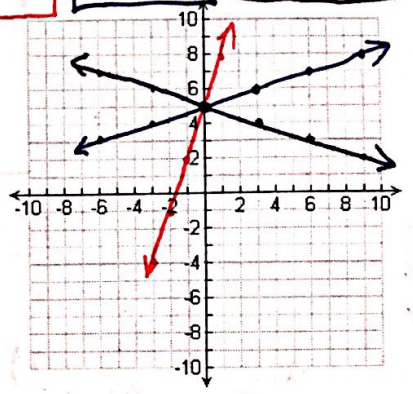
Name: KEY

TNReady Mixed Skills Review

1) Explain, in words, the differences in graphing the following equations: $y = 3x + 5$, $y = \frac{1}{3}x + 5$, $y = -\frac{1}{3}x + 5$. Then graph them all on the coordinate plane.

They all have a y-intercept at 5.
From there, the first equation would go up 3, right 1.
The second equation would go up 1, right 3.
The third equation would go down 1, right 3.



2) Harold baked some cookies, then brought them to a potluck. The cookies were eaten at a constant rate. After 10 minutes, there were 40 cookies left. After 14 minutes, there were 24 cookies left.

a) How many cookies were eaten per minute? 40-24=16 cookies; 14-10=4 minutes; 16÷4 = 4 cookies per minute

b) How many cookies were there on the tray originally?
10 minutes · 4 cookies per min = 40 cookies; 40+40 = 80 cookies originally

c) Use your answers for a & b to write an equation in slope-intercept form. Identify what x and y represent in your equation.

$y = -4x + 80$ (negative slope b/c the # of cookies is decreasing

3) Is this a function? Explain why or why not. (5, 10); (6, 13); (7, 13); (8, 15)

Yes; each "x" (input) has only one "y" (output)

(There does not need to be a pattern in the y-values)

4) When is a decimal rational, and when is it irrational? Explain in words. Give examples.

Any terminating decimal is rational: 0.25, -9.1, 10.758623
Any repeating decimal is rational: $0.\overline{4}$, $2.\overline{985}$, 3.474747...
Non-repeating, non-terminating decimals are irrational: 1.94265578..., 3.1415926...

5) When is a square or cube root rational, and when is it irrational? Explain in words. Give examples.

Square or cube roots are rational when they come out as exact answers: $\sqrt{25}$, $\sqrt{144}$, $\sqrt[3]{8}$
They are irrational when they are not exact answers (decimals): $\sqrt{10}$, $\sqrt{26}$, $\sqrt[3]{9}$

6) Solve the equation: $-5(2x - 3) + 12x = -4x + 9$

$-10x + 15 + 12x = -4x + 9$

$2x + 15 = -4x + 9$

$+4x \quad +4x$

$6x + 15 = 9$

$-15 \quad -15$

$\frac{6x}{6} = \frac{-6}{6}$

$x = -1$

Solve each system of equations:

7) (Substitution) $\begin{cases} x = 4y - 1 \\ 2x - 3y = -34 \end{cases}$

$2(4y-1)-3y=-34$

$8y-2-3y=-34$

$5y-2=-34$

$+2 \quad +2$

$\frac{5y}{5} = \frac{-32}{5}$

$y = -\frac{32}{5}$ or $-6\frac{2}{5}$ or -6.4

$x = 4(-\frac{32}{5}) - 1$

$x = -\frac{128}{5} - \frac{5}{5}$

$x = -\frac{133}{5}$ or -24.6

$(-\frac{133}{5}, -\frac{32}{5})$

$(-24.6, -6.4)$

6.4 × 4 = 25.6

8) (Elimination) $\begin{cases} 4x + y = 15 \\ 8x - 3y = 35 \end{cases}$

$3(4x + y = 15)$

$12x + 3y = 45$

$8x - 3y = 35$

$\frac{20x}{20} = \frac{80}{20}$

$x = 4$

$4(4) + y = 15$

$16 + y = 15$

$-16 \quad -16$

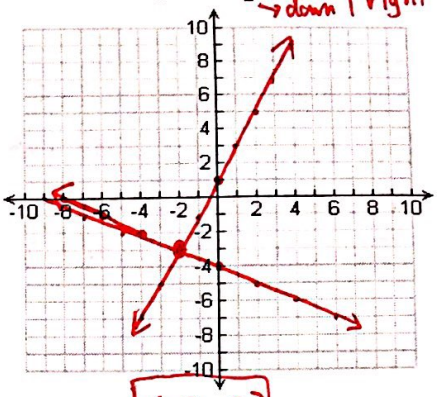
$y = -1$

$(4, -1)$

9) (Graphing) $\begin{cases} y = 2x + 1 \\ y = -\frac{1}{2}x - 4 \end{cases}$

up 2 right 1

down 1 right 2



$(-2, -3)$

10) 6^{-2} is NOT equal to -36. Nor is it equal to +36. Explain how negative exponents work, and say what 6^{-2} is actually equal to.

$6^{-2} = \frac{1}{36} \left(= \frac{1}{6^2}\right)$

Negative exponents are like dividing. 6^{-2} is 1 divided by 6 two times.

If $2^3 = 8$, 2^{-3} is $\frac{1}{8}$. You get 1 over whatever it would be if the exponent were positive.

11) Expand, then simplify: $(2b^4c)^3$

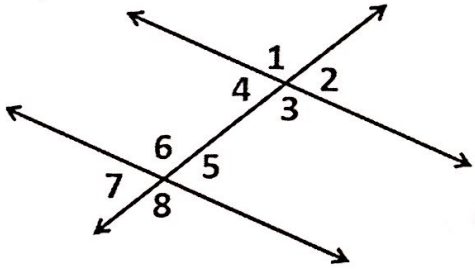
$2 \cdot 2 \cdot 2 = 8$

$b^4 \cdot b^4 \cdot b^4 = b^{12}$

$c \cdot c \cdot c = c^3$

$(2b^4c)(2b^4c)(2b^4c) = 8b^{12}c^3$

12)



a) Identify two vertical angles. ∠1 and ∠3 ∠2 and ∠4 ∠5 and ∠7 ∠6 and ∠8

b) Identify two alternate interior angles. ∠4 and ∠5 ∠3 and ∠6

c) Identify two alternate exterior angles. ∠1 and ∠8 ∠2 and ∠7

d) Identify two same-side interior angles. ∠4 and ∠6 ∠3 and ∠5

e) Identify two corresponding angles. ∠1 and ∠6 ∠2 and ∠5 ∠4 and ∠7 ∠3 and ∠8

f) If the two lines are parallel, and $m\angle 4 = 58°$, find the measure of ALL other angles.

$m\angle 1 = 122°$ $m\angle 2 = 58°$

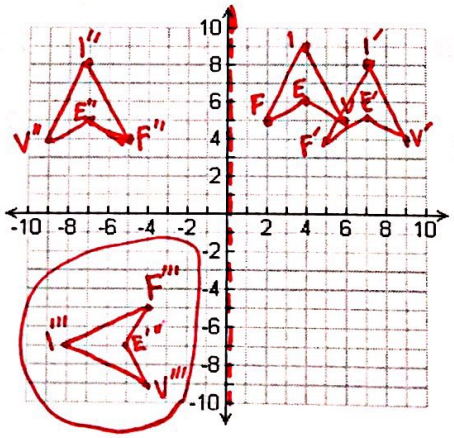
$m\angle 3 = 122°$ $m\angle 5 = 58°$

$m\angle 6 = 122°$ $m\angle 7 = 58°$

$m\angle 8 = 122°$

13) Start with **F(2, 5) I(4, 9) V(6, 5) E (4, 6)**

- Translate 1 unit down and 3 units right.
- Reflect across the y-axis.
- Rotate 90° counterclockwise.
- Label your final coordinates.



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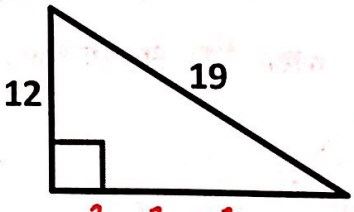
14) Find the missing side on both triangles.



$x^2 + 12^2 = 19^2$

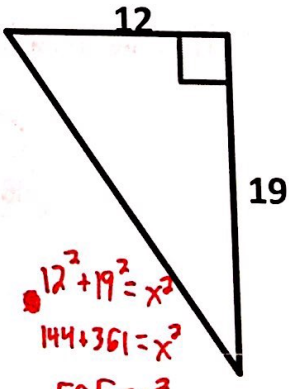
$x^2 + 144 = 361$

$-144 \quad -144$

$x^2 = 217$

$x = \sqrt{217}$

$x \approx 14.7$



$12^2 + 19^2 = x^2$

$144 + 361 = x^2$

$505 = x^2$

$x = \sqrt{505}$

$x \approx 22.5$