Name: KEY

TNReady Review Packet

Instructions: Complete each question and show all work. You may use a calculator only on the calculator section. This will be worth an 0.5 grade. I will select 10 RANDOM problems to grade.

**********What can I do if I don't remember how to do one???**********

- Look in your notes
- Look up old lessons on my website (these questions are in the order we learned them this year)
- Have a friend help you
- Find time to ask Mr. Lischwe
- Whatever your solution, find a way to re-learn it. Do not just guess and move on!

1) Write each letter in the correct box, according to whether it is rational or irrational.

Rational	Irrational
A B C D F H	E G

A: $\frac{7}{11}$ ← Fraction = always Rational
B: 0.3187 ← Terminating = Rat
C: $0.\overline{4}$ ← Repeating = Rat
D: $0.121212\ldots$ ← Repeating = Rat
E: $5.183597\ldots$ ← Not terminating or repeating = Irr
F: $\sqrt{16} = 4$ = Rat
G: $\sqrt{27} \approx 5.2 \rightarrow$ Irr
H: $\sqrt[3]{27} = 3$ = Rat

2) Estimate the value of $\sqrt{58}$. Do not use a calculator. Explain your reasoning in words.

≈ 7.6
≈ 7.7
≈ 7.8

The square root of 49 is 7.
The square root of 64 is 8.
58 is between 49 + 64, so $\sqrt{58}$ is 7.something.
58 is closer to 64 (6 away) than 49 (9 away) so an estimate between 7.5-8.0 is reasonable.

For 3-7, say whether the equations have ONE solution, TWO solutions, or NO solution. Say what the solution/solutions are if there are any.

3) $x^2 = 121$.
TWO
$x = 11, -11$

4) $x^2 = -64$.
ZERO

5) $x^3 = 64$.
ONE
$x = 4$

6) $x^3 = -8$.
ONE
$x = -2$

7) $x^2 = 20$.
TWO
$x = \sqrt{20}$ or $x \approx 4.5$
$x = -\sqrt{20}$ or $x \approx -4.5$

8) Explain why this is not a function:

x	1	2	1	2	3
y	4	5	4	6	7

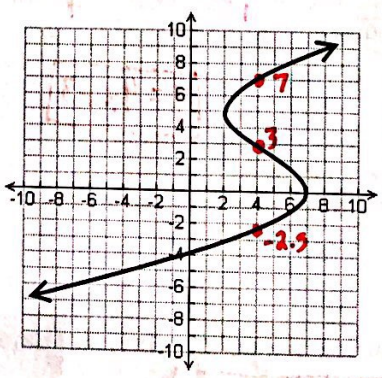
The input "2" has more than one output.

9) Explain why this IS a function:

x	1	2	3	4	5
y	9	9	9	9	9

Each input has only one output.
(The rule could be $y = 0x + 9$)

10) Explain why this is not a function:



Several inputs (x) in the middle have multiple outputs (y). For example, the input "4" has 3 different outputs (-2.5, 3, 7)

For 11 – 17, say whether the table or equation is linear or nonlinear and explain why.

11)

x	y
-2	-3
-1	1
0	5
1	9
2	13

+1 +1 +1 +1 +4 +4 +4 +4

Linear, has a constant rate of change ($\frac{4}{1}$)

12)

x	y
2	18
4	14
6	10
8	4
10	-2

+2 +2 +2 +2 -4 -4 -6 -6

Nonlinear, does not have a constant rate of change

13)

x	y
1	30
2	32
3	34
4	36
6	40

+1 +1 +1 +2 +2 +2 +2 +4

Linear, rate of change is $\frac{2}{1}$. (The row 5, 38 was "skipped")

14) $y = x^2 + 8x$

Nonlinear, has an exponent greater than 1.

15) $3x + 2y = 20$

Linear; no exponents, square roots, etc.

16) $y = \frac{5}{x} + 7$

Nonlinear; has a variable in the denominator

17) $y = x(x + 5)$

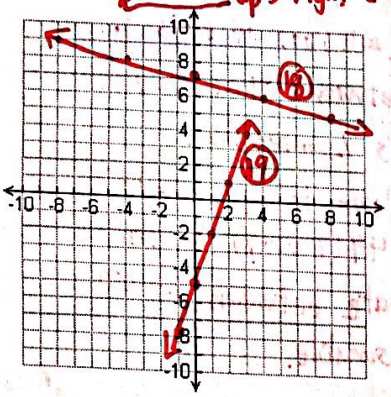
$y = x^2 + 5x$

Nonlinear; after you multiply it out, it has an exponent.

Graph both equations on the same graph.

18) $y = -\frac{1}{4}x + 7$ ← down 1 right 4

19) $y = 3x - 5$ ← up 3 right 1



Find the slope between the two points or from the table.

Simplify if possible. $\left(\frac{y_2 - y_1}{x_2 - x_1}\right)$

20) (-1, 6) and (8, 4)

$\frac{4-6}{8-(-1)} = \boxed{-\frac{2}{9}}$ or $-0.\overline{2}$

21) (1, 5) and (-3, 11)

$\frac{11-5}{-3-1} = \frac{6}{-4} = \boxed{-\frac{3}{2}}$ or -1.5

22)

x	0	3	6	9	12
y	16	10	4	-2	-8

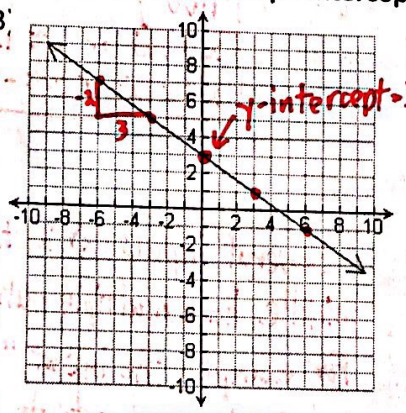
+3 +3 +3 +3

-6 -6 -6 -6

$\frac{-6}{3} = \boxed{-2}$

Write an equation in slope-intercept form. (y = mx + b)

23)



$\boxed{y = -\frac{2}{3}x + 3}$

24)

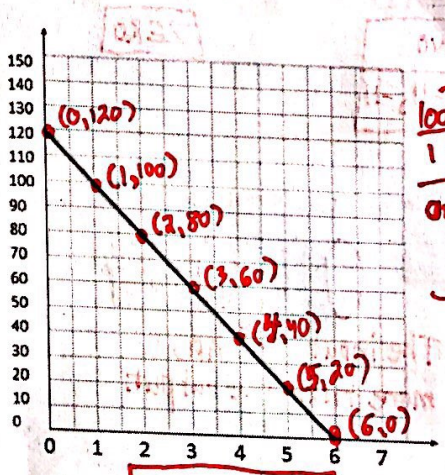
x	y
2	11
3	15
4	19
5	23
6	27

1 1 1 1 4 4 4 4

0 3 ← y-intercept

$\boxed{y = 4x + 3}$

25)



Slope

$\frac{100-120}{1-0} = \frac{-20}{1}$

or $\frac{-10}{0.5} = -20$

$\boxed{y = -20x + 120}$

26) Barry started with \$50 and earned \$20 per day. (x is # of days, y is total money)

$\boxed{y = 20x + 50}$

27) Carrie started with \$100. After two days, she had \$130.

Each day = + \$15 $\boxed{y = 15x + 100}$

Solve each equation. (2 of them are "weird" ones – no solution or infinite solutions)

28) $2(5x + 14) - 5x = 2x + 10$

$10x + 28 - 5x = 2x + 10$

$5x + 28 = 2x + 10$

$-2x \quad -2x$

$3x + 28 = 10$

$-28 \quad -28$

$\frac{3x}{3} = \frac{-18}{3}$

$\boxed{x = -6}$

29) $2x + 4 = 2x + 10$

$-2x \quad -2x$

$4 = 10$

$\boxed{\text{No Solution}}$

30) $4x + 2 = 10x + 2$

$-4x \quad -4x$

$2 = 6x + 2$

$-2 \quad -2$

$\frac{0}{6} = \frac{6x}{6}$

$\boxed{x = 0}$

31) $36 + 2(3x - 8) = -4 + 7x - x + 24$

$36 + 6x - 16 = 6x + 20$

$6x + 20 = 6x + 20$

$\boxed{\text{Infinite Solutions}}$

Solve each system of equations:

32) (Substitution) $\begin{cases} y = 2x + 3 \\ 4x + 2y = 30 \end{cases}$

$4x + 2(2x + 3) = 30$

$4x + 4x + 6 = 30$

$8x + 6 = 30$

$-6 \quad -6$

$\frac{8x}{8} = \frac{24}{8}$

$x = 3$

$y = 2(3) + 3$

$y = 6 + 3$

$y = 9$

$\boxed{(3, 9)}$

33) (Elimination) $\begin{cases} 4x - 3y = 13 \\ 2(-2x + 5y = 11) \end{cases}$

$4x - 3y = 13$

$-4x + 10y = 22$

$\frac{7y}{7} = \frac{35}{7}$

$y = 5$

$4x - 3(5) = 13$

$4x - 15 = 13$

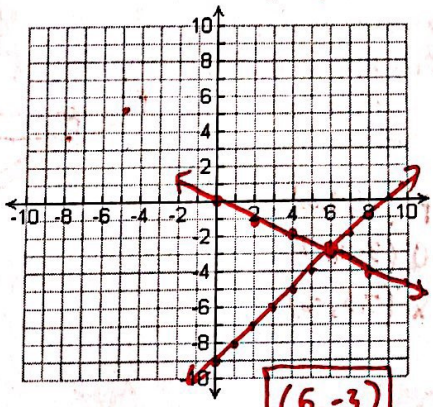
$+15 \quad +15$

$\frac{4x}{4} = \frac{28}{4}$

$x = 7$

$\boxed{(7, 5)}$

34) (Graphing) $\begin{cases} y = x - 9 & \text{slope} = 1 \\ y = -\frac{1}{2}x & \text{y-int} = 0 \end{cases}$



$\boxed{(6, -3)}$

Simplify. Do not leave negative exponents in your answer.

35) $(7ab^6)^2$

$(7 \cdot a \cdot b \cdot b \cdot b \cdot b \cdot b \cdot b)(7 \cdot a \cdot b \cdot b \cdot b \cdot b \cdot b \cdot b)$

$\boxed{49a^2b^{12}}$

36) $\frac{3x^5 \cdot 8x^4}{2x^3}$

$= \frac{24x^9}{2x^3}$

$= \boxed{12x^6}$

37) $\frac{n^1}{n^4} \rightarrow \frac{\cancel{n}}{\cancel{n} \cdot n \cdot n \cdot n}$

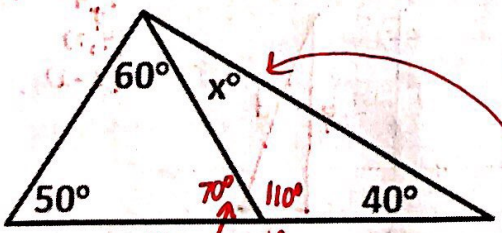
$= n^{-3}$

$= \boxed{\frac{1}{n^3}}$

38) $m^3 \cdot m^{-3}$

$= m^{3+-3} = m^0 = \boxed{1}$

39) Find the value of x:



① (∆ Triangle) $180 - 110° = 70°$

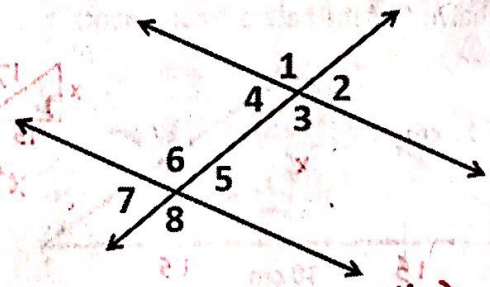
② $180° - 70° = 110°$ (straight angle)

③ $110 + 40 = 150$

$180 - 150 = \boxed{30°}$

$\boxed{x = 30}$

40) Assume the two lines are parallel.



a) If $m\angle 2 = 55^o$, what is $m\angle 5$? 55° (Corresponding)

b) If $m\angle 6 = 109^o$, what is $m\angle 4$? 71° (Same side interior = supplementary)

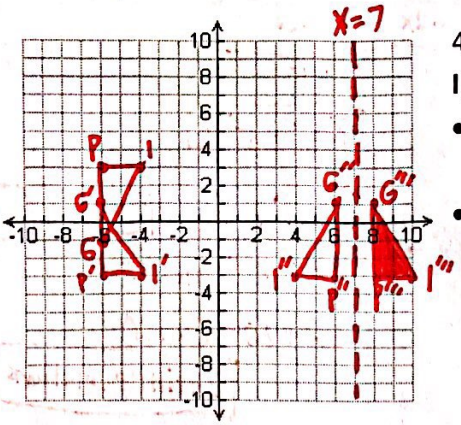
c) If $m\angle 5 = 68^o$, what is $m\angle 1$? 112° (∠2 = 68°, then 180 − 68°)

d) What type of special angle pair are ∠5 and ∠7? Vertical

e) What type of special angle pair are ∠1 and ∠6? Corresponding

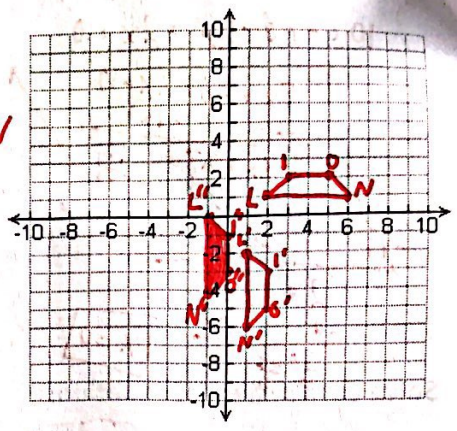
41) Start with **P(-6, 3) I(-4, 3) G(-6, -1)**

- Reflect across the x-axis.
- Reflect across the y-axis.
- Reflect across the line x = 7.



42) Start with **L(2, 1) I(3, 2) O(5, 2) N(6, 1)**

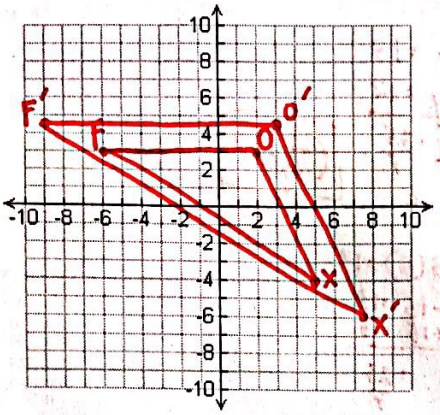
- Rotate 270° or 90° CW counterclockwise.
- Translate by (x – 2, y + 2) left 2 up 2



43) Start with **F(-6, 3) O(2, 3) X(5, -4)**

- Dilate using a scale factor of 1.5.

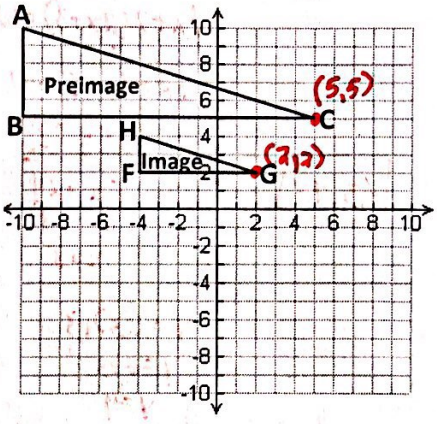
F'(-9, 4.5)
O'(3, 4.5)
X'(7.5, -6)



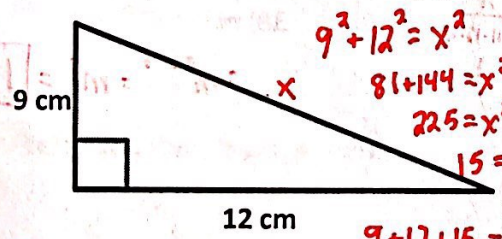
44)

a) Find the scale factor of the dilation.

$\boxed{\frac{2}{5} \text{ or } 0.4}$



45) Find the perimeter of the triangle.



$9^2 + 12^2 = x^2$

$81 + 144 = x^2$

$225 = x^2$

$15 = x$

$9 + 12 + 15 = \boxed{36\text{cm}}$

47) Find the distance between the points on the graph below.

$3^2 + 9^2 = d^2$

$9 + 81 = d^2$

$90 = d^2$

$\boxed{d = \sqrt{90} \text{ or } \approx 9.5}$

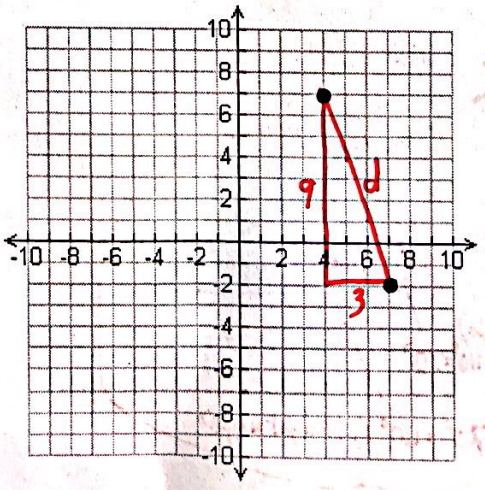
48) Find the slope between the points on the graph below.

$m = \frac{-9}{3} = \boxed{-3}$ $\frac{\text{rise}}{\text{run}}$

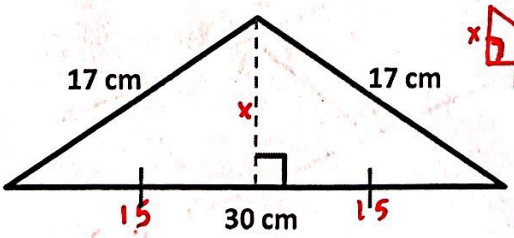
$\frac{-2-7}{7-4} = \frac{-9}{3} = -3$

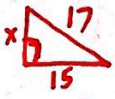
(4, 7)

(7, -2)



46) Find the area of the triangle.
(Both "halves" of the base are congruent)





$x^2 + 15^2 = 17^2$

$\vdots$

$x = 8$

$A = \frac{30 \cdot 8}{2} = \frac{240}{2} = \boxed{120\text{cm}^2}$

49) Write each formula:

a) Area of a circle $\boxed{A = \pi r^2}$

b) Volume of a cylinder $\boxed{V = \pi r^2 h}$

c) Volume of a cone $\boxed{V = \frac{\pi r^2 h}{3}}$

d) Volume of a sphere $\boxed{V = \frac{4}{3}\pi r^3}$