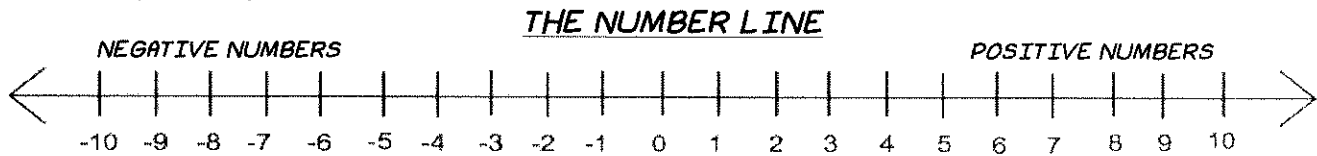


Incoming Math 7 and Pre-Algebra Summer Assignment

Please note: This assignment will be collected on the first day of class.

INTEGER CHEAT SHEET

Integers- A set of positive and negative whole numbers. They can be represented on a number line.



Absolute Value- The distance a number is from zero on the number line. An absolute value is never negative. Examples: $|-5| = 5$ and $|5| = 5$

ADDING INTEGERS

SAME SIGN- Add and Keep the Sign!

Add the absolute value of the numbers and keep the same sign.

(positive) + (positive) = Positive

$$(+4) + (+5) = +9$$

(negative) + (negative) = Negative

$$(-4) + (-5) = -9$$

DIFFERENT SIGNS- Subtract and Keep the Sign of the Bigger Number!

Subtract the absolute value of the numbers and keep the sign of the bigger number.

$$(-4) + (+5) = +1$$

$$(+4) + (-5) = -1$$

SUBTRACTING INTEGERS

Do not subtract integers. You must change the signs:

"Add the Opposite"

KEEP- Keep the sign of the first number

CHANGE- Change the subtraction sign to addition

CHANGE- Change the sign of the second number to the opposite sign. If it is positive- change to negative. If it is negative- change to positive.

$$(+4) - (-4)$$

Keep change change
 $(+4) + (+4)$

NOW USE THE RULES FOR ADDING:

SAME SIGN- Add absolute values and keep sign:

$$(+4) + (+4) = 8$$

MULTPLYING INTEGERS

SAME SIGNS- POSITIVE

Multiply the numbers. Answer will be positive.

$$(-5) \times (-5) = +25$$

DIFFERENT SIGNS- NEGATIVE

Multiply the numbers. Answer will be negative

$$(+5) \times (-5) = -25$$

DIVIDING INTEGERS

SAME SIGNS- POSITIVE

Divide the numbers. Answer will be positive.

$$(-5) \div (-5) = +1$$

DIFFERENT SIGNS- NEGATIVE

Divide the numbers. Answer will be negative

$$(+5) \div (-5) = -1$$

Directions: Complete #1-12, 14, 15, 18-30

MIXED INTEGER PRACTICE

Compute.

1. $-9 + 13$

2. $(-7)(-5)$

3. $18 - (-6)$

4. $-3 - (-7)$

5. $-9 - 18$

6. $\frac{-30}{-3}$

7. $8(-7)$

8. $-18 + (-13)$

9. $-9 \times (-5)$

10. $-19 + 11$

11. $6 - (-15)$

12. $-54 \div (-6)$

~~13. $|-8| - (-3)$~~

14. $-19 + (-7)$

15. $\frac{40}{-8}$

~~16. $|-5| + |-9|$~~

~~17. $-19 \times |-3|$~~

18. $-10 - (-31)$

19. $7 + (-11)$

20. $\frac{72}{-18}$

21. $-14 - (-11)$

22. $-9 + 18$

23. $14(-7)$

24. $-12 + (-9)$

25. $-46 \div (-2)$

26. $8 + (-22)$

27. $-45 \div 9$

28. $-9 + (-3)$

29. $-9(-4)$

30. $-12 - 19$

Directions: Review the How To sheet and then complete the problems on page 4.

HOW TO:

Multiply Proper Fractions

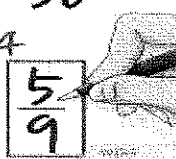
Procedure:

1. Multiply the numerators.
2. Multiply the denominators.
3. Simplify the fraction, if possible.

Example:

$$\frac{1}{2} \times \frac{20}{18} = \frac{20}{36}$$

GCF = 4

$$\frac{20}{36} \div 4 = \frac{5}{9}$$


Divide Proper Fractions

Procedure:

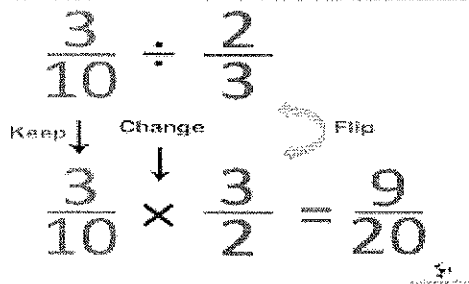
1. KEEP: the first fraction.
2. CHANGE: the division sign to a multiplication sign.
3. FLIP: the second fraction.
4. Multiply as usual.
5. Simplify if possible!

Example:

Dividing Fractions

$$\frac{3}{10} \div \frac{2}{3}$$

Keep ↓ Change ↓ Flip ↷

$$\frac{3}{10} \times \frac{3}{2} = \frac{9}{20}$$


Directions: Complete #1-15. Show ALL work for full credit.

Multiplying and Dividing Fractions (A)

Find the value of each expression in lowest terms.

1. $\frac{1}{2} \times \frac{5}{4}$

6. $\frac{1}{4} \times \frac{5}{3}$

11. $\frac{10}{3} \times \frac{11}{6}$

2. $\frac{1}{6} \div \frac{8}{11}$

7. $\frac{11}{2} \div \frac{1}{2}$

12. $\frac{1}{2} \div \frac{1}{2}$

3. $\frac{1}{3} \div \frac{13}{9}$

8. $\frac{4}{3} \div \frac{11}{12}$

13. $\frac{14}{9} \times \frac{7}{10}$

4. $\frac{13}{4} \div \frac{1}{2}$

9. $\frac{1}{3} \times \frac{20}{9}$

14. $\frac{15}{8} \times \frac{7}{6}$

5. $\frac{17}{6} \div \frac{3}{5}$

10. $\frac{13}{7} \times \frac{14}{11}$

15. $\frac{3}{2} \div \frac{4}{9}$

Directions: Review the examples below and then complete the problems on page 6.

Solving One-Step Equations

To solve an equation, you must use inverse operations!

- Addition & Subtraction are inverses of each other
- Multiplication & Division are inverses of each other

WHATEVER YOU DO TO ONE SIDE OF THE EQUATION,
YOU MUST DO TO THE OTHER SIDE!

$$1) \begin{array}{r} x + 5 = 9 \\ -5 \quad -5 \\ \hline \end{array}$$

$$\boxed{x = 4}$$

$$2) \begin{array}{r} y - 4 = -10 \\ +4 \quad +4 \\ \hline \end{array}$$

$$\boxed{y = -6}$$

$$3) \begin{array}{r} 5n = -30 \\ \div 5 \quad \div 5 \\ \hline \end{array}$$

$$\boxed{n = -6}$$

$$4) \begin{array}{r} x = 6 \\ \div 2 \\ \hline \end{array}$$

$$2 \cdot \frac{x}{2} = 6 \cdot 2$$

$$\boxed{x = 12}$$

Class Examples

$$1) \begin{array}{r} -8 = s - 33 \\ +33 \quad +33 \\ \hline \end{array}$$

$$\boxed{25 = s}$$

$$2) \begin{array}{r} -14 = k + 6 \\ -6 \quad -6 \\ \hline \end{array}$$

$$\boxed{-20 = k}$$

$$3) \begin{array}{r} 3x = -12 \\ \div 3 \quad \div 3 \\ \hline \end{array}$$

$$\boxed{x = -4}$$

$$4) \begin{array}{r} \frac{x}{-5} = 6 \\ \cdot (-5) \quad \cdot (-5) \\ \hline \end{array}$$

$$-5 \cdot \frac{x}{-5} = 6 \cdot (-5)$$

$$\boxed{x = -30}$$

$$5) \begin{array}{r} -\frac{4}{5}x = -8 \\ \cdot \frac{5}{-4} \quad \cdot \frac{5}{-4} \\ \hline \end{array}$$

$$\frac{5}{-4} \cdot -\frac{4}{5}x = -8 \cdot \frac{5}{-4}$$

$$x = \frac{-40}{-4} \quad \boxed{10 = x}$$

$$6) \begin{array}{r} \frac{3}{4}g = -12 \\ \cdot \frac{4}{3} \quad \cdot \frac{4}{3} \\ \hline \end{array}$$

$$\frac{4}{3} \cdot \frac{3}{4}g = -12 \cdot \frac{4}{3}$$

$$g = \frac{-48}{3} \quad \boxed{g = -16}$$

Directions: Complete #1-10. Show ALL work for full credit.

Name _____

Solve	Check here:	Solve	Check here:
1) $15 = w + 4$		2) $a - 2 = 10$	
3) $3b = 21$		4) $\frac{1}{3}n = 13$	
5) $y - 7 = 12$		6) $34 = \frac{y}{2}$	
7) $\frac{a}{7} = 5$		8) $\frac{3}{7}n = 24$	
9) $4x = 24$		10) $w + 2 = 12$	

Directions: Review the examples below and then complete the problems on page 8.

Solving Proportions

Proportions: an equation stating that two ratios are equivalent. Three parts are given, and one is unknown. To find the unknown, use the cross product property.

$$1) \quad \frac{3}{2} = \frac{x}{6}$$

$$\frac{3}{2} = \frac{x}{6}$$

$$\frac{3 \cdot 6 = 2 \cdot x}{18 = 2x}$$

$$x = 9$$

* Cross multiply

3 times 6 = 18

2 times x = 2x

$$2) \quad \frac{9}{y} = \frac{3}{17}$$

$$9 \cdot 17 = 3 \cdot y$$

$$\frac{153 = 3y}{3}$$

$$y = 51$$

$$3) \quad \frac{-12}{-4} = \frac{x}{-6}$$

$$-12 \cdot -6 = -4 \cdot x$$

$$\frac{72 = -4x}{-4} \quad \frac{-4}{-4}$$

$$x = -18$$

$$4) \quad \frac{4}{m-8} = \frac{8}{a}$$

$$4 \cdot a = 8(m-8)$$

$$8 = 8m - 64$$

$$\frac{72 = 8m}{8}$$

$$m = 9$$

$$5) \quad \frac{2}{x} = \frac{4}{10}$$

$$2 \cdot 10 = 4 \cdot x$$

$$\frac{20 = 4x}{4}$$

$$x = 5$$

$$6) \quad \frac{2x}{7} = \frac{4}{1}$$

$$2x \cdot 1 = 7 \cdot 4$$

$$2x = 28$$

$$x = 14$$

$$7) \quad \frac{3}{6} = \frac{x}{8}$$

$$3 \cdot 8 = 6 \cdot x$$

$$\frac{24 = 6x}{6}$$

$$x = 4$$

8)

$$\frac{x}{4} = \frac{15}{100}$$

$$25 \cdot 4 = 100 \cdot x$$

$$\frac{100 = 100x}{100} \quad \frac{100}{100}$$

$$x = 1$$

$$9) \quad \frac{6}{15} = \frac{x}{20}$$

$$15 \cdot x = 6 \cdot 20$$

$$\frac{15x = 120}{15} \quad \frac{15}{15}$$

$$x = 8$$

$$10) \quad \frac{3}{9} = \frac{x}{27}$$

11)

$$\frac{x}{15} = \frac{4}{6}$$

$$9 \cdot x = 27 \cdot 3$$

$$9x = 81$$

$$\frac{9x}{9} = \frac{81}{9}$$

$$x = 9$$

12)

$$\frac{12}{16} = \frac{8}{x}$$

$$12 \cdot x = 8 \cdot 16$$

$$\frac{12x = 128}{12} \quad \frac{12}{12}$$

$$x = 10.67$$

Directions:

Match the problem with the correct answers on the right. Then use the answers to break the code. Show ALL work for full credit!

Q:

7 11 10 12 1 4 9 13 16 15 14 11 16 8 14

13 16 15 6 16 2 14 7 8 10 6 ?

A:

16 3 8 9 12 16 10 13 14 10 9 13 10 5 14

- | | | | | | | | |
|-----|------------------------------------|-----|------------------------------------|-----|-----------------------------------|----|----|
| ___ | 1. $\frac{1}{x} = \frac{6}{30}$ | ___ | 2. $\frac{6}{9} = \frac{x}{6}$ | ___ | 3. $\frac{3}{39} = \frac{1}{x}$ | a. | 21 |
| | | | | | | d. | 18 |
| | | | | | | e. | 32 |
| ___ | 4. $\frac{3}{12} = \frac{5}{x}$ | ___ | 5. $\frac{x}{15} = \frac{8}{10}$ | ___ | 6. $\frac{14}{x} = \frac{8}{4}$ | f. | 15 |
| | | | | | | g. | 4 |
| | | | | | | h. | 14 |
| ___ | 7. $\frac{6}{x} = \frac{10}{15}$ | ___ | 8. $\frac{5}{8} = \frac{20}{x}$ | ___ | 9. $\frac{10}{25} = \frac{x}{40}$ | i. | 20 |
| | | | | | | k. | 5 |
| | | | | | | l. | 12 |
| ___ | 10. $\frac{x}{24} = \frac{7}{8}$ | ___ | 11. $\frac{4}{x} = \frac{6}{21}$ | ___ | 12. $\frac{x}{36} = \frac{6}{8}$ | n. | 16 |
| | | | | | | o. | 28 |
| | | | | | | p. | 13 |
| ___ | 13. $\frac{5}{30} = \frac{3}{x}$ | ___ | 14. $\frac{14}{35} = \frac{x}{15}$ | ___ | 15. $\frac{x}{35} = \frac{9}{21}$ | r. | 7 |
| | | | | | | s. | 6 |
| | | | | | | t. | 27 |
| ___ | 16. $\frac{12}{27} = \frac{x}{63}$ | | | | | w. | 9 |

Directions: Review the examples below and then complete the problems on page 11.

The Distributive Property:
 $a(b+c) = ab+ac$
 Where a , b and c are any real numbers.

First, let me remind you what it means when two letters are right next to each other in math. This is an Algebra thing!

$a(b+c) = ab+ac$
 When two things are next to each other, it means multiplication.

Examples

$8(x+3) = 8x + 24$

$2x(5x-7) = 10x^2 - 14x$

$-3(x^2+4x-2) = -3x^2 - 12x + 6$

1) $6(1-5m) = 6 - 30m$

2) $-1(-2+n) = 2+n$

3) $-10(a-5) = -10a+50$

4) $(3-7x)-2 = -6+14x$

5) $-4(3y+2) = -12y-8$

6) $(x+1)14 = 14x+14$

7) $4(x+3) = 20$

$4x+12 = 20$
 $-12 -12$
 $\frac{4x}{4} = \frac{8}{4} \quad \boxed{x=2}$

8) $5(-x+3) = 10$

$-5x+15 = 10$
 $-15 -15$
 $\frac{-5x}{-5} = \frac{-5}{-5}$
 $\boxed{x=1}$

Combining Like Terms

1. You cannot add or subtract terms unless they are **LIKE TERMS!**
2. Add or subtract the coefficients only - the variables and exponents stay the same.

ex. $5x$ and $-7x = -2x$
 $2xy$ and $xy = 3xy$
 $-6x^2$ and $10x^2 = 4x^2$

Are $3x^2y$ and $4xy^2$ like terms? why or why not?

No, the exponents do not match up

$$1) (4x) + 2y + (-5x) + 8y = \boxed{-x + 10y}$$

$$2) 2x - 4y \quad \boxed{2x - 4y} \text{ They are not like terms}$$

$$3) (2xy) + 6 + (-4xy) - 9 - y = \boxed{-2xy - 3 - y}$$

$$4) (12r) + 5 + (3r) - 5 = \boxed{15r}$$

$$5) -5n + 3(6 + 7n) = \boxed{-5n + 18 + 21n}$$

$$\boxed{16n + 18}$$

$$6) -3(10b + 10) + 5(b + 2)$$

$$\boxed{-30b - 30 + 5b + 10} = \boxed{-25b - 20}$$

Why do bees have sticky hair?

***Show ALL work for full credit!

Directions: Write the letter of each answer in the box containing the problem number.

1. $5(2x + 3)$

2. $8(3m + 4)$

3. $4(3 - 2y)$

4. $(8 + 3n)(6)$

5. $6(2x - 3)$

6. $9(2x + 6y)$

7. $7(x + 2y)$

8. $8(4x - 3y)$

Distribute, and then combine like terms

9. $2(3x + 4) + 6$

10. $3(x + 4) + 2x$

11. $4(2x + 3y) + 7x$

12. $8(3 - 2f) + 3$

13. $(9n + 6)(4) + 3n$

14. $5m + 7(2 + 8m)$

15. $6(x + y) + x$

16. $3 + 9(2n + 1) + 4n$

Challenge Problems:

17. $2(5x + 2y) + 3(2y + x)$

18. $2(7 - 3x) + 6(3 + 2y) + 3y + 2$

Answers:

E. $24m + 32$

A. $48 + 18n$

H. $14 + 61m$

N. $27 - 16f$

Y. $12x - 18$

O. $32x - 24y$

B. $12 - 8y$

S. $5x + 12$

H. $22n + 12$

Y. $34 - 6x + 15y$

E. $18x + 54y$

M. $13x + 10y$

O. $10x + 15$

C. $7x + 6y$

V. $39n + 24$

E. $6x + 14$

T. $7x + 14y$

H. $15x + 12y$

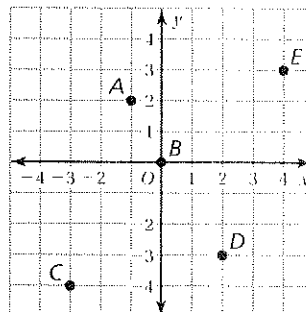
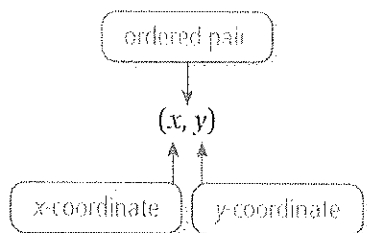
7	14	2	5		11	4	13	9		16	1	12	6	18	15	8	17	3	10
---	----	---	---	--	----	---	----	---	--	----	---	----	---	----	----	---	----	---	----

Directions: Review the information in the red box. Then complete #6-15.

REVIEW: The Coordinate Plane

Name _____

Key Concept and Vocabulary



Skill Examples

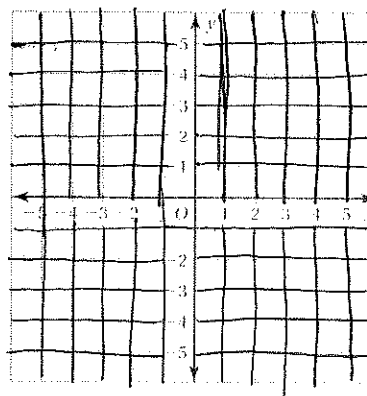
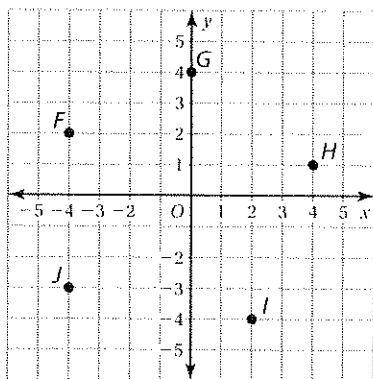
1. $A(-1, 2)$ (Quadrant II)
2. $B(0, 0)$ (origin)
3. $C(-3, -4)$ (Quadrant III)
4. $D(2, -3)$ (Quadrant IV)
5. $E(4, 3)$ (Quadrant I)



PRACTICE MAKES PURR-FECT®

(Check your answers at the end of the page.)

Write the ordered pair corresponding to the point. Plot the ordered pair in the coordinate plane. Name the quadrant for the point.



6. F _____
7. G _____
8. H _____
9. I _____
10. J _____

11. $K(-3, 5)$ _____
12. $L(-3, 0)$ _____
13. $M(2, 5)$ _____
14. $N(4, -2)$ _____
15. $P(-2, -4)$ _____