Algebra 1 Summer Work Name:_____

Operations with integers

https://www.khanacademy.org/math/algebra-basics/core-algebra-foundations/core-algebra-foundations-negative-numbers/v/adding-and-subtracting-negative-number-examples

https://www.khanacademy.org/math/algebra-basics/core-algebra-foundations/core-algebra-foundations-negative-numbers/v/multiplying-positive-and-negative-numbers

Simplify the following*:*

1. a. (-1) + (-4) b. 4 + (-6) c. 2 - 5 d. -6 – (-3)

2. a. (-3)(-16) b. (5)(-20) c. $\frac{-100}{10}$ d. $\frac{-45}{-9}$

Simplifying Fractions:

Reduce the following fractions:

3. a. $\frac{4}{6}$ b. $\frac{-4}{-9}$ c. $\frac{15}{25}$ d. $\frac{4}{12}$

Converting Fractions to Decimals

https://www.khanacademy.org/math/algebra-basics/core-algebra-foundations/algebra-foundations-decimal-operations/e/converting_fractions_to_decimals

4. ***Rename the following fractions as a decimal:***

a. $\frac{1}{4}$ _____ b. $\frac{3}{4}$ _____ c. $\frac{1}{2}$ _____

d. $\frac{3}{2}$ _____ e. $\frac{1}{8}$ _____ d. $\frac{3}{8}$ _____

Converting Decimals to Fractions

https://www.khanacademy.org/math/algebra-basics/core-algebra-foundations/algebra-foundations-decimal-operations/v/converting-decimals-to-fractions-1-ex-3

5. ***Rename the following decimals as fractions in reduced form:***

a. 0.02 _____ b. 0.6 _____ c. 1.2 _____ d. 0.75 _____

Percentages

https://www.khanacademy.org/math/algebra-basics/core-algebra-foundations/algebra-foundations-decimal-operations/v/finding-percentages-example

6. ***Change the following decimals or fractions to a percent:***

a. .25_____ b. $\frac{1}{2}$ _____ c. .9 _____ d. $\frac{35}{100}$ _____ e. $\frac{1}{5}$ _____

Change the following percents to decimals:

d. 40% _____ e. 0.5% _____ f. 120% _____

Rounding

7. a. Round 4.3228 to the nearest hundredth. _____

b. Round 86.8954776 to the nearest ten thousandth. _____

Evaluating Expressions:

https://www.khanacademy.org/math/algebra/introduction-to-algebra/variable-and-expressions/v/evaluate-a-formula-using-substitution

8. ***Evaluate the following expressions and then simplify. Let a = 8 and b = -2.***

a. ab b. $a - b$ c. $\frac{a}{b}$ d. $-2a^2 - a - 4$

Writing Algebraic expressions:

https://www.khanacademy.org/math/algebra/introduction-to-algebra/writing-expressions-tutorial/v/writing-expressions-1

9. ***Write the following verbal expressions as algebraic expressions:***

a. the sum of 3 and a number x

b. 3 less than a number y

c. the product of 6 and the sum of five and a number

Combining Like Terms

https://www.khanacademy.org/math/algebra/introduction-to-algebra/manipulating-expressions/v/combining-like-terms-1

10. ***Simplify the following expressions by combining like terms:***

a. $7a + 2a$ b. $8x - 10x$ c. $6ab + 3ba$ d. $5c - 6c + 8c - 9c$

Order of Operations

https://www.khanacademy.org/math/algebra-basics/core-algebra-foundations/algebra-foundations-order-of-operations/v/introduction-to-order-of-operations

11. ***Simplify the following expressions by applying the order of operations:***

a. $2 + 7 \cdot 4$ b. $8 - 35 \div 7$ c. $6(2) + 12 \div 3(2)$

d. $14 - 2 + 6$ e. $14 - (2+6)$ f. $(-3)^2$ g. -3^2

f. Add parentheses to make the sentence true: $24 \cdot 2 \div 2 \cdot 4 = 96$

Prime Factorization:

https://www.khanacademy.org/math/pre-algebra/factors-multiples/prime_factorization/v/prime-factorization

12. ***Using a factor tree, find the prime factorization for the following:***

a. 24 b. 18 c. 32 d. 100

Greatest Common Factor

https://www.khanacademy.org/math/pre-algebra/factors-multiples/greatest_common_divisor/v/greatest-common-divisor

13. ***Find the greatest common factor of the following numbers.***

a. 3 and 18 b. 24, 36, and 48 c. 112 and 98

Least Common Multiple

https://www.khanacademy.org/math/pre-algebra/factors-multiples/least_common_multiple/v/least-common-multiple-exercise

14. ***Find the least common multiple of the following numbers:***

a. 12 and 18 b. 3, 6, and 8 c. 10, 20, and 50

Square Roots

https://www.khanacademy.org/math/algebra-basics/core-algebra-foundations/square-roots-for-college/v/understanding-square-roots

15. ***Evaluate the following square roots:***

a. $\sqrt{36}$ b. $-\sqrt{25}$

Simplifying Absolute Value Expressions

https://www.khanacademy.org/math/pre-algebra/negatives-absolute-value-pre-alg/abs-value-pre-alg/v/absolute-value-of-integers

16. ***The absolute value of a number is its distance from 0 on a number line. Find the absolute value of each of the following:***

a. $|-5|$ b. $|2-5|$ c. $|-5-3|$ d. $|-5-(-6)|$

Operations with fractions:

https://www.khanacademy.org/math/pre-algebra/fractions-pre-alg/fractions-unlike-denom-pre-alg/v/adding-and-subtracting-fractions

https://www.khanacademy.org/math/arithmetic/fractions/multiplying_fractions/v/multiplying-fractions

https://www.khanacademy.org/math/arithmetic/fractions/div-fractions-fractions/v/another-dividing-fractions-example

https://www.khanacademy.org/math/pre-algebra/fractions-pre-alg/comparing-fractions-pre-alg/v/comparing-fractions

17. ***Add or subtract the following, and then simplify:***

a. $\frac{2}{3}+\frac{5}{6}$ b. $-\frac{1}{4}+(-\frac{5}{8})$ c. $\frac{5}{16}-\frac{3}{8}$

18. ***Multiply or divide the following, and then simplify:***

a. $\frac{2}{3}\cdot\frac{5}{6}$ b. $-\frac{4}{3}\cdot\frac{6}{7}$ c. $-\frac{1}{3}\cdot(-\frac{5}{6})$ d. $\frac{\frac{5}{7}}{\frac{10}{11}}$

19. ***Compare the following fractions using an inequality symbol. (> or <)***

a. $\frac{3}{4},\frac{7}{8}$ b. $\frac{3}{8},\frac{1}{3}$ c. $-\frac{7}{12},-\frac{3}{8}$

Exponents

https://www.khanacademy.org/math/pre-algebra/exponents-radicals/World-of-exponents/v/introduction-to-exponents

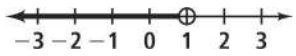
20. a. Rewrite $6 \cdot 6 \cdot 6$ as an exponential expression.

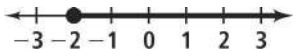
b. Write x^4 in expanded form.

Inequalities

https://www.khanacademy.org/math/pre-algebra/applying-math-reasoning-topic/greater-than-less-than/v/plotting-inequalities-on-a-number-line

21. ***Write an inequality for each graph.***

a. 

b. 

22. ***Graph each inequality on a number line.***

a. $y < -2$ **b.** $t \geq 4$

Sets of Real Numbers

23. Match the following terms to the appropriate set of numbers by writing the corresponding letter in the answer blank.

a. Natural numbers	_____ {...-3, -2, -1, 0, 1, 2, 3,...}
b. Whole numbers	_____ ex. 3, $\frac{1}{2}$, 0.25
c. Integers	_____ ex. π, $\sqrt{3}$, 2.164...
d. Rational numbers	_____ {1,2,3,...}
e. Irrational number	_____ {0,1,2,3…}

Properties of real numbers:

24. Match the property with its example by writing the corresponding letter in the answer blank.

a. Commutative	_____ $\frac{2}{3} \cdot \frac{3}{2} = 1$
b. Associative	_____ 4 (x + 7) = 4x + 28
c. Distributive	_____ 53 · 0 = 0
d. Multiplicative Inverse	_____ 12 + 917 = 917 + 12
e. Multiplicative Property of Zero	_____ -6 + 6 = 0
f. Additive Identity	_____ 7 + 0 = 7
g. Additive Inverse	_____ 3 · (4 · 6) = (3 · 4) · 6

25. ***Simplify the following expressions by applying the distributive property:***

a. 2(x + 7) b. -5(3x- 9) c. –(10x + 3)

One and Two step equations:

https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-variables-expressions/cc-7th-2-step-equations/v/why-we-do-the-same-thing-to-both-sides-two-step-equations

26. ***Solve the following Equations:***

a. $6 = p - 8$

b. $z + 5 = 4$

c. $-25 = -5x$

d. $25 = \frac{z}{-4}$

e. $\frac{3}{4}b = 15$

f. $-8 + 3h = 1$

g. $13 + \frac{a}{11} = 7$

h. $7 = \frac{13 + a}{11}$

Setting up and solving proportions

https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-ratio-proportion/cc-7th-write-and-solve-proportions/v/writing-proportions

27. ***Solve the following proportions:***

a. $\frac{-13}{15} = \frac{k}{-5}$

b $\frac{-14}{h} = \frac{-2}{5}$

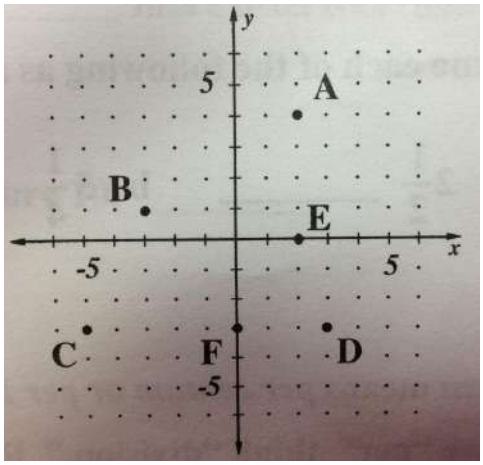
Set up a proportion and solve for the missing quantity:

c. Jennifer is ordering cake for her wedding reception. If one cake will feed 18 people, how many cakes does she need to order for 150 people?

Graphing Points and Equations

https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-negative-number-topic/cc-6th-coordinate-plane/v/plot-ordered-pairs

28***. Identify the ordered pairs on the graph to the right:***



A= **B=**

C= **D=**

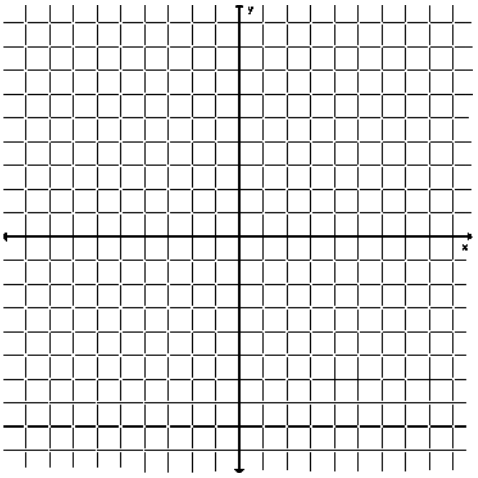
E= **F=**

*29. **Graph the ordered pairs on the coordinate plane to the right:***

a. A(0,0) **b. B(4,1)**

c. C(1,4) **d. D (-5, 3)**

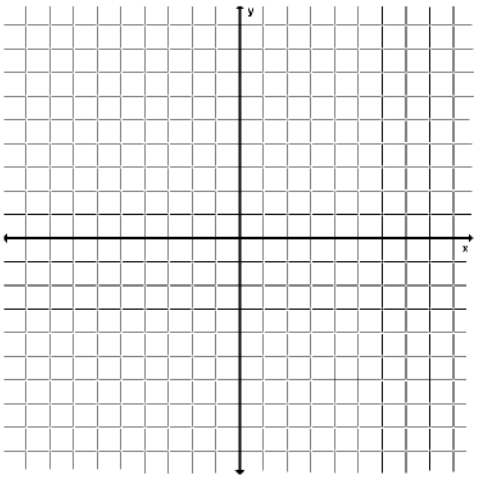
e. E(-2,-6) **f. F(2,0)**



30*. **Create a table of values for the equation below and then graph the equation on the coordinate plane at the right:***

y= 4x-6

x	y



Slopes of Linear Equations:

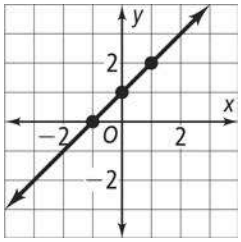
https://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-linear-equations-functions/8th-slope/v/slope-of-a-line

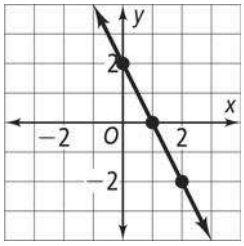
https://www.khanacademy.org/math/algebra/two-var-linear-equations-and-intro-to-functions/slope/v/slope-of-a-line-2

Slope formula: for any two coordinates (x_1, y_1) (x_2, y_2)

Slope= m= $\frac{y_2-y_1}{x_2-x_1}$

31. ***Find the slope of the lines in the graphs below:***

a 

b. 

32. ***Find the slope of the line that passes through each pair of points.***

a. (-4, 5), (1, 1)

b. (0, 0), (-1, 3)