turn data into a circle graph. They will create a circle graph based on their data.
Use fraction circles to model 50%, 25%, 33%, 20%.
Text

Virginia Math Connects, Course 1, ©2012, Glencoe/McGraw-Hill
page(s) – 644 -650 and 651 – 655
Extra Practice page –EP31-32 Lessons 11-3 and 11-4
Coach book, 6th Grade Virginia Gold Edition
6.14a and 6.14b - page(s) 182 - 188
6.14c – page(s) 202 – 208

Technology Integrations

Smart Exchange - interactive skill practice
Graphs, Charts, and Analysis of Data Part 1 [SMART Notebook lesson]
Brain Pop – Circles - interactive skill practice

Resources

Virginia Department of Education
May I Have Fries with That? – lesson plan
SOL 6.14a – lesson plan page 49 -59

Other Sites
Interactivesites weebly – Graphing

Cross Curricular Connection

Reading – *Do You Wanna Bet? Your Chance to Find Out About Probability* by Jean Cushman
Mind Games by Jeanne Marie Grunwell
Environmental Studies and Science – Data Management (Shows a variety of graphs, pick and choose the ones you need)

Materials

Manipulatives	**Technology Resources**	**Student Supplies**
Fraction Circles Graph Paper Cereal Paper Plates Color Pencils or Crayons Construction Paper Glue	LCD Projector Speakers Computer w/Internet Connection	Interactive Notebooks

Course Title/ Course #: Math Grade 6

Unit Title/ Marking Period # (MP): 2

Start day:

Meetings (Length of Unit): 5 days

Desired Results ~ What will students be learning?

Standards of Learning/ Standards

6.20 The student will graph inequalities on a number line.

Essential Understandings/ Big Ideas

In an inequality, does the order of the elements matter?

Yes, the order does matter. For example, $x > 5$ is not the same relationship as $5 > x$. However, $x > 5$ is the same relationship as $5 < x$.

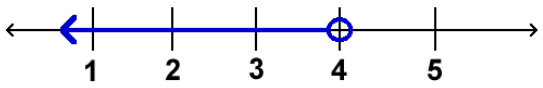
Key Essential Skills and Knowledge

Given a simple inequality with integers, graph the relationship on a number line.

Given the graph of a simple inequality with integers, represent the inequality two different ways using symbols ($<$, $>$, $\leq$, $\geq$).

Inequalities using the $<$ or $>$ symbols are represented on a number line with an open circle on the number and a shaded line over the solution set.

Ex: $x < 4$



When graphing $x \leq 4$ fill in the circle above the 4 to indicate that the 4 is included.

Inequalities using the $\leq$ *or* $\geq$ symbols are represented on a number line with a closed circle on the number and shaded line in the direction of the solution set.

The solution set to an inequality is the set of all numbers that make the inequality true.

It is important for students to see inequalities written with the variable before the inequality symbol and after. For example x > -6 and 7 > y.

Vocabulary

Academic Vocabulary	**Content Vocabulary**	
inequality	greater than	greater than or equal to
number line	less than	less than or equal to
positive integer		
negative integer		

Assessment Evidence ~ What is evidence of mastery? What did the students master & what are they missing?

Assessment/ Evidence

Interactive Achievement
Formative Assessment - Think-Pair-Share

Learning Plan ~ What are the strategies and activities you plan to use?

Learning Experiences/ Best Practice

Foldable
Inequalities Matching Game – Using index cards draw inequalities on them. Match up the cards that show the same inequality.

Text

Virginia Math Connects, Course 1, ©2012, Glencoe/McGraw-Hill
page(s) – 387 – 395
Extra Practice page –EP18 Lesson 7-2

Coach book, 6th Grade Virginia Gold Edition
page(s) 249 – 255

Technology Integrations

Smart Exchange (use slides 1-8) - interactive skill practice
Graphing Inequalities [SMART Notebook Math Tools lesson]
Brain Pop – Inequalities – interactive skill practice

Resources
Virginia Department of Education Give or Take a Few – lesson plan
Cross Curricular Connection
None
Materials

Manipulatives	**Technology Resources**	**Student Supplies**
Number lines Counters Index cards	LCD Projector Speakers Computer w/Internet Connection	Interactive Notebooks Foldables

Course Title/ Course #: Math Grade 6

Unit Title/ Marking Period # (MP): 2

Start day:

Meetings (Length of Unit): 5 days

Desired Results ~ What will students be learning?
Standards of Learning/ Standards
6.17 The student will identify and extend geometric and arithmetic sequences.
Essential Understandings/ Big Ideas
• What is the difference between arithmetic and a geometric sequence? • While both are numerical patterns, arithmetic sequences are additive and geometric sequences are multiplicative. • Numerical patterns may include linear and exponential growth, perfect squares, triangular and other polygonal numbers, or Fibonacci numbers. • Arithmetic and geometric sequences are types of numerical patterns. • In the numerical pattern of an arithmetic sequence, students must determine the difference, called the *common difference*, between each succeeding number in order to determine what is added to each previous number to obtain the next number. Sample numerical patterns are 6, 9, 12, 15, 18, …; and 5, 7, 9, 11, 13, …. • In geometric number patterns, students must determine what each number is multiplied by to obtain the next number in the geometric sequence. This multiplier is called the *common ratio*. Sample geometric number patterns include 2, 4, 8, 16, 32, …; 1, 5, 25, 125, 625, …; and 80, 20, 5, 1.25, … • Strategies to recognize and describe the differences between terms in numerical patterns include, but are not limited to, examining the change between consecutive terms, and finding common factors. An example is the pattern 1, 2, 4, 7, 11, 16,…
Key Essential Skills and Knowledge
• Investigate and apply strategies to recognize and describe the change between terms in arithmetic patterns. • Investigate and apply strategies to recognize and describe geometric patterns. • Describe verbally and in writing the relationships between consecutive terms in an arithmetic or geometric sequence.

- Extend and apply arithmetic and geometric sequences to similar situations.
- Extend arithmetic and geometric sequences in a table by using a given rule or mathematical relationship.
- Compare and contrast arithmetic and geometric sequences.
- Identify the common difference for a given arithmetic sequence.
- Identify the common ratio for a given geometric sequence.

Vocabulary

Academic Vocabulary	**Content Vocabulary**
Pattern Numerical Patterns Common Difference Arithmetic Sequence Geometric Sequence Common Ratio Input Geometric Patterns Terms	Sequence Extend Consecutive

Assessment Evidence ~ What is evidence of mastery? What did the students master & what are they missing?

Assessment/ Evidence

Interactive Achievement
Formative Assessment - Visual Display

Learning Plan ~ What are the strategies and activities you plan to use?

Learning Experiences/ Best Practice

Toothpick Patterns – Growing patterns and sequences
Students create their own arithmetic and Geometric Sequences – share their sequence, explain the rule, and have the class determine which type of sequence it is.
Sequence Sort – Index cards with a variety of Geometric and Arithmetic sequences. Students sort the cards into the appropriate category.

Text
Virginia Math Connects, Course 1, ©2012, Glencoe/McGraw-Hill
page(s) – 378 – 383

Extra Practice page –EP 16-17 Lesson 7-1
Coach book, 6th Grade Virginia Gold Edition
page(s) 230 – 237

Resources

Virginia Department of Education
Growing Patterns and Sequences – lesson plan
SOL 6.17 - lesson plan page 32 -37

Other Sites
Interactivesites weebly - Patterns

Cross Curricular Connection

Reading – *Wright 3* by Blue Balliett
The Number Devil by Hans Magnus Enzensberger

Materials

Manipulatives	Technology Resources	Student Supplies
Color Tiles Dominoes Pattern Blocks Numeral Cards Calculator Sequence Cards Toothpicks	LCD Projector Speakers Computer w/Internet Connection	Interactive Notebooks