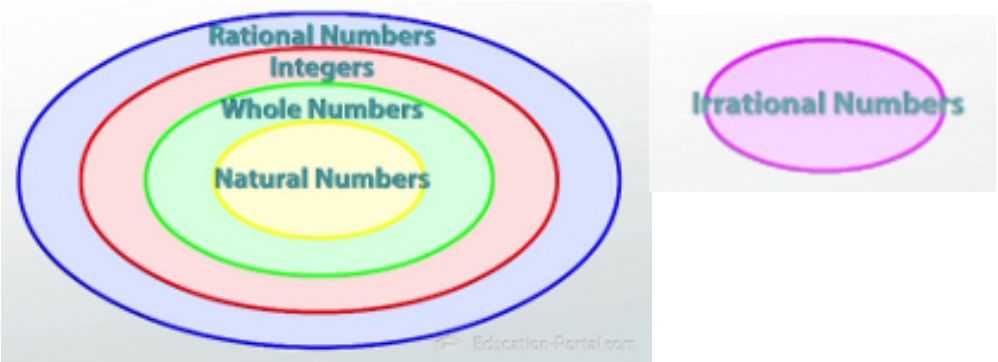
1.3 Real Numbers

Name: _____

Classifications of Numbers

REAL NUMBERS



Natural Numbers =

Whole Numbers = Natural numbers +

Integers = Whole numbers +

Rational Numbers = Integers +

Irrational Numbers =

Rational Numbers		versus	Irrational Numbers	
$-\frac{1}{8}$	$\frac{16}{11}$		$\sqrt{2}$	π

Label the following

5	Whole	Integer	Rational	Irrational
0.6	Whole	Integer	Rational	Irrational
-24	Whole	Integer	Rational	Irrational
$\frac{9}{7}$	Whole	Integer	Rational	Irrational
$\sqrt{11}$	Whole	Integer	Rational	Irrational
$2.8\overline{23}$	Whole	Integer	Rational	Irrational
$2\frac{2}{3}$	Whole	Integer	Rational	Irrational

Convert mixed numbers into fractions.

$2\frac{2}{3}$ $\qquad$ $-3\frac{4}{5}$

Absolute Value =

Simplify the absolute value expressions.

$|-8|$ $\qquad$ $|9|$ $\qquad$ $\left|-2\frac{3}{4}\right|$ $\qquad$ $|12-7|$ $\qquad$ $-\left|\frac{5}{3}\right|$

Put in order from least to greatest.

Graph on the number line.

$3.6, |-3.2|, \frac{13}{4}, 3\frac{3}{8}$

$-1, -\frac{4}{3}, -1.2, -\sqrt{7}$

SUMMARY:

Now, summarize your notes here!

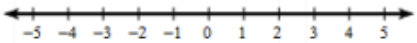
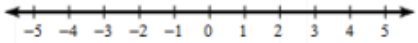
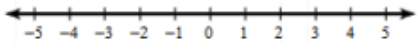
1.3 Real Numbers

PRACTICE

Circle the number set or number sets in which the number lies.		
1. 4.5 Whole Integer Rational Irrational	2. $\sqrt{64}$ Whole Integer Rational Irrational	3. $\frac{15}{7}$ Whole Integer Rational Irrational
4. $\lvert -18 \rvert$ Whole Integer Rational Irrational	5. 8.3145454545 ... Whole Integer Rational Irrational	6. $\sqrt{7}$ Whole Integer Rational Irrational
7. $3.671\overline{2}$ Whole Integer Rational Irrational	8. 7.5182386 ... Whole Integer Rational Irrational	9. $(-5)^2$ Whole Integer Rational Irrational
10. $-\lvert 4 \rvert$ Whole Integer Rational Irrational	11. π Whole Integer Rational Irrational	12. $5\frac{3}{4}$ Whole Integer Rational Irrational

Convert the mixed number into an improper fraction.			
13. $6\frac{1}{5}$	14. $1\frac{2}{7}$	15. $-4\frac{3}{4}$	16. $-5\frac{1}{2}$
Express the following as decimals rounded to the nearest thousandth.			
17. $\frac{13}{4}$	18. $5\frac{5}{6}$	19. $\sqrt{67}$	20. $\sqrt{12}$

Plot each number on the number line then fill in the circle with > , < , or = .

21. $\frac{9}{4}$ ◯ 2.5	22. $-3\frac{2}{3}$ ◯ $-\sqrt{17}$	21. $\frac{7}{5}$ ◯ $\lvert -2 \rvert$
		

Simplify each absolute value expression.			
24. $\lvert -7 \rvert$	25. $\lvert 24 \rvert$	26. $-\left\lvert \frac{2}{3} \right\rvert$	27. $-\lvert -4.5 \rvert$

Order the numbers from least to greatest.	
28. $1.6, \lvert -1 \rvert, \frac{5}{3}, \sqrt{4}$	29. $-\frac{2}{5}, -0.6, -1, -1\frac{1}{3}$
30. $\sqrt{2}, 1.66, \frac{4}{3}, \lvert -1.6 \rvert$	31. $-5.15, -5.2, -\frac{16}{3}, -\sqrt{26}$

True or False?	
32. All whole numbers are rational numbers.	T or F
33. All integers are natural numbers.	T or F
34. All integers are irrational numbers.	T or F

35. Fill in the blank

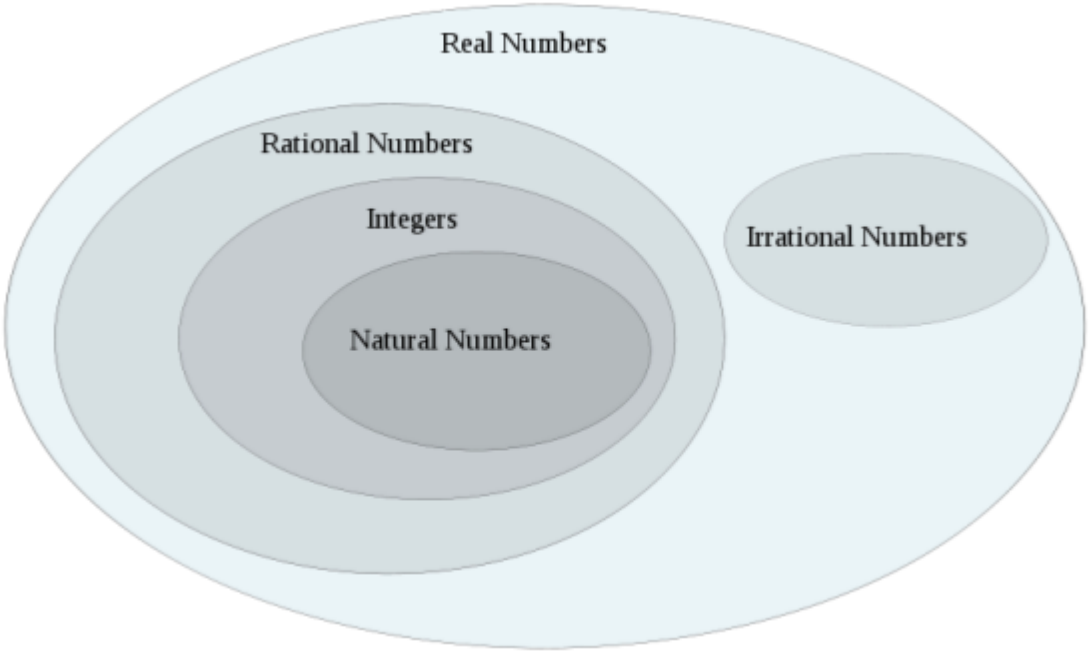
<u>Types of decimals</u> - Rational or Irrational?

- Decimals that end are _____
- Decimals that don't end with a pattern are _____
- Decimals that don't end with no pattern (like π) are _____

36. Using the following set of numbers:

$$\left\{ \tfrac{1}{2},\ 8,\ \sqrt{6},\ \pi,\ 0.29452,\ -3,\ 0.3,\ 0,\ 2.6734\ldots,\ 4\tfrac{2}{3},\ \sqrt{25},\ 4.363636\ldots \right\}$$

- Place each element in the appropriate subset.
- Some elements may fit in more than one or even multiply spots.



Skillz Review

TRUE or FALSE.	
1. $\lvert 8(-2)\rvert = \lvert 8\rvert \cdot \lvert -2\rvert$	2. $\lvert 8 + (-2)\rvert = \lvert 8\rvert + \lvert -2\rvert$
3. $\left\lvert \frac{8}{-2} \right\rvert = \frac{\lvert 8\rvert}{\lvert -2\rvert}$	4. $\lvert 8 - (-2)\rvert = \lvert 8\rvert - \lvert -2\rvert$

5. x less than eight is greater then five.

6. The quotient of x and two is 15.

1.3 Real Numbers

APPLICATION

Classify these numbers as rational or irrational and give your reason.

1. a. 7329
   b. $\sqrt{4}$
2. a. 0.95832758941…
   b. 0.5287593593593

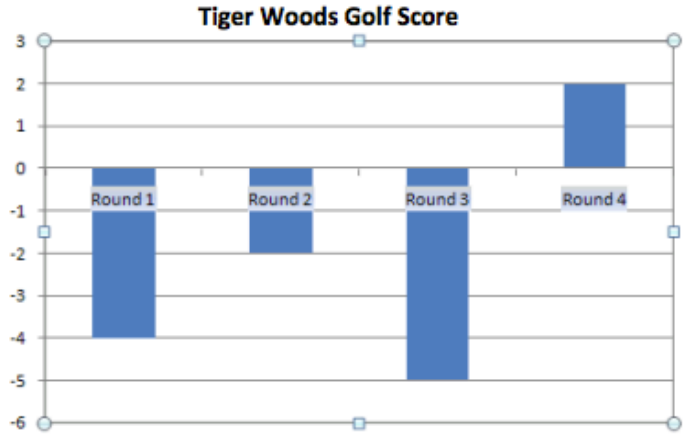
3. Tiger Woods shot four rounds of golf. To win golf you must have the lowest score possible. Your score is determined by how far from par you are.

   a. Which round did Tiger score the lowest?

   b. Which round did Tiger do the worst in?

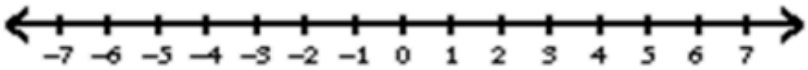
   c. Tiger's scores fall in which number set?

   Whole Integers Rational Irrational



4. Here is probably the coolest math puzzle that you will do today.
   Rules: Plot on the number line. Don't forget to label your points to unlock the hidden phrase.

U	M	H	I	A	V	L	T
-2	3.75	$\sqrt{50}$	-6.5	$\lvert -4 \rvert$	0	$-\frac{11}{4}$	$\frac{19}{3}$



5. a. $\sqrt{8}$ is between what two whole numbers? Which whole number is it closer to? Explain why?

   b. $\sqrt{27}$ is between what two whole numbers? Which whole number is it closer to? Explain why?

For 6 and 7, circle the correct number set, then EXPLAIN why you chose it!

6. Mr. Brust is going to write a function to represent how much money is made from selling t-shirts. The domain of this function is the number of shirts sold. What is the most appropriate set to use for the domain?

   Whole Integers Rational Irrational

   Why?

7. Mr. Kelly is going to write a function to represent how much money he would spend on filling up his car with gas. What is the most appropriate set to use for the domain?

   Whole Integers Rational Irrational

   Why?

8. List the set of whole numbers less than 4.

9. List the set of integers such that $-3 < x < 5$.

10. Give an example of a number that would satisfy these rules.

    a number that is: real, rational, whole, an integer, and natural

    a number that is: real and irrational

    a number that is: real, rational, an integer