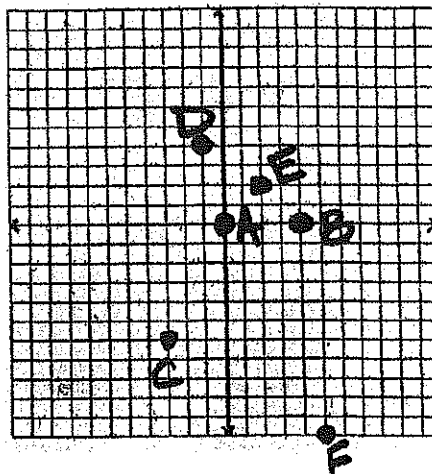


## Algebra I: Summer Packet

1) Plot and label the following ordered pairs (points)

- |             |             |
|-------------|-------------|
| a. (0, 0)   | d. (-1, 4)  |
| b. (4, 0)   | e. (2, 2)   |
| c. (-6, -3) | f. (5, -11) |



2) Sandy received the follow quiz grades in the forth marking period: 82, 88, 91, 76, and 99. What was her average for the five quiz grades?

$$\frac{\text{SUM OF QUIZZES}}{\text{TOTAL \# OF QUIZZES}} = \frac{82 + 88 + 91 + 76 + 99}{5} = \frac{436}{5} = \text{AVG } 87.2$$

3) Jim wants to buy a shirt for the first day of school. The original price of \$55.00 but he notices that all the shirts are marked 30% off. How much will he end up paying before taxes?

$$\frac{x}{55} = \frac{70}{100}$$

$\swarrow$  it saved 30%, then paid for 70%

$$(70)(55) = 100x$$

$$3850 = 100x$$

$$\text{\$ } 38.50 = x$$

4) Write the following phrases as algebraic expression.

- a) The product of eleven and a number

$$11 \cdot n$$

- b) Two times a number plus six

$$2n + 6$$

- c) Seven less than three times a number

$$3n - 7$$

- d) Triple the quantity of 45 plus a number cubed

$$3(n^3 + 45)$$

5) Write the following algebraic expressions and verbal phrases. **ANSWERS VARY**

a)  $3m - 7n^3$  **TRIPLE A NUMBER MINUS SEVEN AND THE PRODUCT OF ANOTHER NUMBER CUBED.**

b)  $(5 + f) \div 8$  **THE SUM OF FIVE AND A NUMBER DIVIDED BY EIGHT.**

6) Find the next three terms in each sequence.

a) 27, 35, 43, 51... **59 67 75**  
 $\downarrow \downarrow \downarrow \downarrow$   
 $+8 +8 +8 +8$

b) 27, 9, 3... **1 1/3 1/9**  
 $\downarrow \downarrow \downarrow$   
 $\div 3 \div 3 \div 3$

c) 

7) Simplify the following. Remember PEMDAS:

a)  $\frac{3 + [15 \div (-3)]}{16} = \frac{3 + [-5]}{16} = \frac{-2}{16} = \boxed{\frac{-1}{8}}$

b)  $\frac{1}{2} (5^2 + 3) - 4 = \frac{1}{2} (25 + 3) - 4 = \frac{1}{2} (28) - 4 = 14 - 4 = \boxed{10}$

c)  $\frac{1}{3} - \frac{12(77 \div 11)}{9} = \frac{1}{3} - \frac{12(7)}{9} = \frac{1}{3} - \frac{84}{9} = \frac{3}{9} - \frac{84}{9} = \frac{-81}{9} = \boxed{-9}$

8) Fill in the blank with  $<$ ,  $>$ ,  $\geq$ , or  $\leq$ ,  $=$

a)  $\frac{2}{3} < \frac{4}{5}$   
 $\frac{8}{15} < \frac{12}{15}$

b)  $-5 < -4.5$

c)  $\frac{12}{16} = \frac{3}{4}$   
 $\frac{12}{16}$

9) State whether each equation is true or false for the given variable.

a)  $3x^2 - 4(5) = 6$  for  $x = -3$ ?  
 $3(-3)^2 - 4(5) = 6$   
 $3(9) - 20 = 6$   
 $27 - 20 = 7$

**FALSE**

b)  $\frac{5^2 - 2y}{5^2 - 6} \leq 1$  for  $y = 3$

**TRUE**

$\frac{5^2 - 2(3)}{5^2 - 6} \leq 1$   
 $\frac{5^2 - 6}{5^2 - 6} \leq 1$   
 $\frac{25 - 6}{25 - 6} \leq 1$   
 $\frac{19}{19} \leq 1$   
 $1 \leq 1 \checkmark$

c)  $y^4 = 4^2$  for  $y = 2$ ?  
 $(2)^4 = 4^2$   
 $16 = 16 \checkmark$

**TRUE**

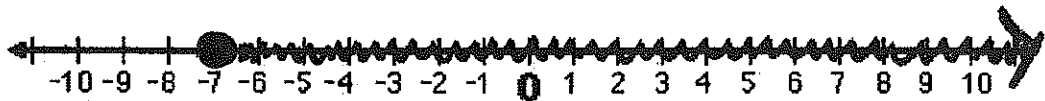
10) Simplify the following.

a)  $-9^2 = \boxed{-81}$

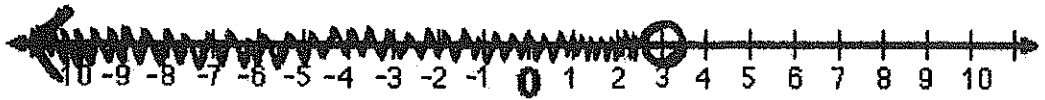
b)  $(-9)^2 = \boxed{81}$

11) Graphing sets of solutions.

a)  $y \geq -7$



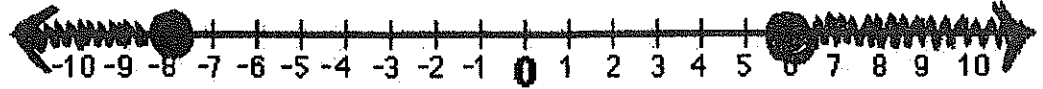
b)  $x < 3$



c)  $-2 < k < 4$



d)  $t \leq -8$  or  $t \geq 6$



12) Find the sum or difference of each.

a)  $-61 + (-29)$

$$\begin{array}{r} -61 - 29 \\ \hline -90 \end{array}$$

b)  $44 + (-18)$

$$\begin{array}{r} 44 - 18 \\ \hline 26 \end{array}$$

c)  $-14 - 59$

$$\begin{array}{r} -14 - 59 \\ \hline -73 \end{array}$$

d)  $12 - (-63)$

$$\begin{array}{r} 12 + 63 \\ \hline 75 \end{array}$$

e)  $64w - 32w$

$$\begin{array}{r} 64w - 32w \\ \hline 32w \end{array}$$

f)  $\frac{1.2}{5.2} - \frac{1.5}{2.5}$  LCD = 10

$$\frac{2}{10} - \frac{3}{10} = \begin{array}{r} -3 \\ \hline 10 \end{array}$$

13) Find the product of each.

a)  $(-6)(-12)$

$$\begin{array}{r} -6 \times -12 \\ \hline 72 \end{array}$$

b)  $(-\frac{1}{1})(\frac{2}{5})$

$$\begin{array}{r} -1 \times \frac{2}{5} \\ \hline -\frac{2}{5} \end{array}$$

c)  $(-\frac{1}{2})(\frac{6}{7})$

$$\begin{array}{r} -1 \times \frac{6}{7} \\ \hline -\frac{6}{7} \end{array}$$

14) Find a number between the given numbers.

a)  $\frac{5}{6}$  and  $\frac{3}{4}$

$$\begin{array}{r} \frac{20}{24} \quad \frac{18}{24} \end{array}$$

$$\begin{array}{r} 19 \\ \hline 24 \end{array}$$

b)  $\frac{3}{7}$  and  $\frac{5}{6}$

$$\begin{array}{r} \frac{18}{42} \quad \frac{35}{42} \end{array}$$

$$\begin{array}{r} 19 \\ \hline 42 \end{array}$$

ANSWERS WILL VARY!

15) Replace each \_\_\_ with  $<$ ,  $>$ , or  $=$  to make the statement true.

a)  $-0.66 > -0.67$

b)  $\frac{5}{13} < \frac{6}{14}$

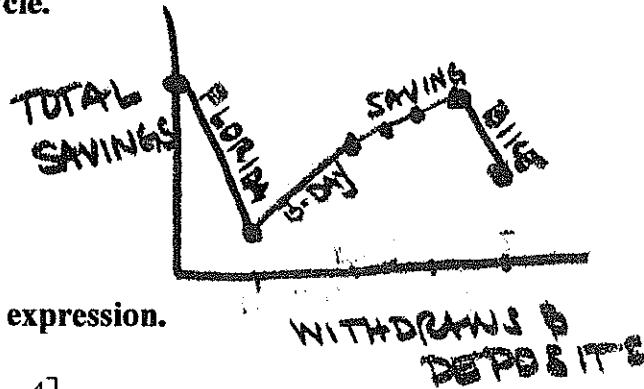
c)  $\frac{2}{3} > \frac{5}{8}$

$$\frac{70}{182} \quad \frac{78}{182}$$

$$\frac{16}{24} \quad \frac{15}{24}$$

16) Sketch a reasonable graph for the following situation. Be sure to label your graph appropriately.

David makes a large withdraw from his account to go on a trip to Florida. He then adds checks given to him for his birthday. David saves his money for a few weeks before buying a new bicycle.



17) Simplify each matrix expression.

a)  $\begin{bmatrix} 5 & -2 \\ 3 & 8 \end{bmatrix} - \begin{bmatrix} 1 & -4 \\ -3 & 6 \end{bmatrix} =$

$\begin{bmatrix} 4 & 2 \\ 6 & 2 \end{bmatrix}$

b)  $\begin{bmatrix} 2 & 11 & -3 \end{bmatrix} + \begin{bmatrix} 1 & 12 & -4 \end{bmatrix} =$

$\begin{bmatrix} 3 & 23 & -7 \end{bmatrix}$

c)  $4 \begin{bmatrix} 3 & -9 & \frac{1}{2} \\ 5 & \frac{1}{4} & 7 \\ \frac{5}{4} & -6 & 10 \end{bmatrix} =$

$\begin{bmatrix} 12 & -36 & 2 \\ 20 & 1 & 28 \\ 5 & -24 & 40 \end{bmatrix}$

18) George Washington was born in 1732 and died at the age of 67. What year did Washington die?

$1732 + 67 = 1799$

19) Simplify the following absolute value expressions.

a)  $|-124|$

$124$

b)  $|-31 + 15|$

$|-16|$   
 $16$

c)  $-|8 + 9 - 21|$

$-|17 - 21|$   
 $-|-4| = -4$

20) Draw a Line Plot and a Stem – and – Leaf Plot of the following Data:

46, ~~34~~, ~~38~~, ~~44~~, 56, ~~29~~, ~~38~~, ~~30~~, ~~51~~, 56



Stem	Leaf
2	9
3	0 1 4 8 8
4	4 6
5	6 6

Find the mean median and mode of this data.

Mean =  $\frac{402}{10} = 40.2$

Median = 38

Mode = 38 & 56

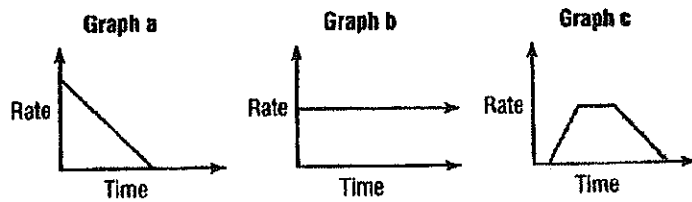
21) Marsha deposits her 90 dollar paycheck into her bank account and then withdraws \$150 for a plane ticket to Florida. If she had \$1200 in her account before these transactions, what is her current balance?

$1200$   
 $+ 90$  deposit  
 $- 150$  withdraw  


---

 $1140$

22) Match each description with the appropriate graph.



the speed of light **B**  
 an airplane taking off, then landing **C**  
 a car approaching a stop sign **A**

23) Simplify the following square roots.

a)  $\sqrt{169} = 13$

b)  $-\sqrt{36} = -6$

c)  $\sqrt{m^2} = m$

d)  $\sqrt{45} = \sqrt{9 \cdot 5} = 3\sqrt{5}$

e)  $\sqrt{\frac{25}{64}} = \frac{5}{8}$

f)  $\pm \sqrt{11}$  SIMPLIFIED

24) Simplify the following rational expressions.

a)  $\frac{1}{2} \div \frac{5}{7} = \frac{1}{2} \times \frac{7}{5} = \frac{7}{10}$

b)  $-\frac{6}{7} \div 3 = -\frac{6}{7} \times \frac{1}{3} = -\frac{2}{7}$

c)  $\left(-\frac{1}{2}\right) \left(-\frac{1}{2}\right) = \frac{1}{2}$

d)  $\frac{-5}{\frac{3}{7}} = -\frac{5}{1} \cdot \frac{7}{3} = -\frac{35}{3}$

e)  $\frac{2}{\frac{5}{8}} = \frac{2}{1} \cdot \frac{8}{5} = \frac{16}{5}$

f)  $6(7x+2) + 4(x-1) = 42x + 12 + 4x - 4 = 46x + 8$

g)  $3x(-2y) + (-9x)(-2y) =$

$-6xy + 18xy$

$12xy$

h)  $\frac{-3a + 16}{4} =$

$-\frac{3}{4}a + 4$

25) Write an equation for each of the following statements. Be sure to identify each variable.

a) Sarah collected six more than three times the number of pieces of candy collected by Jordan.

$S = 6 + 3J$

Let  $S = \text{Sarah}$  and  $J = \text{Jordan}$

b) Eric collected seven less than half the number of pieces of candy collected by Jordan.

$E = \frac{1}{2}J - 7$

Let  $E = \text{Eric}$  and  $J = \text{Jordan}$

c) A science fiction book has three times the number of pages as a mystery book. Together the two books have 675 pages

Solve the following equations.

Let  $S = \text{Science Fiction}$   
 $M = \text{Mystery}$

$S = 3M$

$S = 337.5 \text{ pages}$   
 $M = 112.5 \text{ pages}$

$S + 3M = 675$

$3M + 3M = 675$

$6M = 675$

$M = 112.5$

26) Solve the following equation for the given variable.

a)  $y + 7 = 15$

$-7 \downarrow -7$

$y = 8$

b)  $23 + p = -11$

$-23 \downarrow -23$

$p = -34$

c)  $y + \left(-\frac{1}{2}\right) = \frac{3}{4}$

$y - \frac{1}{2} = \frac{3}{4}$

$+\frac{1}{2} \downarrow +\frac{1}{2}$

$y = \frac{5}{4}$

d)  $\frac{9}{4}x = 180$

$\frac{9}{4} \downarrow \frac{4}{9}$

$x = 20$

e)  $\frac{x}{12} \times \frac{1}{4}$

$\frac{4x}{4} = \frac{84}{4}$

$x = 21$

f)  $\frac{13}{4}k = \frac{5}{2}$

$\frac{13}{4} \downarrow \frac{4}{13}$

$k = \frac{5}{2} \cdot \frac{4}{13}$

$k = \frac{10}{13}$

$$\begin{array}{r} \text{g) } 3y + 16 = 22 \\ -16 \quad -16 \\ \hline \end{array}$$

$$\frac{3y}{3} = \frac{6}{3}$$

$$\boxed{y=2}$$

$$\text{i) } 5 = -5(y+3)$$

$$\begin{array}{r} 5 = -5y - 15 \\ +15 \quad +15 \\ \hline \end{array}$$

$$\frac{20}{-5} = \frac{-5y}{-5} \quad \boxed{y=-4}$$

$$\text{h) } \begin{array}{r} 15 - x = x - 7 \\ +7 \quad +x \quad +x \quad +7 \\ \hline \end{array}$$

$$\frac{22}{2} = \frac{2x}{2}$$

$$\boxed{11 = x}$$

$$\text{j) } 9 = \frac{x-8}{4}$$

$$\begin{array}{r} 36 = x - 8 \\ +8 \quad +8 \\ \hline \end{array}$$

$$\boxed{44 = x}$$

27) You are the service manager at an auto repair shop. You charge \$35 per hour for labor plus the cost of any parts. A car needed \$154 of new parts. The final bill for the car was \$420. How long did it take to repair the car? Explain your answer.

Cost per hour + parts = TOTAL COST

$$35h + 154 = 420$$

$$\begin{array}{r} -154 \quad -154 \\ \hline \end{array}$$

$$\frac{35h}{35} = \frac{266}{35}$$

$$\boxed{h = 7.6 \text{ hours}}$$

OR

$$\boxed{7 \text{ hours AND } 36 \text{ MINUTES}}$$

EXPLAIN  
HOW YOU  
GOT THIS  
RESULT AND  
WHY YOU KNOW  
IT'S CORRECT!!