Name: Key
Date:_____

Watkins
6th Grade

Quiz 8.1-8.7

Learning Target Report Card	Learning Target Common Core	4	3	2	1
The Number System					
Compares, orders and converts fractions, decimals and percents **Problem Numbers: 1-3, 6-11**	**CC.6.NS.7** Understand ordering and of rational numbers.	NA	Regularly and accurately identifies rational and irrational numbers.	Identifies rational and irrational numbers, but with some errors.	Demonstrates difficulty when identifying rational and irrational numbers.
Demonstrates competency in all operations of rational numbers **Problem Numbers:** 1-5, 12-16	**CC.7.NS.1** Adding and subtracting rational numbers **CC.7.NS.2** Multiplication and division of rational numbers	NA	Regularly and accurately adds, subtracts, multiplies, and divides positive and negative integers, decimals and fractions.	Adds, subtracts, multiplies, and divides positive and negative integers, decimals and fractions with some mistakes.	Adds, subtracts, multiplies, and divides positive and negative integers, decimals and with many mistakes.
Measurement					
Calculates perimeter, area, volume, and surface area **Problem Numbers:** 4-5, 14-16, **17	**CC.6.G.1** Find the area of right triangles, other triangles, special quadrilaterals, and polygons	Independently and consistently uses formulas to calculate the area and perimeter of composite figures that include circles or parts of circles.	Knows the formulas for perimeter, area, volume and surface area. Regularly and accurately uses the formulas to solve simple and real world problems with few mistakes.	Solves for perimeter and area correctly, but inconsistently uses the formulas in doing so, and/or has several mistakes in either setting up the problem or solving it.	Often inaccurately uses formulas to solve for the perimeter, area, volume or surface area.
Expressions and Equations					
Writes/solves for unknowns in one-variable equations **Problem Numbers: 12-13**	**CC.6.EE.5** Understand solving an equation or inequality as a process of answering a question **CC.6.EE.6** Use variables to represent numbers and write expressions	NA	Regularly and accurately solves for the Pythagorean Theorem using the correct equation.	Solves for the Pythagorean Theorem using the correct equation, but with some errors.	Demonstrates difficulty when using the Pythagorean Theorem to solve for a missing leg or hypotenuse of a right triangle.
Process standards					
Uses problem solving strategies **Problem Numbers:** All	**Process Standard 1** Make sense of problems and persevere in solving them	Independently and consistently uses several problem-solving strategies. There is work evident on ALL problems, even when mental math is used.	Regularly with prompting the student uses problem-solving strategies. There is work evident on ALL problems, even when mental math is used.	Most of the time uses problem-solving strategies. There is work evident on most problems, even when mental math is used.	Rarely uses problem-solving strategies. There is work evident on few to no problems.

Learning Target Report Card	Learning Target Common Core	4	3	2	1
Communicates clearly and makes connections **Problem Numbers:** All	**Mathematical Practice 3**. Construct viable arguments and critique the reasoning of others	Independently and consistently makes connections between mathematic concepts and is able to communicate those connections in a variety of ways.	Makes connections between mathematic concepts and is able to communicate those connections in a variety of ways.	Makes some, but not all connections between mathematic concepts and is able to communicate those connections in at least two ways.	Is not making connections OR Makes some, but not all connections between mathematic concepts and is able to communicate those connections in one way.

Learner Traits				
Produces legible work	4: NA	3	2	1
Accepts directions and follows rules.	4: NA	3	2	1

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Square Roots: Estimate each square root to the nearest integer. To demonstrate proficiency in this you must write the inequalities you used to estimate.

1. $\sqrt{35}$

$\sqrt{25} < \sqrt{35} < \sqrt{36}$
$5 < \sqrt{35} < 6$
$\sqrt{35} \approx 6$

2. $\sqrt{197}$

$\sqrt{196} < \sqrt{197} < \sqrt{225}$
$14 < \sqrt{197} < 15$
$\sqrt{197} \approx 14$

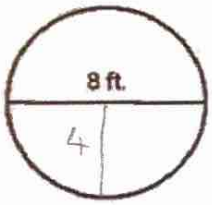
3. $\sqrt{63}$

$\sqrt{49} < \sqrt{63} < \sqrt{64}$
$7 < \sqrt{63} < 8$
$\sqrt{63} \approx 8$

Circumference and Area of a Circle: Find the **exact** and **approximate circumference** and **area** of each circle. Round your approximate answers to the nearest **tenth.**

4. Circumference (exact) 8π ft Area (exact) 16π ft^2

Circumference (approx) 25.1 ft Area (approx) 50.3 ft^2

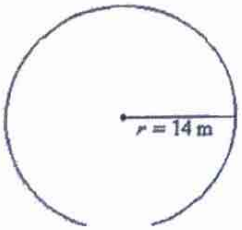


$C = \pi d$
$C = \pi 8$

$A = \pi r^2$
$A = \pi \cdot 4^2$

5. Circumference (exact) 28π m Area (exact) 196π m^2

Circumference (approx) 88.0 m Area (approx) 615.8 m^2



$C = 2\pi r$
$C = 2\pi 14$
$C \approx 87.96$

$A = \pi r^2$
$A = \pi 14^2$

Rational and Irrational Numbers Identify each number as rational or irrational

6. $\sqrt{100} = 10$ Rational

7. $3\frac{4}{5}$ Rational

8. $-3.\overline{24}$ Rational

9. 2.114 Rational

10. $\sqrt{2}$ Irrational

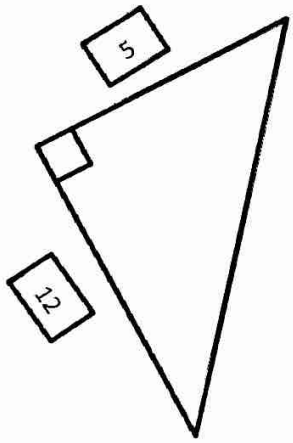
11. Describe the qualities that irrational numbers have. (What is the definition of an irrational number?)

Irrational numbers are numbers that cannot be written as the ratio of 2 integers. They have non-terminating, non-repeating decimals.

Pythagorean Theorem: Find the missing side length. You **do not** have to give me an exact answer

- **Include Units** in your answer

12.



Show Work!

$a^2 + b^2 = c^2$

$5^2 + 12^2 = c^2$

$25 + 144 = c^2$

$169 = c^2$

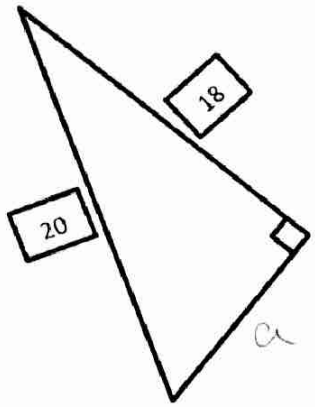
$\sqrt{169} = \sqrt{c^2}$

$13 = c$

Explain how you know your answer is correct

The hypotenuse is 13 units long. I used the pythagorean theorem and substituted 5 and 12 for the legs (a and b) I followed order of operation and squared 5 and 12. Their sum was 169. To solve for the hypotenuse I had to take the square root of 169 and the square root of c^2

13.



Show Work!

$a^2 + b^2 = c^2$

$a^2 + 18^2 = 20^2$

$a^2 + 324 = 400$

$-324 \quad -324$

$a^2 = 76$

$\sqrt{a^2} = \sqrt{76}$

$a = \sqrt{76} \approx 8.7$

Check

$8.7^2 + 18^2 = 20^2$

$75.69 + 324 = 400$

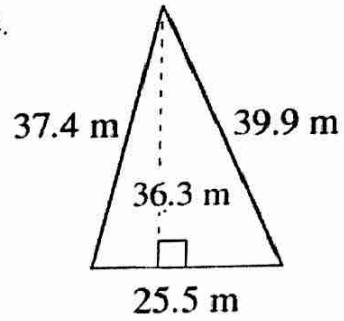
$399.69 \approx 400$

It is not exact because of rounding

Explain how you know your answer is correct

- I used the Pythagorean theorem to solve for the missing leg of the right triangle.
- I substituted 18 for b and 20 for the hypotenuse (c)
- I squared both numbers
- I isolated a^2 by subtracting 324 from both sides
- To find a I took the square root of a^2 and 76. This is the inverse operation of squaring.
- I found that the missing side was about 8.7 units & checked my answer by substituting all values into the Pythagorean theorem again

14.



Show Work!

$A = \frac{1}{2}bh$

$A = \frac{1}{2} \cdot 25.5 \cdot 36.3$

$= 12.75 \cdot 36.3$

$= 462.825 m^2$

$P = 5 + 5 + 5$

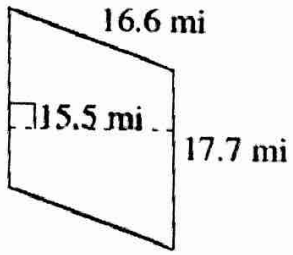
$P = 37.4 + 39.9 + 25.5$

$= 77.3 + 25.5$

$= 102.8$

Area: $462.825 m^2$ Perimeter: $102.8 m$

15.



Show Work!

$A = bh$

$A = 17.7 \cdot 15.5$

$= 274.35$

$P = 2(l+w)$

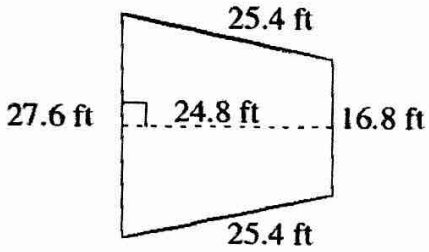
$= 2(16.6+17.7)$

$= 2(34.3)$

$= 68.6$

Area: $274.35 mi^2$ Perimeter: $68.6 mi$

16.



Show Work!

$A = \frac{1}{2}h(b_1+b_2)$

$A = \frac{1}{2} \cdot 24.8(16.8+27.6)$

$= \frac{1}{2} \cdot 24.8 \cdot 44.4$

$= 12.4 \cdot 44.4$

$= 550.56$

$P = S+S+S+S$

$P = 25.4+16.8+25.4+27.6$

$P = 42.2+25.4+27.6$

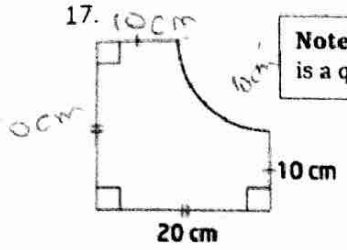
$= 67.6+27.6$

$= 95.2$

Area: $550.56 ft^2$ Perimeter: $95.2 ft$

Level 4: Calculate the perimeter and area of the figure. Round your answer to the nearest hundredth.

17.



Note: the cut-out is a quarter circle

Show Work!

$A = 20 \cdot 20 - \frac{1}{4} \cdot \pi 10^2$

$= 400 - \frac{100\pi}{4}$

$= 400 - 25\pi$

$= 321.4601 \text{ cm}^2$

$P = 10 \cdot 2 + 20 \cdot 2 + \frac{1}{4}\pi \cdot 20$

$= 20 + 40 + 5\pi$

$= 60 + 5\pi$

$= 75.7079$

Area: 321.46 cm^2 Perimeter: 75.71 cm

Explain how you know your answer is correct

- For the area I found the area of the whole square and then subtracted the area of the quarter circle (or $\frac{1}{4}$ of the area of the circle with a radius of 10)
- For the perimeter I found the sum of all the straight sides. To find the length of the curve I found what $\frac{1}{4}$ of the circumference of the circle was. I then found the sum of all the sides and the curve.