



Course Title/ Course #: Math Grade 6

Unit Title/ Marking Period # (MP): 3

Start day:

Meetings (Length of Unit): 6 days

Desired Results ~ What will students be learning?

Standards of Learning/ Standards

- 6.15 The student will**
- a) describe mean as balance point; and**
 - b) decide which measure of center is appropriate for a given purpose.**

Essential Understandings/ Big Ideas

- What does the phrase “measure of center” mean?
- This is a collective term for the 3 types of averages for a set of data – mean, median, and mode.
- What is meant by mean as balance point? Mean can be defined as the point on a number line where the data distribution is balanced. This means that the sum of the distances from the mean of all the points above the mean is equal to the sum of the distances of all the data points below the mean. This is the concept of mean as the balance point.
- Measures of center are types of averages for a data set. They represent numbers that describe a data set. Mean, median, and mode are measures of center that are useful for describing the average for different situations.
- Mean works well for sets of data with no very high or low numbers.
- Median is a good choice when data sets have a couple of values much higher or lower than most of the others.
- Mode is a good descriptor to use when the set of data has some identical values or when data are not conducive to computation of other measures of central tendency, as when working with data in a yes or no survey.
- The mean is the numerical average of the data set and is found by adding the numbers in the data set together and dividing the sum by the number of data pieces in the set.
- In grade 5 mathematics, mean is defined as fair- share.
- Mean can be defined as the point on a number line where the data distribution is balanced. This means that the sum of the distances from the mean of all the points above the mean is equal to the sum of the distances of all the data points below the mean. This is the concept of mean as the balance point.

- Defining mean as balance point is a prerequisite for understanding standard deviation.
- The median is the middle value of a data set in ranked order. If there are an odd number of pieces of data, the median is the middle value in ranked order. If there is an even number of pieces of data, the median is the numerical average of the two middle values.
- The mode is the piece of data that occurs most frequently. If no value occurs more often than any other, there is no mode. If there is more than one value that occurs most often, all these most-frequently-occurring values are modes. When there are exactly two modes, the data set is bimodal.

Key Essential Skills and Knowledge

- Find the mean for a set of data.
- Describe the three measures of center and a situation in which each would best represent a set of data.
- Identify and draw a number line that demonstrates the concept of mean as balance point for a set of data.

Vocabulary

Academic Vocabulary

Content Vocabulary

| | | |
|------------------------------|---------------|-------------|
| Range | Mean | Data |
| Measures of Central Tendency | | Demonstrate |
| Mode | Median | Fair Share |
| Average | Balance Point | |
| Fulcrum | | |

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

Assessment/ Evidence

Interactive Achievement
Formative Assessment - Vocabulary

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

Learning Experiences/ Best Practice

Balancing Act – Use a trapezoid, ruler, and centimeter cubes create a balance scale. Put the cubes on the ruler in various places. Move the cubes one at a time, taking turns moving them from the left and right until the ruler is balanced. (Finding balance point)
Number line – Use two color counters and place them randomly on the number line. Move the counters one at a time until you find the balance point.

Mean, Median, Mode Foldable

Text

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

page(s) 613 – 618 (mean)

page(s) 620 – 624 (median, mode, and range)

page(s) 627 – 630 (appropriate measures)

Extra Practice page –EP30 Lesson 11-1

Coach book, 6th Grade Virginia Gold Edition

page(s) 209 – 216

Technology Integrations

Smart Exchange - interactive skill practice

[Measures of Central Tendency \[SMART Notebook lesson\]](#)

[Graphs, Charts, and Analysis of Data Part 2 \[SMART Notebook lesson\]](#)

[Discovering the Mean \[SMART Notebook lesson\]](#)

Gizmo – [Mean, Median, Mode](#) - interactive instructional resource

Gizmo – [Reaction Time](#) - interactive instructional resource

Brain Pop – [Mean, Median, Mode](#) – interactive skill practice

Resources

Virginia Department of Education

[Balancing Act](#) – lesson plan

Other Sites

Interactivitesites weebly – [Mean, Median, and Mode](#)

Cross Curricular Connection

English and Science - [Pedometer](#)

Materials

Manipulatives

Linking Cubes

Number Cubes

Number lines

Color Cubes

Tape

Technology Resources

LCD Projector

Speakers

Computer w/Internet Connection

Student Supplies

Interactive Notebooks

Foldable paper

| | | |
|---|--|--|
| Rulers Trapezoid Two sided counters | | |
|---|--|--|

Course Title/ Course #: Math Grade 6

Unit Title/ Marking Period # (MP): 3

Start day:

Meetings (Length of Unit): 10 days

Desired Results ~ What will students be learning?

Standards of Learning/ Standards

- 6.10 The student will**
- a) define pi (π) as the ratio of the circumference of a circle to its diameter;**
 - b) solve practical problems involving circumference and area of a circle, given the diameter or radius;**
 - c) solve practical problems involving area and perimeter; and**
 - d) describe and determine the volume and surface area of a rectangular prism.**

Essential Understandings/ Big Ideas

- What is the relationship between the circumference and diameter of a circle?
The circumference of a circle is about 3 times the measure of the diameter.
- What is the difference between area and perimeter?
Perimeter is the distance around the outside of a figure while area is the measure of the amount of space enclosed by the perimeter.
- What is the relationship between area and surface area?
Surface area is calculated for a three-dimensional figure. It is the sum of the areas of the two-dimensional surfaces that make up the three-dimensional figure.
- Experiences in deriving the formulas for area, perimeter, and volume using manipulatives such as tiles, one-inch cubes, adding machine tape, graph paper, geoboards, or tracing paper, promote an understanding of the formulas and facility in their use.
- The perimeter of a polygon is the measure of the distance around the polygon.
- Circumference is the distance around or perimeter of a circle.
- The area of a closed curve is the number of non-overlapping square units required to fill the region enclosed by the curve.

- The perimeter of a square whose side measures s is 4 times s ($P = 4s$), and its area is side times side ($A = s^2$).
- The perimeter of a rectangle is the sum of twice the length and twice the width [$P = 2l + 2w$, or $P = 2(l + w)$], and its area is the product of the length and the width ($A = lw$).
- The value of pi (π) is the ratio of the circumference of a circle to its diameter.
- The ratio of the circumference to the diameter of a circle is a constant value, pi (π), which can be approximated by measuring various sizes of circles.
- The fractional approximation of pi generally used is $\frac{22}{7}$.
- The decimal approximation of pi generally used is 3.14.
- The circumference of a circle is computed using $C = \pi d$ or $C = 2\pi r$, where d is the diameter and r is the radius of the circle.
- The area of a circle is computed using the formula $A = \pi r^2$, where r is the radius of the circle.
- The surface area of a rectangular prism is the sum of the areas of all six faces ($SA = 2lw + 2lh + 2wh$).
- The volume of a rectangular prism is computed by multiplying the area of the base, B , (length x width) by the height of the prism ($V = lwh = Bh$).

Key Essential Skills and Knowledge

- Derive an approximation for pi (3.14 or $\frac{22}{7}$) by gathering data and comparing the circumference to the diameter of various circles, using concrete materials or computer models.
- Find the circumference of a circle by substituting a value for the diameter or the radius into the formula $C = \pi d$ or $C = 2\pi r$.
- Find the area of a circle by using the formula $A = \pi r^2$.
- Apply formulas to solve practical problems involving area and perimeter of triangles and rectangles.
- Create and solve problems that involve finding the circumference and area of a circle when given the diameter or radius.
- Solve problems that require finding the surface area of a rectangular prism, given a diagram of the prism with the necessary dimensions labeled.
- Solve problems that require finding the volume of a rectangular prism given a diagram of the prism with the necessary

dimensions labeled.

Vocabulary

Academic Vocabulary

Content Vocabulary

| | | |
|---------------|------------|--------|
| Surface Area | Volume | Height |
| Perimeter | Net | Width |
| Base | Prism | |
| Solid | Faces | |
| Cube | Cubic Unit | |
| Circumference | Cylinder | |
| Square Units | Length | |
| Diameter | Area | |
| Rectangle | Circle | |
| Radius | Pi | |

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

Assessment/ Evidence

Interactive Achievement
Formative Assessment - Transparency Check

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

Learning Experiences/ Best Practice

Bubble Circumference – Students will blow bubbles onto construction paper, trace the outline, and then find the circumference, diameter, radius, and area of each circle.

Snowmen – Use a variety of circle sizes to make a snowman. Glue the circles on construction paper and then have students find diameter, radius, circumference, and/or area.

Geoboards or Grid paper – Make different shapes and find the area and perimeter of each.

Volume – Use linking cubes or empty boxes, have students find the volume of a variety of different rectangular prisms.

Surface Area – Collect empty cardboard boxes and label with a letter or number. Have the students find the measurements of length, width, and height. They can then chart the surface area of each box.

Text

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

Circumference – page(s) 507 - 512

Area - page(s) 495 – 500 (triangles) 513 – 518 (circles)

Perimeter – page(s) 520 – 524
Volume – page(s) 534 – 540
Surface Area – page(s) 541 – 547
Extra Practice page –EP 24 -27 Lessons 9-1, 9-2, 9-3, and 9-4

Coach book, 6th Grade Virginia Gold Edition

6.10a - page(s) 121 – 126
6.10b - page(s) 127 – 131
6.10c – page(s) 132 – 138
6.10d – page(s) 139 - 150

Technology Integrations

Smart Exchange - interactive skill practice

[Circumference \[SMART Notebook lesson\]](#)

[The Area of Circles \[SMART Notebook lesson\]](#)

[Volume of Rectangular Prisms \[SMART Notebook lesson\]](#)

Gizmos – [Circumference and Area of Circles](#) - interactive instructional resource

Gizmos – [Balancing Blocks](#) - interactive instructional resource

Gizmos – [Finding Fido's Flower Bed](#) - interactive instructional resource

Brain Pop – [Pi](#) – interactive skills practice

Resources

Virginia Department of Education

[Going the Distance](#) – lesson plan

[SOL 6.10 a,b](#) – lesson plan page 10-21

[Out of the Box](#) – lesson plan

[SOL 6.10d, 7.5a](#) – lesson plan page 13 -52

Other Sites

Interactivesites weebly - [Circles](#)

Interactivesites weebly – [Area and Perimeter](#)

Cross Curricular Connection

Reading – *Spaghetti and Meatball for All!* by Marilyn Burns (Area and Perimeter)

Perimeter, Area, and Volume by David Adler

Sir Circumference – series by Cindy Neuschwander

Art – [Area Art](#)

Materials

Manipulatives

Color Tiles
Rulers
Bubbles
Geoboards
Fraction Circles
Decimal Squares
Various sizes of cardboard boxes

Technology Resources

LCD Projector
Speakers
Computer w/Internet Connection

Student Supplies

Interactive Notebooks

Course Title/ Course #: Math Grade 6

Unit Title/ Marking Period # (MP): 3

Start day:

Meetings (Length of Unit): 6 days

| <i>Desired Results ~ What will students be learning?</i> | |
|---|---|
| <u>Standards of Learning/ Standards</u> | |
| 6.13 | The student will describe and identify properties of quadrilaterals. |
| <u>Essential Understandings/ Big Ideas</u> | |
| <ul style="list-style-type: none">• Can a figure belong to more than one subset of quadrilaterals? Any figure that has the attributes of more than one subset of quadrilaterals can belong to more than one subset. For example, rectangles have opposite sides of equal length. Squares have all 4 sides of equal length thereby meeting the attributes of both subsets.• A quadrilateral is a closed planar (two-dimensional) figure with four sides that are line segments.• A parallelogram is a quadrilateral whose opposite sides are parallel and opposite angles are congruent.• A rectangle is a parallelogram with four right angles.• Rectangles have special characteristics (such as diagonals are bisectors) that are true for any rectangle.• To bisect means to divide into two equal parts.• A square is a rectangle with four congruent sides or a rhombus with four right angles.• A rhombus is a parallelogram with four congruent sides.• A trapezoid is a quadrilateral with exactly one pair of parallel sides. The parallel sides are called <i>bases</i>, and the nonparallel sides are called <i>legs</i>. If the legs have the same length, then the trapezoid is an isosceles trapezoid.• A kite is a quadrilateral with two pairs of adjacent congruent sides. One pair of opposite angles is congruent.• Quadrilaterals can be sorted according to common attributes, using a variety of materials.• Quadrilaterals can be classified by the number of parallel sides: a parallelogram, rectangle, rhombus, and square each have | |

two pairs of parallel sides; a trapezoid has only one pair of parallel sides; other quadrilaterals have no parallel sides.

- Quadrilaterals can be classified by the measures of their angles: a rectangle has four 90° angles; a trapezoid may have zero or two 90° angles.
- Quadrilaterals can be classified by the number of congruent sides: a rhombus has four congruent sides; a square, which is a rhombus with four right angles, also has four congruent sides; a parallelogram and a rectangle each have two pairs of congruent sides.
- A square is a special type of both a rectangle and a rhombus, which are special types of parallelograms, which are special types of quadrilaterals.
- The sum of the measures of the angles of a quadrilateral is 360° .
- A chart, graphic organizer, or Venn Diagram can be made to organize quadrilaterals according to attributes such as sides and/or angles.

Key Essential Skills and Knowledge

- Sort and classify polygons as quadrilaterals, parallelograms, rectangles, trapezoids, kites, rhombi, and squares based on their properties. Properties include number of parallel sides, angle measures and number of congruent sides.
- Identify the sum of the measures of the angles of a quadrilateral as 360° .

Vocabulary

| <u>Academic Vocabulary</u> | | <u>Content Vocabulary</u> |
|-----------------------------------|---------------|----------------------------------|
| Quadrilateral | Rhombus | Attributes |
| Kite | Parallelogram | |
| Trapezoid | Rectangle | |
| Isosceles Trapezoid | Square | |
| Parallel Sides | | |

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

Assessment/ Evidence

Interactive Achievement
Formative Assessment - Ticket out the door

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

Learning Experiences/ Best Practice

Task Cards- Quadrilateral attributes
Classify quadrilaterals
Quadrilateral Bingo

Text

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

page(s) 456 – 461

Extra Practice page –EP22 Lesson 8-3

Coach book, 6th Grade Virginia Gold Edition

page(s) 169 – 175

Technology Integrations

Smart Exchange - interactive skill practice

[Polygons and Pattern Blocks \[SMART Notebook lesson\]](#)

[Quadrilaterals \[SMART Notebook lesson\]](#)

Gizmos – [Classifying Quadrilaterals](#) - interactive instructional resource

Resources

Virginia Department of Education

[Exploring Quadrilaterals](#) – lesson plan

[SOL 6.13, 7.7](#) – lesson plan page 74 -91

Cross Curricular Connection

Reading – *Sandy's Circus: A Story About Alexander Calder* by Tanya Lee Stone

Art - Alexander Calder Shape Mobiles

Students learn about geometric terms and basic shapes by creating hanging art. Students can create a quadrilateral family tree mobile, 3-D shape mobile or a mobile with various triangles, or hang geometry concepts to help further their understanding (such as: different angles or lines). Younger students can hang basic shapes that they are just learning to identify.

Materials

Manipulatives

Geometric Solids
Attribute Blocks
Quadrilateral Shape Sort

Technology Resources

LCD Projector
Speakers
Computer w/Internet Connection

Student Supplies

Interactive Notebooks

Course Title/ Course #: Math Grade 6

Unit Title/ Marking Period # (MP): 3

Start day:

Meetings (Length of Unit): 9 days

| <i>Desired Results ~ What will students be learning?</i> |
|---|
| <u>Standards of Learning/ Standards</u> |
| 6.7 The student will solve single-step and multistep practical problems involving addition, subtraction, multiplication, and division of decimals. |
| <u>Essential Understandings/ Big Ideas</u> |
| <ul style="list-style-type: none">• What is the role of estimation in solving problems? Estimation gives a reasonable solution to a problem when an exact answer is not required. If an exact answer is required, estimation allows you to know if the calculated answer is reasonable.• Different strategies can be used to estimate the result of computations and judge the reasonableness of the result. For example: What is an approximate answer for $2.19 \div 0.8$? The answer is around 2 because $2 \div 1 = 2$.• Understanding the placement of the decimal point is very important when finding quotients of decimals. Examining patterns with successive decimals provides meaning, such as dividing the dividend by 6, by 0.6, by 0.06, and by 0.006.• Solving multistep problems in the context of real-life situations enhances interconnectedness and proficiency with estimation strategies.• Examples of practical situations solved by using estimation strategies include shopping for groceries, buying school supplies, creating a budget, an allowance, deciding what time to leave for school or the movies, and sharing a pizza or the prize money from a contest. |
| <u>Key Essential Skills and Knowledge</u> |
| <ul style="list-style-type: none">• Solve single-step and multistep practical problems involving addition, subtraction, multiplication and division with decimals expressed to thousandths with no more than two operations. |

| <u>Vocabulary</u> | | |
|---|-----------------|---------------------------|
| <u>Academic Vocabulary</u> | | <u>Content Vocabulary</u> |
| Estimation | Problem Solving | Strategy |
| Sum | Divisor | |
| Compatible Numbers | Decimal | |
| Difference | Dividend | |
| Product | Quotient | |
| <i>Assessment Evidence ~ What is evidence of mastery? What did the students master & what are they missing?</i> | | |
| <u>Assessment/ Evidence</u> | | |
| Interactive Achievement Mulligan Checkpoint 6.7 Formative Assessment - Graphic Organizer | | |
| <i>Learning Plan ~ What are the strategies and activities you plan to use?</i> | | |
| <u>Learning Experiences/ Best Practice</u> | | |
| <p>Decimal Computation Foldable Decimal Cards – Place decimals in order on a string number line. Grocery or Sale Papers – Students are given a specific amount of money they can spend. They must find items to “purchase” and use addition, subtraction, division, and multiplication to determine their totals. Decimal Scavenger Hunt – Students must find real world applications of how to use decimals. Decimal Sort – Index cards with a variety of decimal and mixed numbers on them. Students will sort the cards based on estimation to zero, a half, or a whole.</p> <p>Text <u>Virginia Math Connects, Course 1</u>, ©2012, Glencoe/McGraw-Hill Multiplication - page(s) 32 – 41 Division- page(s) 47 – 60 Addition and Subtraction page(s) 7 -9 and 562 Extra Practice page –EP2-3 Lessons 1-1 and 1-2</p> <p><u>Coach book, 6th Grade Virginia Gold Edition</u> page(s) 90 – 95 (addition and subtraction) page(s) 96 – 103 (multiplication and division)</p> | | |

Technology Integrations

Gizmos – [Sums and Differences with Decimals](#) - interactive instructional resource
Brain Pop – [Multiplying Decimals](#) – interactive skills practice

Resources

Virginia Department of Education
[Practical Problems Involving Decimals](#) – lesson plan
[SOL 5.5b, 6.7, 8.3a](#) - lesson plan

Other Sites

Interactivesites weebly - [Decimals](#)

Cross Curricular Connection

Reading – *The Toothpaste Millionaire* by Jean Merrill
Millions by Frank Cottrell

Materials

Manipulatives

Decimal Squares
Numeral Cards (decimals)
Number lines
String
Grocery or Sale Ads

Technology Resources

LCD Projector
Speakers
Computer w/Internet Connection

Student Supplies

Interactive Notebooks
Copy Paper

Course Title/ Course #: Math Grade 6

Unit Title/ Marking Period # (MP): 3

Start day:

Meetings (Length of Unit): 7 days

Desired Results ~ What will students be learning?

Standards of Learning/ Standards

6.9 The student will make ballpark comparisons between measurements in the U.S. Customary System of measurement and measurements in the metric system.

Essential Understandings/ Big Ideas

- What is the difference between weight and mass?

Weight and mass are different. Mass is the amount of matter in an object. Weight is the pull of gravity on the mass of an object. The mass of an object remains the same regardless of its location. The weight of an object changes dependent on the gravitational pull at its location.

- How do you determine which units to use at different times?

Units of measure are determined by the attributes of the object being measured. Measures of length are expressed in linear units, measures of area are expressed in square units, and measures of volume are expressed in cubic units.

- Why are there two different measurement systems?

Measurement systems are conventions invented by different cultures to meet their needs. The U.S. Customary System is the preferred method in the United States. The metric system is the preferred system worldwide.

- Making sense of various units of measure is an essential life skill, requiring reasonable estimates of what measurements mean, particularly in relation to other units of measure.

1 inch is about 2.5 centimeters.

1 foot is about 30 centimeters.

1 meter is a little longer than a yard, or about 40 inches.

1 mile is slightly farther than 1.5 kilometers.

1 kilometer is slightly farther than half a mile.

1 ounce is about 28 grams.

1 nickel has the mass of about 5 grams.
 1 kilogram is a little more than 2 pounds.
 1 quart is a little less than 1 liter.
 1 liter is a little more than 1 quart.
 Water freezes at 0°C and 32°F.
 Water boils at 100°C and 212°F.
 Normal body temperature is about 37°C and 98°F.
 Room temperature is about 20°C and 70°F.

- Mass is the amount of matter in an object. Weight is the pull of gravity on the mass of an object. The mass of an object remains the same regardless of its location. The weight of an object changes dependent on the gravitational pull at its location. In everyday life, most people are actually interested in determining an object’s mass, although they use the term *weight*, as shown by the questions: “How much does it weigh?” versus “What is its mass?”
- The degree of accuracy of measurement required is determined by the situation.
- Whether to use an underestimate or an overestimate is determined by the situation.
- Physically measuring objects along with using visual and symbolic representations improves student understanding of both the concepts and processes of measurement.

Key Essential Skills and Knowledge

- Estimate the conversion of units of length, weight/mass, volume, and temperature between the U.S. Customary system and the metric system by using ballpark comparisons.
 Ex: 1 L \approx 1qt. Ex: 4L \approx 4 qts.
- Estimate measurements by comparing the object to be measured against a benchmark.

Vocabulary

| <u>Academic Vocabulary</u> | | <u>Content Vocabulary</u> |
|-----------------------------------|---------------------|----------------------------------|
| Metric System | Standard | |
| Meter | Volume | |
| U.S. Customary System | Unit | |
| Liter | Area | |
| Capacity | Gram | |
| Mass | Ballpark Comparison | |

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

Assessment/ Evidence

Interactive Achievement
Formative Assessment - Discuss with a Partner

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

Learning Experiences/ Best Practice

Measurement Task Cards – Index cards with measurements in metric and U.S. Customary units. The students will convert the measurements into the other system of measurement.

Measurement Match-up – Students create their own measurements and exchange with other groups to answer.

Measure a variety of items in the classroom and convert to the other system of measurement.

Text

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

page(s) 594 -599

Coach book, 6th Grade Virginia Gold Edition

page(s) 116 – 120

Technology Integrations

Brain Pop – [Metric vs. Customary](#) – interactive skill practice

Resources

Virginia Department of Education

[Measuring Mania](#) - lesson plan

[SOL 5.8d, 6.9](#) – lesson plan

Other Sites

Interactivesites weebly – [Measurement](#) (Review of basic measurements within the same system)

Cross Curricular Connection

Art – [Worms and More](#)

P.E. - [Skis](#) (How many Skis)

History - [Olympics](#)

Materials

Manipulatives

Meter and Yard Sticks

Rulers

Technology Resources

LCD Projector

Speakers

Student Supplies

Interactive Notebooks

Task Cards

| | | |
|--|--------------------------------|--|
| Scales and weights Volume containers Index Cards | Computer w/Internet Connection | |
|--|--------------------------------|--|