Most recent update: October 14, 2020

RightStart™ Mathematics

Corrections and Updates for Level H/Grade 7 Lessons and Worksheets, second edition

LESSON/WORKSHEET/SOLUTIONS		CHANGE DATE	CORRECTION OR UPDATE
	Solutions 9-2	10/14/2020	The answer for Problem 11 should be r = **2.8** in, not 2.75, and $A = \pi \times$ **2.8**, not A = π × 2.75, giving an answer of **24.6** in^2, not 23.8 in^2. If the actual value for the radius found in the first step, 2.753380515, is used to calculate the area, the area will be 23.81674146 in^2, or 23.8 in^2 rounded.
Worksheet 19	Solutions 19	12/27/2019	The image for Problem 4 has been changed. See attached **PDFs**.
Worksheet 21		12/27/2019	Two plaids are outlined in the new worksheet. Instructions are changed slightly. See attached **PDF**.
Worksheet 22-2		12/27/2019	For Problem 14, the instructions are changed to "Draw a **regular** tessellation…" rather than "Draw a pure tessellation…"
	Solutions 36-1	12/27/2019	In the notes for the remaining six products, the final problem of 45 × 12 can have the following options: 15 × 36, 30 × 18, **20 × 27**, and **54 × 10**. The solution of 60 × 9 is an error.
Worksheet 39-3	Solutions 39-1	12/27/2019	For Problem 25, the instructions are changed to "Find p, t, and ***r***" and the value of r is removed from the graphics. See attached **PDF**. In the Solutions for Problem 25, when the calculated value for r is used in the third equation, it should be 5.4/**4.1**, not 5.4/4.0.
Worksheet 41	Solutions 41	12/27/2019	Two final questions are asked. See attached **PDF**s.
Worksheet 42-1		12/27/2019	The position and size of the starting rectangle has changed. See attached **PDF**.
	Solutions 42-2	12/27/2019	The measurements for Problems 2–7 are changed. See attached **PDF**.
Worksheet 45		12/27/2019	The position and size of the starting squares has changed. See attached **PDF**.
Worksheet 48-1		12/27/2019	Problem 5 has been updated with the size of the starting rectangle. See attached **PDF**.
	Solutions 48-2	12/27/2019	The first measurement for Problem 6 is **10.2**/6.3 = **1.6**, not 10.1/6.3 = 1.7
	Solutions 75-4	02/04/2020	The answer for Question 40 should be **A**, not B.
	Solutions 76-4	03/09/2020	The comment for Question 40 should say **600** cm^2, not 6 cm^2.
	Solutions 85-1	03/09/2020	The answer for Problem 14 needs convertion from centimeters to decimeters. It should be 63.63 cm **≈ 6.4 dm**.
Worksheet 91-2	Solutions 91-2	03/11/2020	Question 3 should read "**If no faces are regular**, how many different ways will the package fit into the box?"
	Solutions 101-2	04/20/2020	For Question 21, the solutions reference Q#18 when it should be **Q#19**.
Worksheet 107	Solutions 107	04/20/2020	The first ordered pair for equation 4 should read -4 + **12**, not -4 + 11, giving an answer of (**8**, 1), not (7, 1). The first ordered pair for equation14 should read -2 + **-6**, not -2 + -5, giving an answer of (**-8**, 1), not (-7, 1). Graphed image is correct.

Lesson 113			04/20/2020	In the first Extra, the beginning sentence should read "…would be 0.25 × *n* , or 0.25 × **5**, which is $1.25", not "…would be 0.25 × *n* , or 0.25 × 10, which is $1.25."
	Worksheet 113	Solutions 113	04/20/2020	Question 3 should read "…household using between five and **eight** units...", not ...between five and nine units..."
	Worksheet 114-2	Solutions 114-2	04/20/2020	Problem l (in the second column) *x* -value equation should be $12^2 - \mathbf{141}$, not $12^2 - 121$. Answer of 3 is correct.
		Solutions 114-3	04/27/2020	The solutions for Problem 38 should be: $g^2 = 92 + 749$ $g = \sqrt{841}$ $g = 29$
	Worksheet 117		04/27/2020	The wording for Questions 7 and 8 have changed to recognize that at 0ºC and 32ºF water can be both frozen or liquid and that at 100ºC and 212ºF water can be both liquid or gas. See attached **PDF**.
Lesson 119	Worksheet 119	Solutions 119	10/14/2020	Half way down the lesson page, the section Solving absolute value equtions has been changed as there was a significant error. See attached **PDF** for the new lesson. Problem 6 has been changed on the Worksheet and Solutions to $\mathbf{\lvert x \rvert = 5 - 4}$, not $\lvert x \rvert = 4 - 5$. Answers are not changed and remain as $x = 1$ and $x = -1$.
		Solutions 122	05/06/2020	The answer for Question 8b should be **10%**, not 20%.
	Worksheet 123-2	Solutions 123-2	10/14/2020	Problem 13 has changed and the data for Questions 14 through 17 has been changed. See attached **PDF**.
	Worksheet 124-8		05/11/2020	The data for Questions 92 through 96 has been changed. See attached **PDF**.
	Worksheet 125-8	Solutions 125-8	05/11/2020	The data and questions for Questions 87 through 90 has been changed. See attached **PDF**.

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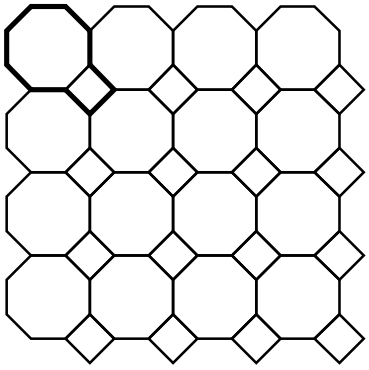
Find the basic unit for the three tessellations below. The first one is done for you.

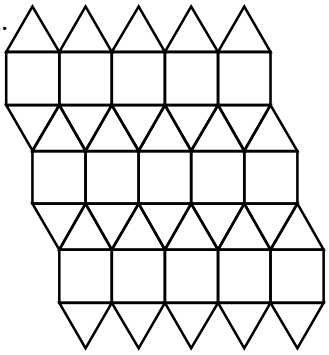
Fill in the table to describe how to construct the tessellations by translating the basic unit. Use millimeters.

Problem	To make first row	To make next rows
1		
2		
3		

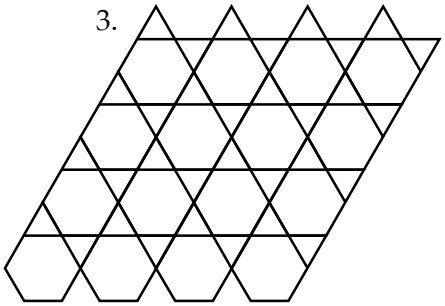
1.



2.

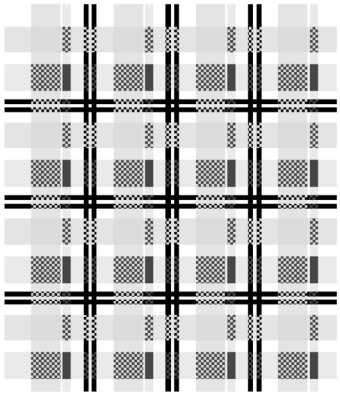


3.

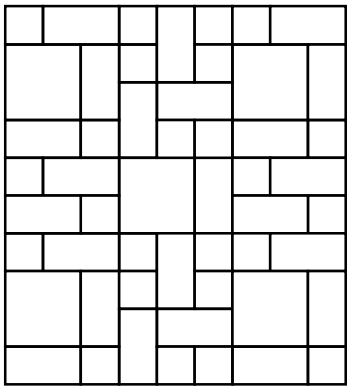


Find the basic unit.

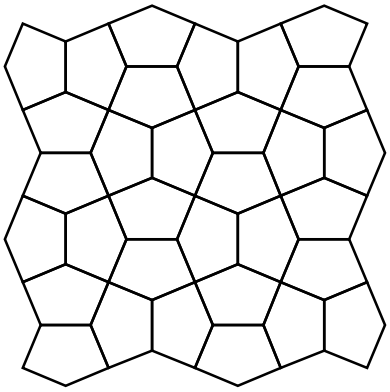
4.



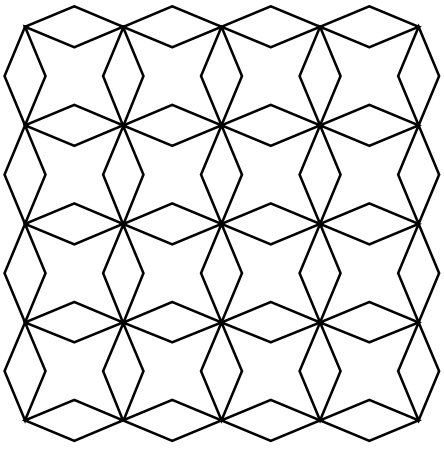
5.



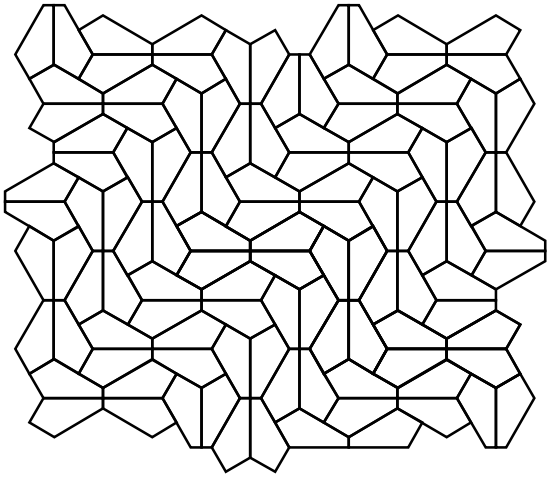
6.



7.



8.



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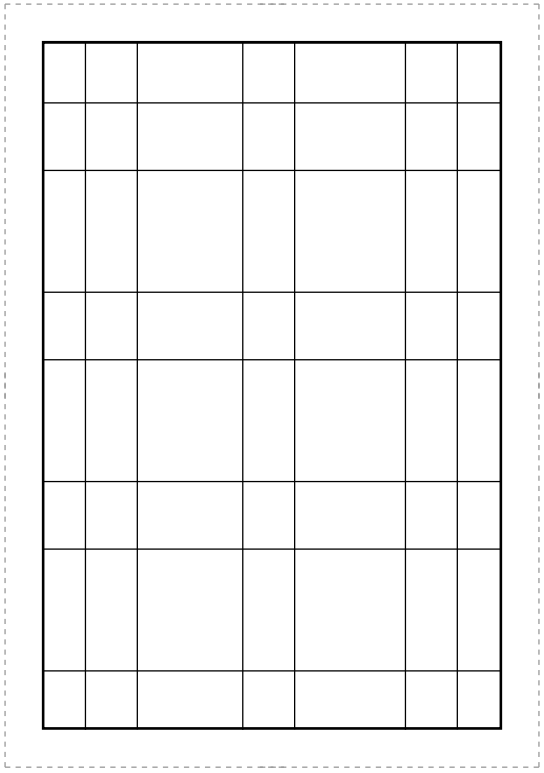
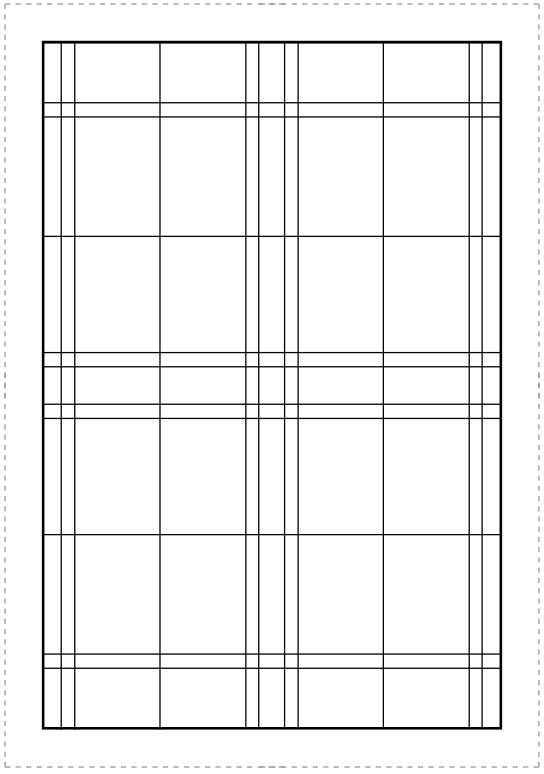
Worksheet 21, Tartan Plaids

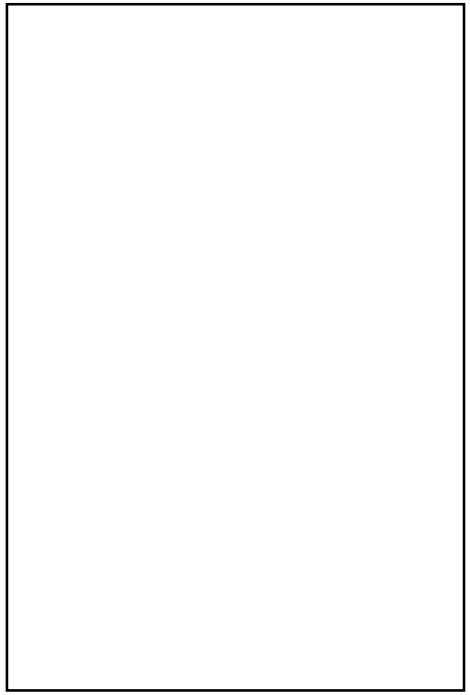
Fold and cut your tracing paper into three rectangles, each approximately the size of the dotted rectangles below.

For each rectangle, follow the instructions to design a plaid and color it.

1. Two plaids are outlined for you. Draw an outline for the third rectangle. Create a systematic design.
2. Center the tracing paper over a rectangle and tape the top in place.
3. On the tracing paper, systematically color each of the horizontal weft sections of the plaid all the way across.
4. Lift the tracing paper and color the vertical warp sections, all the way down.
5. Return the tracing paper to cover the rectangle and see each plaid design.







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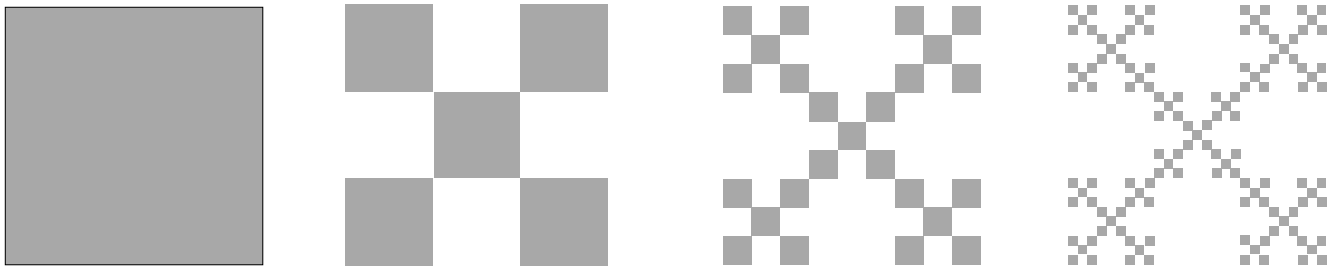


Iteration 0 Iteration 1 Iteration 2 Iteration 3

23. Using the Box Fractals above, complete the table below.

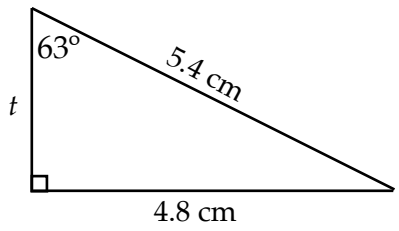
Iteration	Number of Squares (use multiplication)	Number of Squares (use exponent & numeric form)
0		$5^0 = 1$
1		
2		
3		
4		

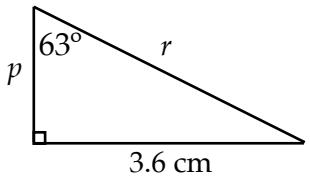
24. Solve these proportions. You may simplify the fraction before cross multiplying.

$\frac{p}{24} = \frac{5}{12}$ $\frac{7}{21} = \frac{r}{3}$ $\frac{1}{2} = \frac{e}{67}$

p = ____ r = ____ e = ____

25. Find p, t, and r. Round to the nearest tenth.





Name: _____

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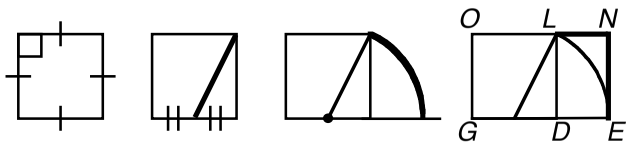
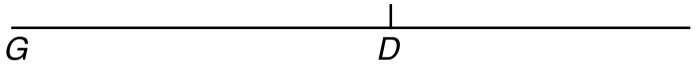
Worksheet 41, Golden Ratio

1. Construct a golden rectangle on the line below. Follow the instructions provided in the figures. Label the rectangles.





2–3. Measure and find the ratios of the longer side to the shorter side for both rectangles. Round to the nearest tenth.

$\frac{\overline{GE}}{\overline{OG}} =$

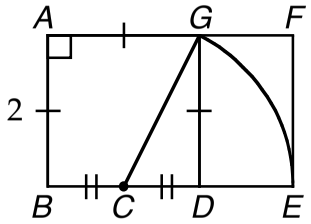
$\frac{\overline{NE}}{\overline{DE}} =$

4. Measure and find the ratios for the line segment $\overline{GE}$.

$\frac{\text{whole}}{\text{longer}} = \frac{\overline{GE}}{\overline{DG}} =$

$\frac{\text{longer}}{\text{shorter}} =$ ___

5. Use the lengths of $\overline{CD}$ and $\overline{DG}$ with the Pythagorean theorem to find $\overline{CG}$. Keep your answer in square root form.



6. Fill in the chart.

Lengths	In square root form	In decimal form to 6 decimal places
$\overline{CE}$		
$\overline{DE}$		
$\overline{BE}$		
$\overline{BE} : \overline{BD}$		
$\overline{BD} : \overline{DE}$		
$\overline{DE} : \overline{BD}$		

CONTINUE READING THE LESSON.

Compute your answers to six decimal places.

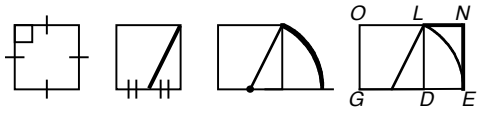
7. What is $\phi + 1$? _____ What is ϕ^2? _____

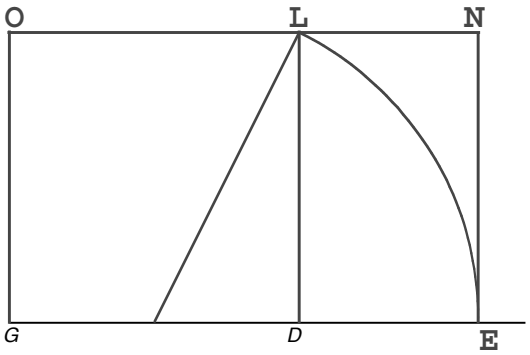
8. What is $\frac{1}{\phi}$? _____ What is $\phi - 1$? _____

9. Does $\phi + 1 = \phi^2$? _____

10. Does $\frac{1}{\phi} = \phi - 1$? _____

1. Construct a golden rectangle on the line below. Follow the instructions provided in the figures. Label the rectangles.





2–3. Measure and find the ratios of the longer side to the shorter side for both rectangles. Round to the nearest tenth.

$$\frac{\overline{GE}}{\overline{OG}} = \frac{8.1}{5} = 1.6$$

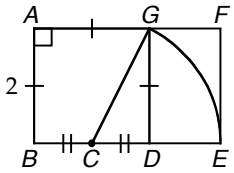
$$\frac{\overline{NE}}{\overline{DE}} = \frac{5}{3.1} = 1.6$$

4. Measure and find the ratios for the line segment $\overline{GE}$.

$$\frac{\text{whole}}{\text{longer}} = \frac{\overline{GE}}{\overline{DG}} = \frac{8.1}{5} = 1.6$$

$$\frac{\text{longer}}{\text{shorter}} = \frac{\overline{DG}}{\overline{DE}} \quad \frac{5}{3.1} = 1.6$$

5. Use the lengths of $\overline{CD}$ and $\overline{DG}$ with the Pythagorean theorem to find $\overline{CG}$. Keep your answer in square root form.



$$c^2 = a^2 + b^2$$
$$c^2 = 1^2 + 2^2$$
$$c^2 = 5$$
$$c = \sqrt{5} = \overline{CG}$$

6. Fill in the chart.

Lengths	In square root form	In decimal form to 6 decimal places
$\overline{CE}$	$\sqrt{5}$	
$\overline{DE}$	$\sqrt{5} - 1$	
$\overline{BE}$	$\sqrt{5} + 1$	
$\overline{BE} : \overline{BD}$	$\frac{\sqrt{5}+1}{2}$	1.618034
$\overline{BD} : \overline{DE}$	$\frac{2}{\sqrt{5}-1}$	1.618034
$\overline{DE} : \overline{BD}$	$\frac{\sqrt{5}-1}{2}$	0.618034

CONTINUE READING THE LESSON.

Compute your answers to six decimal places.

7. What is $\phi + 1$? 2.618034 What is ϕ^2? 2.618034

8. What is $\frac{1}{\phi}$? 0.618034 What is $\phi - 1$? 0.618034

9. Does $\phi + 1 = \phi^2$? yes

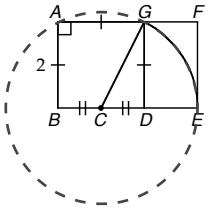
10. Does $\frac{1}{\phi} = \phi - 1$? yes

NOTES: For Problem 1, make sure the student draws a precise square first. If a square is not in place, calculations for 2 through 4 will not be accurate.

If the student is unfamiliar or unsure how to use the mmArc compass, there is a video online at RightStartMath.com/geometry under this lesson number.

When finding the ratios for Problems 2 through 4, watch that the comparisons are longer sides to shorter sides.

Problem 5 can also be calculated as $\overline{CG} = \sqrt{1^2 + 2^2} = \sqrt{5}$, because $c = \sqrt{a^2 + b^2}$, combining steps from the solution shown above. If the student does this, they are doing steps in their heads and is to be commended.



In Problem 6, both $\overline{CG}$ and $\overline{CE}$ are the radius for the arc on the right side of the drawing, therefore, $\overline{CG} = \overline{CE}$. Some students may benefit from continuing the arc to make the circle. This reminds the student that C is the center of the circle, therefore, any lines from the center to the circumference will be the radius, which will all measure the same. See the figure on the right.

To convert the square root form of the answers to decimal form for Problem 6, guide the student to the note in the Extras section of the lesson. When calculating $\overline{BD} : \overline{DE}$, make sure the student realizes 2 is being divided by $(\sqrt{5} - 1)$, not 2 divided by $\sqrt{5}$, which is 0.894, then minus 1 for a total of -0.106. These are two different equations with two very different answers.

DICTIONARY TERMS: golden rectangle, golden ratio, phi, ϕ

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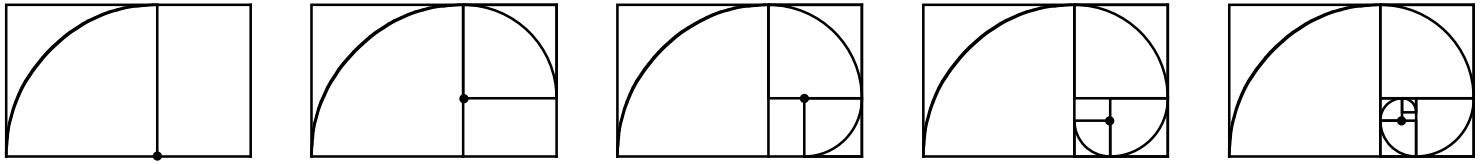
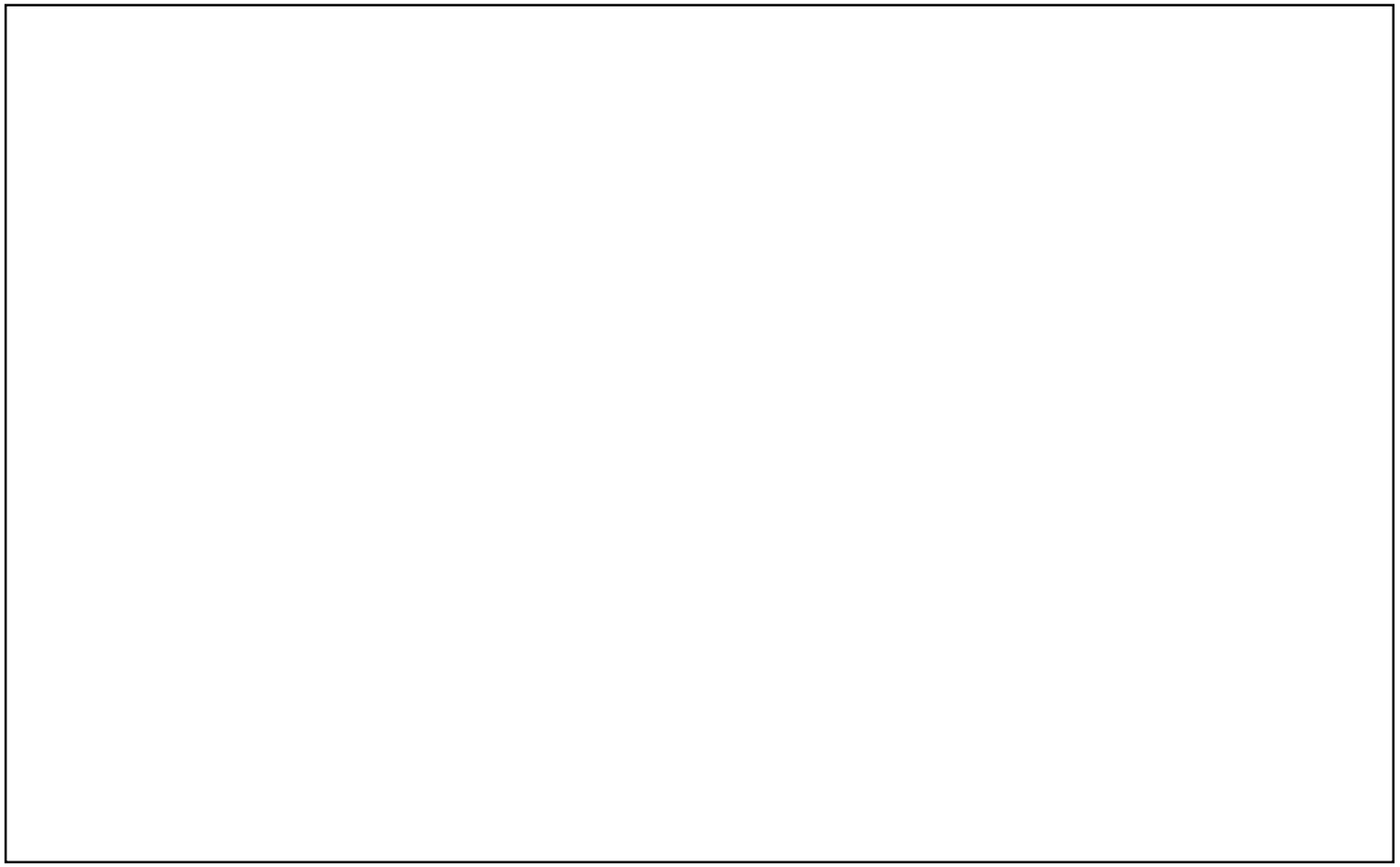
Worksheet 42-1, More Golden Goodies

1. Construct golden rectangles within the golden rectangle by constructing squares. Be as precise as you can as you will need these measurements on the next worksheet. Then draw the spiral.





2–7. Measure the sides of the six largest squares you drew on Worksheet 42-1 to the nearest tenth of a centimeter. Find the ratio of the sides of the largest square to the second largest square. Then find the ratio of the sides of the second largest square to the third largest square. Continue for five ratios.

$\frac{12.3}{7.6} = 1.6$

$\frac{7.6}{4.7} = 1.6$ $\quad$ $\frac{2.9}{1.8} = 1.6$

$\frac{4.7}{2.9} = 1.6$ $\quad$ $\frac{1.8}{1.1} = 1.6$

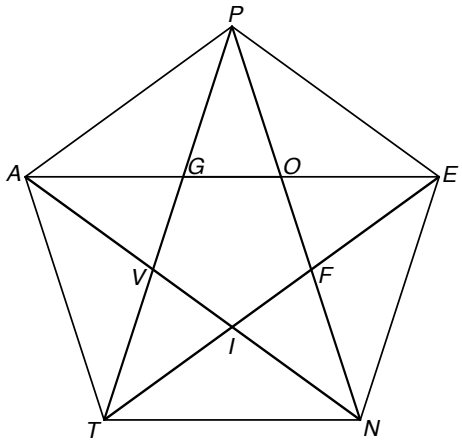
CONTINUE READING THE LESSON.

8–11. Fill in the chart using the regular pentagon above on the right. Find your ratios to 3 decimal places. Use the measurements given on the right.

$\overline{PG} = 6.1803$
$\overline{GO} = 3.8196$
$\overline{AP} = 10.0000$
$\overline{AE} = 16.1803$

Triangle	Longest side/ Shortest side	Ratio	Golden Triangle? (yes or no)
ΔPGO	$\frac{\overline{PG}}{\overline{GO}} = \frac{6.1803}{3.8196}$	1.618	yes
ΔPAE	$\frac{\overline{AE}}{\overline{AP}} = \frac{16.1803}{10.0000}$	1.618	yes
ΔPAG	$\frac{\overline{PA}}{\overline{PG}} = \frac{10.0000}{6.1803}$	1.618	yes
ΔPGE	$\frac{\overline{PE}}{\overline{PG}} = \frac{10.0000}{6.1803}$	1.618	yes

[TRIANGLE SIDES MAY VARY, HOWEVER RATIOS WILL BE THE SAME.]



12. What is $\angle APE$? 108°

13. What is $\angle GPO$? 36°

14. What is $\angle APG$? 36°

15. Circle the triangles that are similar to ΔEOF.

ΔPAG ΔPAT (ΔPTN) (ΔPGE) (ΔPGO)

16. Circle the triangles that are similar to ΔTIN.

(ΔPAG) (ΔPAT) ΔPTN ΔPGE (ΔPTF)

17. How many golden triangles are in the figure above? 35

18. Would you call *APET* a golden trapezoid? Explain. yes
The 3 shorter sides are equal.
The longer:shorter ratio = ϕ.

NOTES: When working on the chart for Problems 8 to 11, some students find it beneficial to identify the triangles, then consider which side is the longest and which is the shortest. Although the chart identifies the line segment as well as the measurements, it is not necessary for the student to write both. They will need to use the measurements given and notice which line segments are congruent in the figure to find the measurement of the line segments not given.

For Question 12, when finding the measurement of $\angle APE$, remind the student that to find the interior angles of a pentagon, divide it into three triangles (Lesson 6). The total angles of the pentagon is 180×3, which is 540º. Therefore, each of the five angles is $540 \div 5$ or 108º.

Question 13 is simpling dividing the angle of the pentagon by the three triangles; $108 \div 3$. Some students may wonder how they would know that the three angles are equal. Because this is a regular pentagon, the interior pentagon, *GOFIV*, drawn with symmetrical lines, is also a regular pentagon. The angles on a regular pentagon are 108º. The vertical angle, $\angle PGA$, will also be 108º. Because ΔPGA is an isosceles triangle, the two other angles will be equal; $180 - 108 = 72$ and $72 \div 2 = 36$º. This means $\angle P$ is $108 - 36 - 36$, which is 36º!

For Question 18, Bailey Hodson, age 13, answered, "Probably. Maybe. Kinda. Yes, because it looks like it has the right amount of proportion." Although that's not a mathematical answer, Bailey was able to recognize the ratios! Her brother, Seth Hodson said, "Yes, because it is made of golden triangles."

DICTIONARY TERMS: golden triangle

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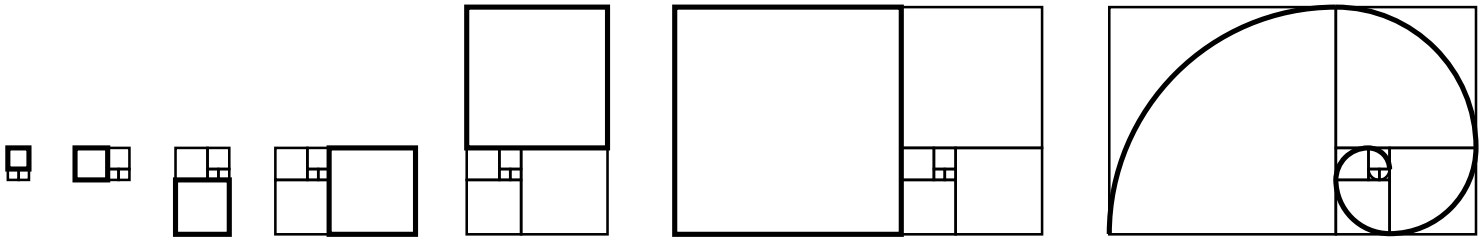
Worksheet 45, Fibonacci Spiral

Construct the Fibonacci spiral as shown in the steps below. Write the Fibonacci number in each square.



Name: _____

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Write the correct term for the following definitions.

1. A set of quantities in some type of order is called? _____

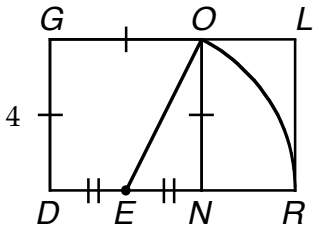
2. The Greek symbol for the golden ratio, 1.618034? _____

3. What is the missing part of the formula for the golden ratio?

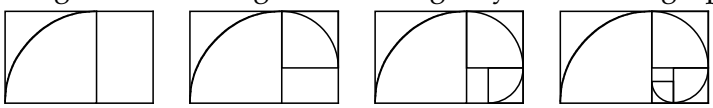
$$\frac{\text{whole}}{\text{longer part}} = \frac{\text{\_\_\_\_\_}}{\text{shorter part}}$$

a. equal part
b. upper part
c. longer part

4. Use the lengths of $\overline{EN}$ and $\overline{NO}$ with the Pythagorean Theorem to find $\overline{EO}$. Keep your answer in square root form. So now, what is the length of $\overline{ER}$?



5. Construct golden rectangles within the golden rectangle by constructing squares and then draw the spiral.



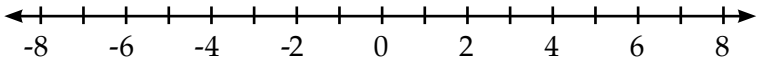
Name: _____

Date: _____

Worksheet 117,
More about Inequalities

1. Write out in words what this inequality means, $4 \leq g \leq 8$ and graph it on the number line.

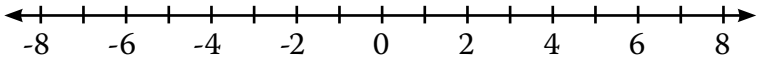
_____



Can g be equal to 8?_____ Can g be equal to 3?_____

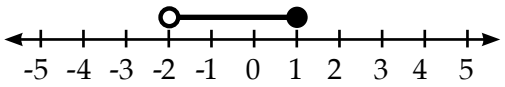
2. Write out in words what this inequality means, $-3 > r \geq -6$ and graph it on the number line.

_____

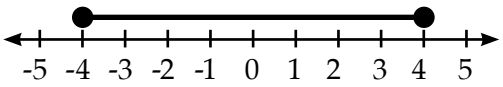


Can r be equal to -3?_____ Can r be equal to -6?_____

3–4. Write inequalities that express what the graphs show.

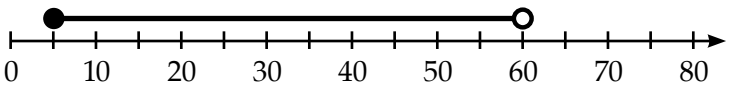


_____



_____

5. The ages, a, for those who pay $10 for Alex's tickets is expressed by inequality, $5 \leq a < 60$. Those under 5 or those 60 or older get free tickets. Write and graph the expression(s) for the ages that get in free.



_____

6. Write an expression for the number of days in a month. _____

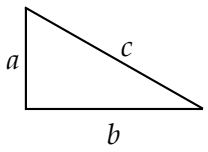
7. On the Celsius scale, at sea level water at 0° can be both frozen or liquid and at 100° can be both liquid or gas. Write an expression for the temperature range that water can be a liquid.

_____

8. On the Fahrenheit scale, water at 32° can be both frozen or liquid and at 212° can be both liquid or gas. Write an expression for the temperature range that water can be a liquid.

_____

9–11. For the right triangle shown, write the correct symbols to make the following expressions true.



$a^2 + b^2$ _____ c^2 $a + b$ _____ c b _____ $c + a$

Lesson 119: Absolute Value

OBJECTIVES:

1. To learn the term *absolute value*
2. To learn the absolute value sign, "| |"
3. To solve equations with absolute values

MATERIALS:

1. Math Dictionary
2. Straightedge
3. Worksheet 119, Absolute Value

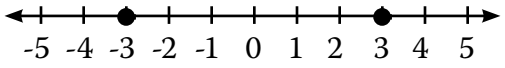
ACTIVITIES:

Introducing absolute value. Absolute value is a fairly simple concept. It is the value of a number or variable without regard to it being positive or negative. The absolute value sign is a pair of vertical lines, one on each side of the number. This sign has been in use since 1841, which is fairly recent for math symbols.

$$|4| = 4$$
$$|-4| = 4$$

The *absolute value* of a number is its distance from 0. This means the absolute value of 0 or any number greater than 0 is unchanged. And the absolute value of any number less than 0 is the number without the negative sign.

Absolute value on a number line. Look at the two points on the number line shown below. Think what their absolute values are before continuing.



$|-3| = 3$ $\qquad$ $|3| = 3$

Worksheet 119, problems 1-5. Do the first five problems, then continue reading.

Solving absolute value equations. Let's start with a very simple example: $|x| = 13$

This means x can be either 13 or -13, making absolute value equations a bit unusual because they have two solutions. Therefore, $x = 13$ **or** $x = -13$.

Now try: $|r - 4| = 1$

Remove the absolute value signs and write the two equations, one with a positive value and a second one with its negative value.

$$r - 4 = 1 \qquad -(r - 4) = 1$$

Solving the positive value equation is straightforward. Add 4 to each side of the equation:

$$r - 4 = 1$$
$$r - 4 + \mathbf{4} = 1 + \mathbf{4}$$
$$r = 5$$

Substitute this value into the original equation. Does it check?

EXTRAS:

Another way to look at this is as follows. For the positive value, you could think: $|x| = 13$
$x = 13$.

For the negative value, you could think: $|x| = 13$
$-x = 13$
which is the same as $x = -13$.

If you are curious how you went from $-x = 13$ to $x = -13$, remember what happens when you multiply both sides of an equation by -1.

ACTIVITIES:

Solving the negative value equation can be done two ways. You will quickly find the way that works best for your thinking, then almost do it intuitively.

The negative equation for $|r - 4| = 1$ is $-(r - 4) = 1$. First, use the distributive property to remove the parentheses:

$-r - -4 = 1$, which is the same as $-r + 4 = 1$

Next subtract 4 from both sides:

$-r + 4 - \mathbf{4} = 1 - \mathbf{4}$, so $-r = -3$

Multiply both sides by -1 and $r = 3$. Again, substitute this second value into the original equation mentally. Does it check?

A second way to solve the negative value equation of $-(r - 4) = 1$ is to first multiply both sides of the equation by -1:

$(r - 4) = -1$

Now add 4 to both sides of the equation:

$r - 4 + \mathbf{4} = -1 + \mathbf{4}$
$r = 3$

This is the same answer that the first method determined!

Worksheet 119. Complete the worksheet.

Today's game. Play Super Corners™. The instructions for this game are below.

EXTRAS:

Refer back to Lesson 107 if you need a reminder on subtracting negative numbers.

Refer back to Lesson 108 if you need a reminder on multiplying negative numbers by negative numbers.

There is a third approach to solve $|r - 4| = 1$. You know that $r - 4$ will be 1 or -1 because the equation tells us that the absolute value of $r - 4$ is 1. This allows the two values to be quickly written as $r - 4 = 1$ and $r - 4 = -1$ producing the answers of 5 and 3.

Super Corners™

Object of the game. To have the highest score. Try to beat your previous scores!

Cards. The 50 Corners cards.

Number of players. One.

Deal. Place the deck of cards face down on the table off to one side. Take five cards and place them face up in front of you. Take another card and place it face up in the center of the table. When a card is played, take another card so that five are always face up to play.

Play. Combine the cards by matching colors and sums equaling multiples of five, 5, 10, 15, or 20. No scoreless matching is permitted. Cards can be played anywhere without regard to the last card played.

Scoring. The scoring is what makes this game different. Cards placed with only one side connected will score that sum.

Cards placed with two sides connected, a corner, will get the total of the two sums multiplied by 2. Cards placed with three sides connected, a bay, will get the cards' sum multiplied by 3. If you are lucky enough to fill a window with all four sides joined, the total sum is multiplied by 4!

The game is over when all the cards are played.

Variation 1. Use the multiples of three.

Variation 2. Use the multiples of four.

Variation 3. Play the game with the Android or Apple app.

Name: _____

Date: _____

10. Write the relationship symbols to make the following expressions true: <, ≤, =, ≥, or >.

1 cm _____ 1 m 100 mm _____ 1 dm 1 dm _____ 1 cm 28 days _____ 1 month

11–13. Find both solutions for the following equations.

$|t + 4| = 9$

$|x + 2| = 2(9 - 2)^2$

$|n - 5| = 3^2 - 7$

14–17. Fill in the table below. Round your calculations to two decimal points where necessary.

	Data	**Mode**	**Median**	**Arithmetic Mean**	**Geometric Mean**
a.	6, 3, 7, 3, 8				
b.	2, 5, 2, 3, 17, 11				
c.	24, 87, 83				
d.	97, 83, 72, 97				

Given a deck of 50 cards with the numbers 1 to 50, answer the following questions.

18. What is the probability you will choose a number that is a multiple of 5? _____

19. What is the probability you will select a 12? _____

20. What is the probability you will choose numbers that are odd? _____

21. What is the probability you will choose a number that is a multiple of 25? _____

22. What is the probability you will choose a double digit number? _____

23. What is the probability you will choose a zero? _____

Name: _____

Date: _____

Write the correct term for the following definitions.

88. What is the name for the solids having more than one regular polygon type and identical vertices?

_____

89. What is the name for a polyhedron that resembles a star? _____

Write the correct symbols.

90. Greater than or equal to: _____

91. Less than or equal to: _____

92–96. Fill in the table below. Round your calculations to two decimal points where necessary.

	Data	**Mode**	**Median**	**Arithmetic Mean**	**Geometric Mean**
a.	2, 5, 32				
b.	3, 31, 32, 19				
c.	2, 9, 17, 58, 17				
d.	6, 8, 8, 10, 8				
e.	23, 6, 9, 11, 9				

Base your answers to the following questions assuming you have a deck of 10 cards with the numbers 1 to 10.

97. What is the probability you will choose a number that is a multiple of 10? _____

98. What is the probability you will select an 8? _____

99. What is the probability you will choose a number that is even? _____

100. What is the probability you will choose a number that is a multiple of 5? _____

10. Write the relationship symbols to make the following expressions true: <, ≤, =, ≥, or >.

1 cm __<__ 1 m 100 mm __=__ 1 dm 1 dm __>__ 1 cm 28 days __≤__ 1 month

11–13. Find both solutions for the following equations.

$|t + 4| = 9$

```
t + 4 = 9          t + 4 = -9
    t = 5              t = -13
```

$|x + 2| = 2(9 - 2)^2$

```
|x + 2| = 98
 x + 2 = 98        x + 2 = -98
     x = 96            x = -100
```

$|n - 5| = 3^2 - 7$

```
|n - 5| = 2
 n - 5 = 2         n - 5 = -2
     n = 7             n = 3
```

14–17. Fill in the table below. Round your calculations to two decimal points where necessary.

	Data	Mode	Median	Arithmetic Mean	Geometric Mean
a.	6, 3, 7, 3, 8	3	6	5.40	4.97
b.	2, 5, 2, 3, 17, 11	2	4	6.67	4.73
c.	24, 87, 83	---	83	64.67	55.75
d.	97, 83, 72, 97	97	90	87.25	86.59

Given a deck of 50 cards with the numbers 1 to 50, answer the following questions.

18. What is the probability you will choose a number that is a multiple of 5? __20%__

19. What is the probability you will select a 12? __2%__

20. What is the probability you will choose numbers that are odd? __50%__

21. What is the probability you will choose a number that is a multiple of 25? __4%__

22. What is the probability you will choose a double digit number? __82%__

23. What is the probability you will choose a zero? __0%__

NOTES: For Question 10, some students may need to write 10 mm = 1 cm and 10 cm = 1 dm. Referencing a ruler may help some students.

For Problems 11 to 13, some students find it useful to simplify before they split into two equations, then solve for both answers. Because there are multiple ways to solve the negative equations, the solutions just show basic steps. Your student may have steps preceding or differing from those shown. If needed, remind the student to "plug in" their two answers into the equation to verify accuracy.

For Problems 18 to 23, many student will start with a fraction, then convert to percentages. A common mistake is to forget that the count is out of 50, not out of 100 which is needed for percentages. The fractions are as follows:

18. $\frac{10}{50}$ or $\frac{20}{100}$ or 20%
19. $\frac{1}{50}$ or $\frac{2}{100}$ or 2%
20. $\frac{25}{50}$ or $\frac{50}{100}$ or 50%
21. $\frac{2}{50}$ or $\frac{4}{100}$ or 4%
22. $\frac{41}{50}$ or $\frac{82}{100}$ or 82%
23. $\frac{0}{50}$ or $\frac{0}{100}$ or 0%

DICTIONARY TERMS: none

Write the correct term for the following definitions.

83. What is the value of a number without regard to it being positive or negative? absolute value

84. What is the mathematical word for most used number in a data set? mode

Write the definitions for the following terms.

85. Mean: the mathematical word for average

86. Median: the middle number when numbers are put in order

87–90. Fill in the table below. Round your calculations to two decimal points where necessary.

				Estimated		Calculated	
	Data	Mode	Median	Arithmetic Mean	Geometric Mean	Arithmetic Mean	Geometric Mean
a.	99, 66, 77, 88	---	82.5	[ANSWERS WILL VARY]		82.5	81.57
b.	99, 66, 77, 88, 66	66	77	[ANSWERS WILL VARY]		79.2	78.19
c.	99, 66, 77, 88, 99	99	88	[ANSWERS WILL VARY]		85.8	84.79
d.	267, 275, 275	275	275	[ANSWERS WILL VARY]		272.33	272.31

Base your answers to the following questions assuming you have a deck of 20 cards with the numbers 1 to 20.

91. What is the probability you will choose a number that is a multiple of 10? 10%

92. What is the probability you will select a 19? 5%

93. What is the probability you will choose numbers that are odd? 50%

94. What is the probability you will choose a number that is a multiple of 5? 20%

NOTES: For Problems 91 to 94, many student will start with a fraction, then convert to percentages. A common mistake is to forget that the count is out of 20, not out of 100 which is needed for percentages. The fractions are as follows:

91. $\frac{2}{20}$ or $\frac{10}{100}$ or 10%
92. $\frac{1}{20}$ or $\frac{5}{100}$ or 5%
93. $\frac{10}{20}$ or $\frac{50}{100}$ or 50%
94. $\frac{4}{20}$ or $\frac{20}{100}$ or 20%

DICTIONARY TERMS: none

Name: _____ *Worksheet 125-8, Assessment 3*

Date: _____

Write the correct term for the following definitions.

83. What is the value of a number without regard to it being positive or negative? _____

84. What is the mathematical word for the most used number in a data set? _____

Write the definitions for the following terms.

85. Mean: _____

86. Median: _____

87–90. Fill in the table below. Round your calculations to two decimal points where necessary.

				Estimated		**Calculated**	
	Data	**Mode**	**Median**	**Arithmetic Mean**	**Geometric Mean**	**Arithmetic Mean**	**Geometric Mean**
a.	99, 66, 77, 88						
b.	99, 66, 77, 88, 66						
c.	99, 66, 77, 88, 99						
d.	267, 275, 275						

Base your answers to the following questions assuming you have a deck of 20 cards with the numbers 1 to 20.

91. What is the probability you will choose a number that is a multiple of 10? _____

92. What is the probability you will select a 19? _____

93. What is the probability you will choose numbers that are odd? _____

94. What is the probability you will choose a number that is a multiple of 5? _____