Name: _____ Date: _____ Hour: ____Alg 1__

Unit 5 Day 21: Review

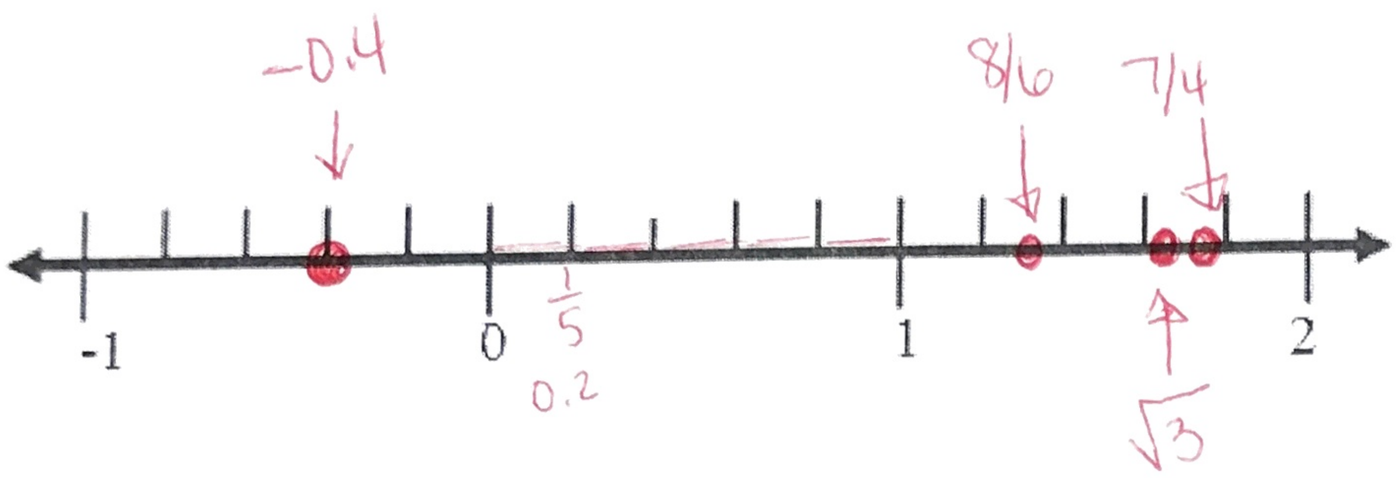
Focus Question: Am I ready for my test?

+ or − whole # → Z counting → N

A. Give the **best** classification for each number.(irrational, rational, integer, natural)

1. $\frac{10}{3}$ Q
2. $\sqrt{25}=5$ N
3. $\frac{-6}{3}=-2$ Z
4. $\sqrt{104}$ Q'
5. $4.\overline{32}$ Q

B. Place each number on the number line



$\approx 1.\overline{6}$

$\frac{7}{4}$ $1\frac{3}{4}$ or 1.75	$\sqrt{3}$ $\sqrt{1}$ $\sqrt{4}$
$\frac{8}{6}$ $1\frac{2}{6}$ or $1.\overline{3}$	-0.4

C. Give the BEST rational equivalent to the decimal.

$-6\frac{12}{100-1}$

1. $-6.\overline{12}$ $-6\frac{12}{99}$ $-6\frac{4}{33} \rightarrow \frac{198}{33}+\frac{4}{33} \rightarrow \boxed{-\frac{202}{33}}$

2. $0.\overline{8}$ $\frac{8}{10-1}=\boxed{\frac{8}{9}}$

*3. -5.4 $-5\frac{4}{10}$ $-5\frac{2}{5}$ $\frac{25}{5}+\frac{2}{5}$ $\boxed{-\frac{27}{5}}$

D. Simplify each of the following

1. $\frac{\sqrt{20}}{\sqrt{2}}=\sqrt{\frac{20}{2}}$ $=\sqrt{10}$

2. $\frac{3\sqrt{5}}{\sqrt{10}}$ $\frac{3\sqrt{1}}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}}=\boxed{\frac{3\sqrt{2}}{2}}$

3. $(4+2\sqrt{6})-(2+\sqrt{54})$ $4-2+2\sqrt{6}-\sqrt{54}$ $2+2\sqrt{6}-3\sqrt{6}$ $\boxed{2-\sqrt{6}}$

$\sqrt{54}$ $\sqrt{9\cdot 6}$ $3\sqrt{6}$

1. $(x^2+3x+4)(2x^3-5)$

5. $(6x^3+2x+1)-(2x^2+5x+2)$ $6x^3-2x^2-3x-1$

C. Solve the following

1. $3x^2+24=171$

$-24 \quad -24$

$\frac{3x^2}{3}=\frac{147}{3}$

$\sqrt{x^2}=\sqrt{49}$

$\boxed{x=\pm 7}$

PEMDAS

2. $-24=-5m^2-14$

$+14 \quad +14$

$\frac{-10}{-5}=\frac{-5m^2}{-5}$

$\sqrt{2}=\sqrt{m^2}$

$\boxed{m=\sqrt{2}}$

D. Tell under which operations each set is NOT closed. Provide an example that proves it is not closed.

Naturals are not closed under Subtract And Division.
$1-2=-1$ $\notin -1$ is not $\mathbb{N}$ $\quad 1\div 2=\frac{1}{2}$ $\notin \frac{1}{2}$ is not $\mathbb{N}$

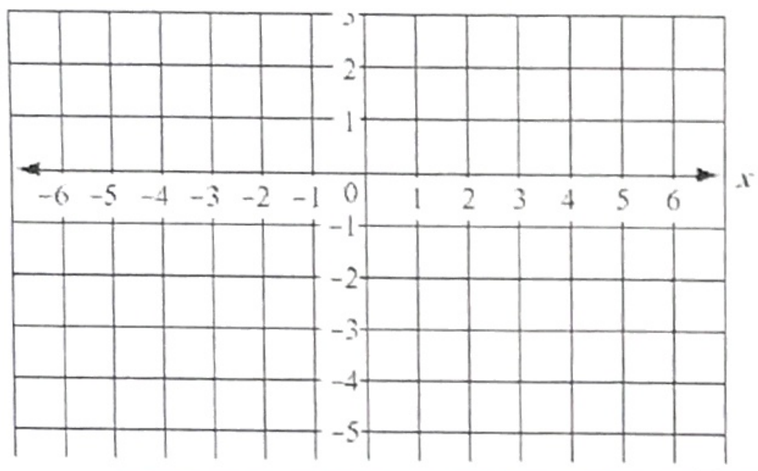
Integers (and Polynomials) are not closed under Division $-3\div 2=\frac{-3}{2}$.
$\notin \frac{-3}{2}$ is not $\mathbb{Z}$

Rationals are not closed under N/A They are closed under. EVERYTHING

Irrationals are not closed under Add Subt. Mult. Division.
$-\sqrt{10}+\sqrt{10}=0$ $\sqrt{6}-\sqrt{6}=0$ $\sqrt{5}\cdot\sqrt{5}=5$ $\frac{2\sqrt{7}}{\sqrt{7}}=2$
$\uparrow$ not $\mathbb{Q}'$ $\quad\uparrow$ not $\mathbb{Q}'$ $\quad\uparrow$ not $\mathbb{Q}'$ $\quad\uparrow$ not $\mathbb{Q}'$

E. Find the distance between the given points.

1. (-6, 2) and (3, -4)



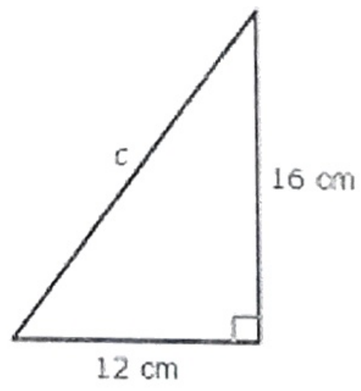
$d=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$
$d=\sqrt{(3--6)^2+(-4-2)^2}$
$d=\sqrt{(9)^2+(-6)^2}$
$d=\sqrt{81+36}$ $\quad d=\sqrt{117}$ units

2. (-12, 10) and (-8, 20)

$d=\sqrt{(-12--8)^2+(10-20)^2}$
$d=\sqrt{(-4)^2+(-10)^2}$
$d=\sqrt{16+100}$
$d=\sqrt{116}$
$=\sqrt{4\cdot 29}$
$d=2\sqrt{29}$ units

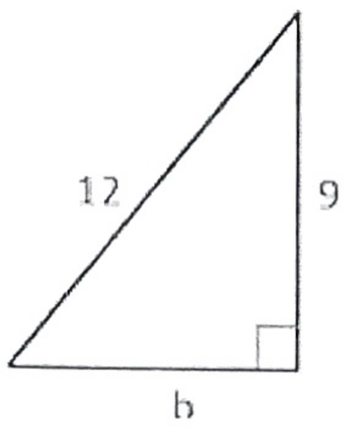
F. Use the Pythagorean Theorem.

1.



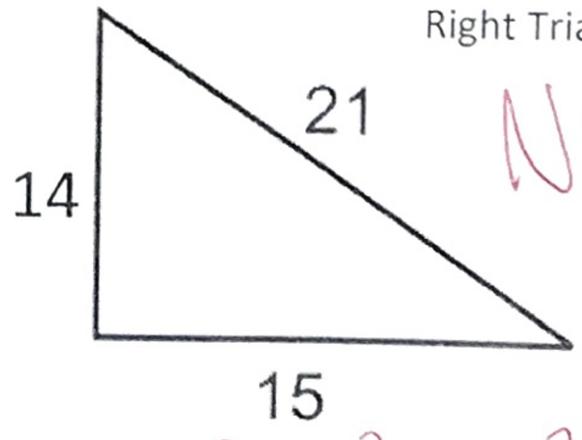
$12^2+16^2=c^2$
$c=20$

2.



$b^2+9^2=12^2$
$b=\sqrt{63}=3\sqrt{7}$
$\sqrt{9\cdot 7}$

3. Right Triangle?



No
$14^2+15^2=21^2$
$196+225=441$
$420=441$

(1) $x^2(2x^3-5)+3x(2x^3-5)+4(2x^3-5)$

$x^2\cdot 2x^3 + x^2\cdot(-5) + 3x\cdot 2x^3 + 3x\cdot(-5) + 4(2x^3) + 4(-5)$

~~$2x^5$~~ ~~$-5x^2$~~ + ~~$6x^4$~~ $-15x$ + ~~$8x^3$~~ -20

$2x^5 + 6x^4 + 8x^3 - 5x^2 - 15x - 20$

(2) $(9x^6+2)(4x^3-3)$

$9x^6(4x^3-3) + 2(4x^3-3)$

$9x^6(4x^3) + 9x^6(-3) + 2(4x^3) + 2(-3)$

$36x^9 - 27x^6 + 8x^3 - 6$