Rising Pre-Algebra Summer Assignment

Mark Twain Middle School
Summer 2019

Name: _____

All rising **Pre-Algebra students** must complete this packet over the summer. There will be **two help sessions** offered to students who need assistance completing this assignment. These sessions are **open to all rising Pre-Algebra students**. Students do not need to stay for the entire session and these sessions are not mandatory. Please check the Twain website for the dates and times of these sessions

This assignment is due for

ALL Mark Twain Middle School

Pre-Algebra students on the first day of school:

August 26th , 2019

Students will be assessed during the first week of school on the topics in this packet

You <u>may</u> use a calculator for all of this assignment

Converting and Ordering Rational Numbers

Fractions, Decimals, & Percents

Change a...	To a...		To a...
	Decimal		**Percent**
Fraction	Divide the numerator by the denominator. Example: ¾ would be $3 \div 4 = 0.75$		Change the fraction to a decimal then multiply the decimal by 100. Example: ¾ = 0.75 Then 0.75 x 100 = 75%

Change a...	To a...		To a...
	Percent		**Fraction**
Decimal	Multiply the decimal by 100. Example: To change 0.382 to a percent just multiply by 100. 0.382 x 100 = 38.2%		If you can read the decimal properly you can write it as a fraction. Then simplify the fraction Example: 0.875 reads 875 thousandths – as a fraction that would be $\frac{875}{1000}$ - which reads exactly the same. Now simplify your answer and you are finished $\frac{875}{1000} = \frac{7}{8}$.

Change a...	To a...		To a...
	Decimal		**Fraction**
Percent	**Divide the percent by 100.** Example: 75% would be $75 \div 100 = 0.75$ So 75% = 0.75		**Write the percent as a fraction over 100 then simplify the fraction.** Example: 75% would be $\frac{75}{100}$. Simplified $\frac{75}{100} = ¾$

Scientific Notation

Example 1 — Express each number in standard form.

a. 6.32×10^5

$6.32 \times 10^5 = 6.32 \times 100,000$ $10^5 = 100,000$

$= 632,000$ Move the decimal point 5 places to the right because it is a **POSITIVE** exponent.

b. 7.8×10^{-6}

$7.8 \times 10^{-6} = 7.8 \times 0.000001$ $10^{-6} = 0.000001$

$= 0.0000078$ Move the decimal point 6 places to the left because it is a **NEGATIVE** exponent.

Example 2 — Express each number in scientific notation.

a. 62,000,000

To write in scientific notation, place the decimal point after the first nonzero digit, then find the power of 10.

$62,000,000 = 6.2 \times 10,000,000$ The decimal point moves 7 places.

$= 6.2 \times 10^7$ The exponent is positive because the original number was **greater than or equal to 1.**

b. 0.00025

$0.00025 = 2.5 \times 0.0001$ The decimal point moves 4 places.

$= 2.5 \times 10^{-4}$ The exponent is negative because the original number was **less than 1.**

Practice

Write each percent as a decimal.

1. 12%   2. 5%   3. 1.7%   4. 72%

_____   _____   _____   _____

Write each decimal as a percent.

5. 0.3   6. 0.21   7. 0.09   8. 3.225

_____   _____   _____   _____

Express each fraction as a decimal. Round to the nearest tenth, if necessary.

9. $\frac{3}{5}$ 10. $\frac{9}{32}$ 11. $\frac{3}{8}$ 12. $\frac{11}{4}$

_____   _____   _____   _____

Express each number in standard form:

13. 6.21×10^6 _____   14. 1.0×10^1 _____

15. 8.75×10^5 _____   16. 8.49×10^{-2} _____

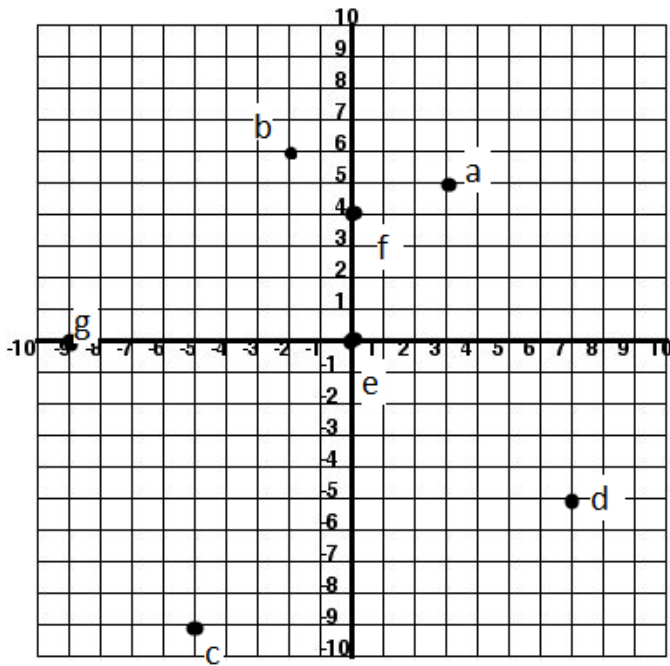17. 7.1×10^{-6} _____   18. 1.0×10^{-3} _____

Order the following from *least to greatest*: (Hint: Convert them to decimals, and then line up decimal points to order them)

19. $\frac{2}{3}$, 70%, 0.65, $\frac{3}{5}$ _____

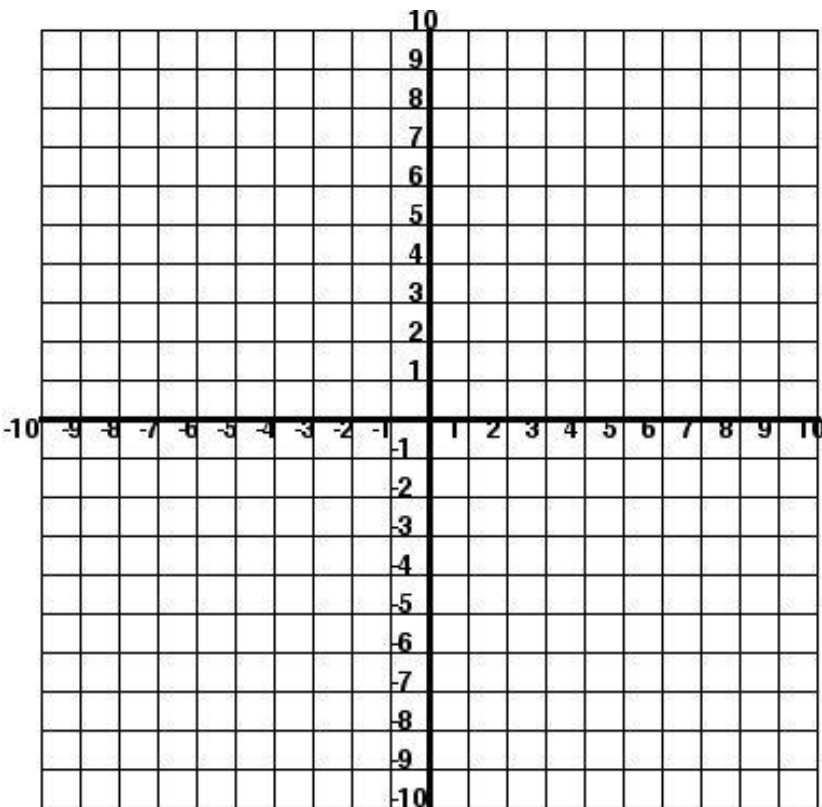20. $\frac{1}{3}$, 31%, 0.35, $\frac{3}{10}$ _____

Graphing Ordered Pairs

Example: Plot the following points on the coordinate plane and label with the appropriate letter
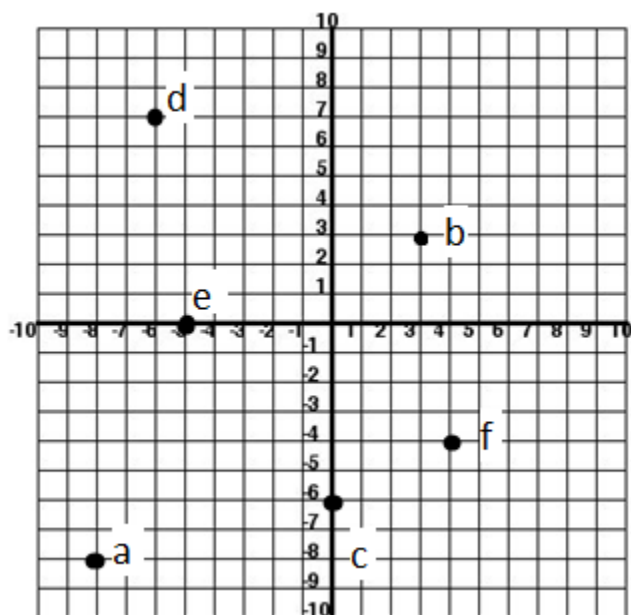

a. (3, 5)

b. (-2, 6)

c. (-5, -9)

d. (7, -5)

e. (0, 0)

f. (0, 4)

g. (-9, 0)

You Try! Plot the following points on the coordinate plane and label with the appropriate letter. Make sure your points are bold.

a. (5, 6)

b. (-6, 1)

c. (-4, -2)

d. (8, -3)

e. (0, 0)

f. (0, -2)

g. (7, 0)

Example: Write the ordered pairs for the following points:
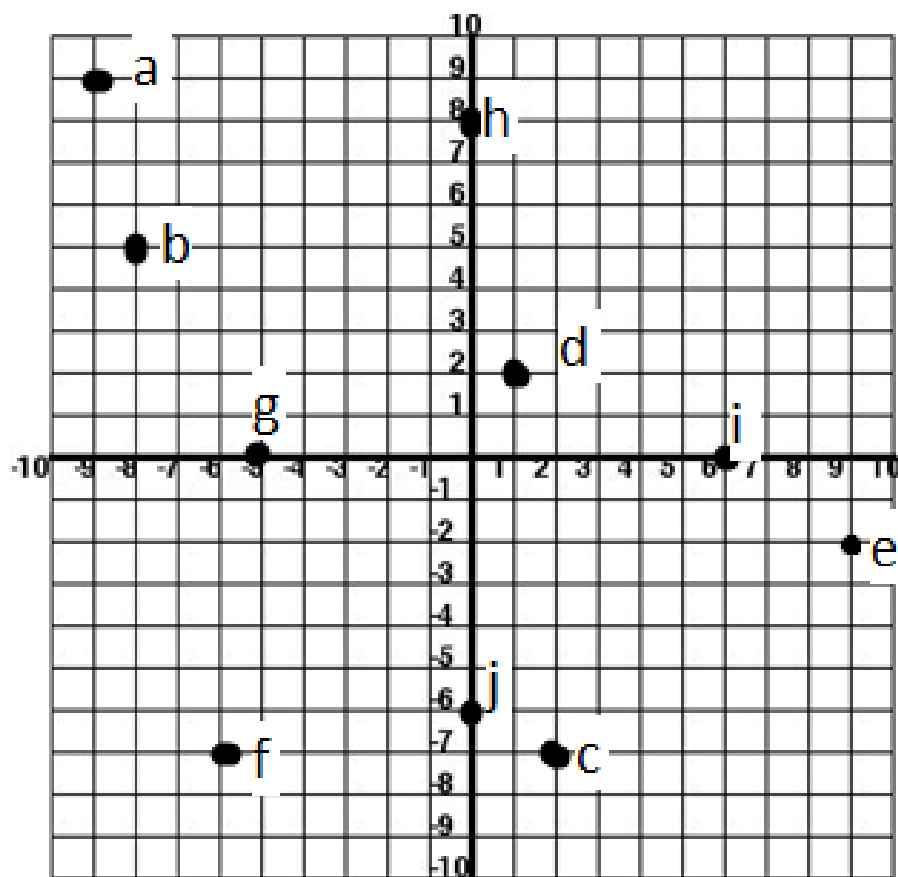
A: (-8, -8)

B: (3, 3)

C: (0, -6)

D: (-6, 7)

E: (-5, 0)

F: (4, -4)

You Try: Write the ordered pairs for the following points:

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

g. _____

h. _____

i. _____

j. _____

Expressions:

Remember: **GEMDAS**

Grouping ( ) or [}

Exponents²

Multiplication/Division (from left to right!)

Addition/Subtraction (from left to right!)

Simplify each expression:

$10 - 3 \cdot 5 + 2$	$26 + (7 - 2) \cdot 4$
$-3 \cdot 3 + (-12) \div 3$	$(9 - 6) + 4 \cdot 4 + 12$
$\dfrac{5 + (-25)}{-6 + 1}$	$\dfrac{2 - 6 \cdot 3}{3 + 1 \cdot 5}$

Equations

One Step Equations:

Solve using addition and subtraction.

$r + 16 = -7$ Get the variable by itself. Right now 16 is being added to it.

$-16 \quad -16$ Undo the addition by subtracting 16 from both sides.

$r = -23$ Answer.

Solve using multiplication and division.

$-5t = 60$ Get the variable by itself. Right now -5 is being multiplied to it.

$\dfrac{-5t}{-5} = \dfrac{60}{5}$ Undo the multiplication by dividing both sides by -5.

$t = -12$ Answer.

Solve for x, showing each step like above.

1) $x + 8 = -12$

2) $x - (-5) = 17$

3) $15 = -2x$

4) $\dfrac{x}{5} = -4.5$

5) $7 + w = -10$

6) $-3c = -24$

7) $\dfrac{y}{8} = -5$

8) $3.5 = g - 6$

2-Step Equations:

Solving Two-Step Equations

1. Add or subtract to isolate the variable term.
2. Multiply or divide to solve for the variable.
3. Check your solutions.

Example:
$$3x + 5 = -16$$
$$\underline{-5 \quad\quad -5} \quad \text{Subtract}$$
$$3x = -21$$
$$\frac{3x}{3} = \frac{-21}{3} \quad \text{Divide}$$
$$x = -7$$
$$3(-7) + 5 = -16 \quad \text{Check}$$

Your Turn: Solve each equation, showing each step. Check your solution.

1) $80 = 10d - 20$

2) $59 = 7x + 10$

3) $5p - 8 = 22$

4) $15 + 2x = 75$

5) $\frac{z}{4} - 6 = 18$

6) $\frac{m}{5} + 8 = -12$

7) $\frac{w}{-3} + 5 = 13$

8) $-6 - 3x = 12$