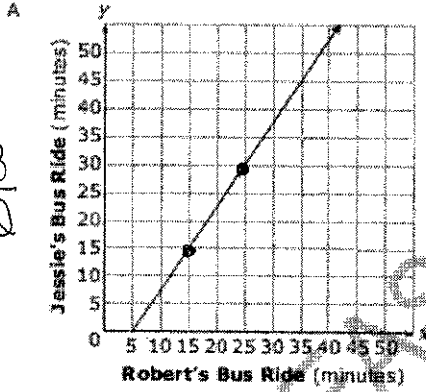


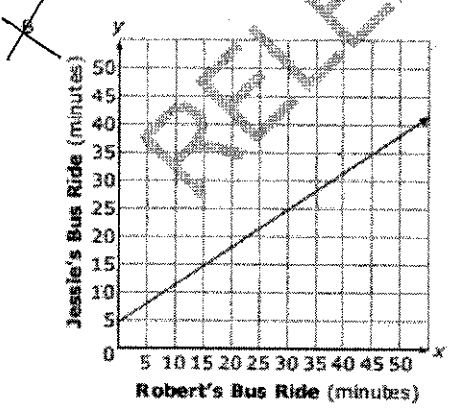
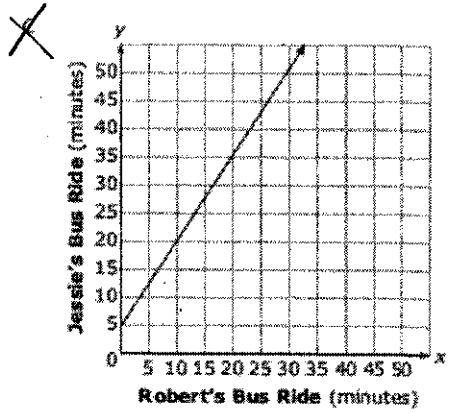
Midterm Review Sheet (SEMESTER – Spring 2019)

1.) Robert's bus ride is 5 minutes more than  $\frac{3}{2}$  the length of Jessie's bus ride. Which graph represents the length of their rides?

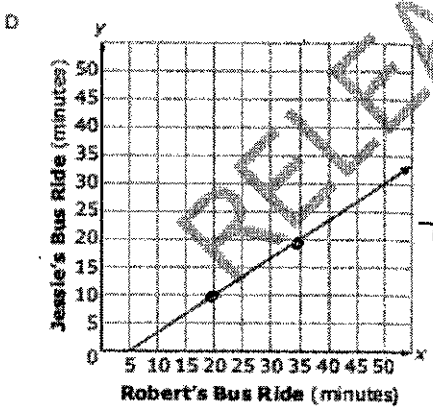
$m = \frac{2}{3}$



$X = 5 + \frac{3}{2}Y$   
 $X - 5 = \frac{3}{2}Y$   
 $\frac{2X - 10}{2} = \frac{3Y}{2}$



$Y = \frac{2}{3}X - \frac{10}{3}$



$m = \frac{3}{2}$

2.) Michael has a jar of dimes and nickels. There are 152 dimes and nickels in the jar that total \$11.00 If  $d$  represents and  $n$  represents nickels, which system of equations below represents the situation?

- A  $\begin{cases} d+n=11 \\ 0.05d+0.10n=152 \end{cases}$       B  $\begin{cases} d+n=11 \\ 0.10d+0.5n=152 \end{cases}$       C  $\begin{cases} d+n=152 \\ 0.05d+0.10n=11 \end{cases}$       D  $\begin{cases} d+n=152 \\ 0.10d+0.05n=11 \end{cases}$

3.) The marching band sells cases of oranges and grapefruit for a fundraiser.  
 • Shakira sells 5 cases of oranges and 8 cases of grapefruit for \$235.  
 • Jeff sells 3 cases of oranges and 2 cases of grapefruit for \$85.

How much would 1 case of oranges cost? (Express your answer in dollars.cents.)

$X = \text{ORANGES}$   
 $Y = \text{GRAPEFRUIT}$   
 $5X + 8Y = 235$   
 $3X + 2Y = 85$   
 $10X + 16Y = 470$   
 $24X + 10Y = 680$

$X = \$15.00$

$\frac{-14X}{-14} = \frac{-210}{-14}$

4.) Four times Joe's age plus 2 times Tim's age equals 50. Tim's age is also 2 less than Joe's age. How old is Joe?  $\rightarrow X =$

$X = \text{Joe's age}$   
 $Y = \text{Tim's age}$   
 $X = 9$   
 $4X + 2Y = 50$   
 $Y = X - 2$   
 $4X + 2(X - 2) = 50$   
 $4X + 2X - 4 = 50$   
 $6X - 4 = 50$

$\frac{6X}{6} = \frac{54}{6}$

5.) Suppose that the function  $f(p) = 3p + 30$  represents the number of points you earn on a test for getting  $p$  questions correct. You earned 13 extra credit points for a project. How many questions must you answer correctly to earn an A (90 points) on the test?

$$(3p + 30) + 13 = 90$$

$$3p + 43 = 90$$

$$3p = 47$$

$$p = 15.7$$

10 problems

6.) The volume of a cylinder can be found using the formula:  $V = \pi r^2 h$ , where  $V$  is the Volume,  $r$  is the radius of the base, and  $h$  is the height. What equation finds  $h$ , given  $V$  and  $r$ ? (Remember,  $\pi$  is a number.)

A)  $\frac{\pi r^2}{V} = h$

B)  $V\pi r^2 = h$

C)  $\frac{V\pi}{r^2} = h$

D)  $\frac{V}{\pi r^2} = h$

7.) The table below represents the average price of a movie ticket in the given year.

Year	1987	1991	1995	1999	2003	2007	2009
Price (\$)	3.91	4.21	4.35	5.06	6.03	6.88	7.50

$$\frac{7.50 - 4.21}{2009 - 1991} =$$

To the nearest cent, what was the average rate of change of the ticket price between 1991 and 2009?

A) \$.16/year

B) \$.18/year

C) \$.23/year

D) \$3.29/year

$$3.29$$

$$18.18$$

8.) Jose compared the  $y$ -intercept of the graph of the function  $f(x) = 3x - 9$  to the  $y$ -intercept of the graph of the linear function that includes the points in the table below.

What is the difference when the  $y$ -intercept of  $f(x)$  is subtracted from the  $y$ -intercept of  $g(x)$ ?

A. -11

B.) -7

C.) 2

D.) 7

$$-2 - (-9)$$

$$f(x) = 3x - 9$$

$$\hookrightarrow b = -9$$

$x$	$y$
1	2
3	10
4	14
7	26

+2 (1 to 3) +8  
 +1 (3 to 4) +4  
 +3 (4 to 7) +12

$$m = 4$$

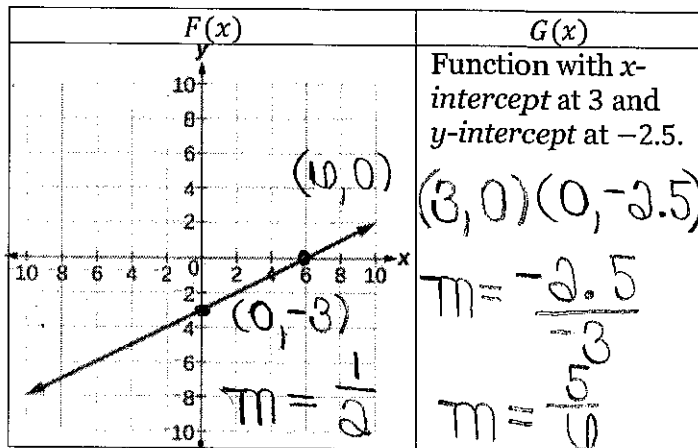
$$b = -2$$

9.) For a certain section, Panthers season tickets cost \$70 per game for  $x$  games with a \$2,000 charge for a Personal Seat License. Courtside season tickets to the Hornets cost \$250 per game for  $x$  games with no PSL charge. What function represents the difference in cost between Panthers and Hornets season tickets?

- (A)  $f(x) = -180x + 2000$
- B)  $f(x) = -180x - 2000$
- C)  $f(x) = 70x - 1750$
- D)  $f(x) = -1820x$

Panthers - Hornets  
 $70x + 2000 - (250x)$   
 $-180x + 2000$

10.) Dayana compared the slope of the following two functions:



What is the slope of the function with the larger slope?

- A)  $\frac{1}{2}$
- (B)  $\frac{5}{6}$
- C)  $\frac{6}{5}$
- D) 2

11.) The table below shows a car dealer's paycheck based on the number of cars she sold.

Cars Sold	Monthly Paycheck
6	\$2,500
12	\$4,000
18	\$5,500
24	\$7,000

+1500

What is the meaning of the slope of the linear model for the data?

- A) The dealer gets \$2,500 for every car she sells.
- B) The dealer gets \$2,500 for every 6 cars she sells.
- C) The dealer gets \$1,500 for every car she sells.
- (D) The dealer gets \$1,500 for every 6 cars she sells.

12.) Keyshawn and Trey begin saving money each week. After  $x$  weeks, the following functions represent the amount of money they have saved:

Keyshawn:  $f(x) = 5x + 36$   
 Trey:  $g(x) = 8x + 9$

After how many weeks will they have the same amount of money?

- A) 1 week
- B) 5 weeks
- (C) 9 weeks
- D) 13 weeks

$5x + 36 = 8x + 9$   
 $36 = 3x + 9$   
 $27 = 3x$   
 $x = 9$

13.) Solve the equation:

$8a - (5a + 1) = 8 - 2(a - 3)$   
 $8a - 5a - 1 = 8 - 2a + 6$   
 $3a - 1 = 14 - 2a$

$5a = 15$

$a = 3$

14.) A really bad cold is going around. The following table represents the number of sick students in a school on a given day.

DAYS	1	2	3	4	5	6	7
SICK STUDENTS	12	23	34	45	56	67	78

$\cup$        $\cup$        $\cup$   
 $+11$     $+11$     $+11$

What function could represent the number of sick students after  $x$  days, assuming the cold keeps spreading?

- A)  $f(x) = -11x + 12$   
 B)  $f(x) = -12x + 11$   
 C)  $f(x) = 11 + 12(x - 1)$   
 D)  $f(x) = 12 + 11(x - 1)$

15.) Jesus has \$34 in his bank account. With his new job, he deposits the same amount each week into the account. After 35 weeks, Jesus has \$909. What function can find the amount in Jesus's account after  $w$  weeks?

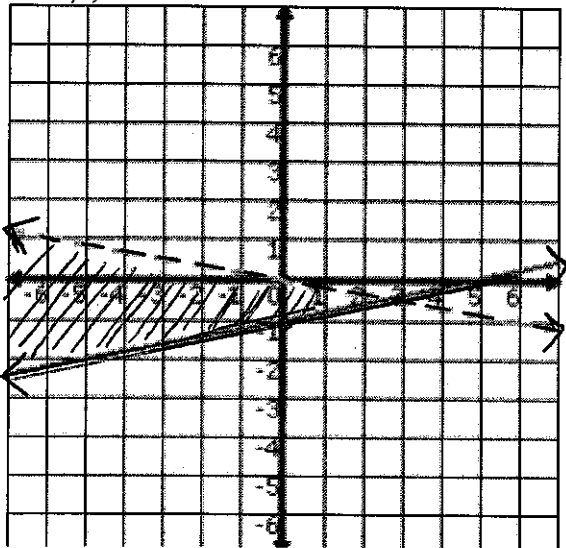
- A)  $f(w) = 35w + 34$   
 B)  $f(w) = 25w + 34$   
 C)  $f(w) = \frac{909}{35}w + 34$   
 D)  $f(w) = 25(w - 1) + 34$
- $(0, 34)(35, 909)$   
 $m = \frac{909 - 34}{35 - 0}$   
 $m = \frac{875}{35}$

16.) What function describes the  $n^{\text{th}}$  term of the following sequence?

9, 16, 23, 30, ...

- A)  $f(n) = 9n + 7$   
 B)  $f(n) = 7n + 9$   
 C)  $f(n) = 9(n - 1) + 7$   
 D)  $f(n) = 7(n - 1) + 9$

17.)



Choose the system of inequalities that matches the graph.

A.  $y < -6x$   
 $y \geq \frac{1}{5}x - 1$

B.  $y < -\frac{1}{6}x$   
 $y \geq \frac{1}{5}x - 1$

~~C.  $y < -\frac{1}{6}x$   
 $y \geq 5x$~~

~~D.  $y < -\frac{1}{6}x$   
 $y \leq \frac{1}{5}x - 1$~~

$b = 0$   
 $m = -\frac{1}{6}$

shade above  
 $m = \frac{1}{5} \geq$   
 $b = -1$

18.) Solve the inequality:

$$\begin{aligned}
 -x &< -x + 7(x - 2) \\
 -x &< -x + 7x - 14 \\
 -x &< 6x - 14 \\
 -7x &< 14
 \end{aligned}$$

$x > -2$

19.) Solve the equation:

$$\begin{aligned}
 18 \left( \frac{x}{9} + \frac{4}{3} \right) &= \left( \frac{1}{2}x - 1 \right) 18 \\
 2x + 24 &= 9x - 18 \\
 24 &= 7x - 18 \\
 42 &= 7x \\
 \frac{42}{7} &= \frac{7x}{7}
 \end{aligned}$$

$x = 6$

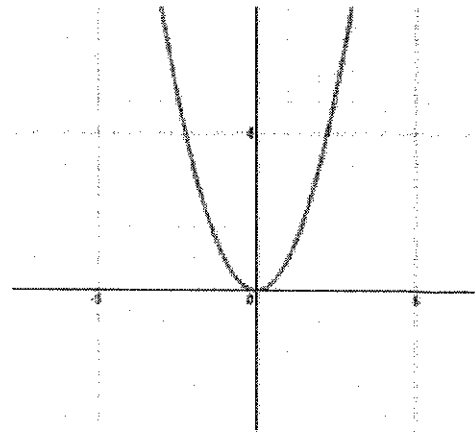
20.) What is the value of  $x$  for  $-4(2x + 3) - 10x = 14(x - 8) + 3x$ ?

Leave your answer in fraction form.

$$\begin{aligned} -8x - 12 - 10x &= 14x - 112 + 3x \\ -18x - 12 &= 17x - 112 \\ -12 &= 35x - 112 \\ 100 &= 35x \\ \frac{100}{35} &= \frac{35x}{35} \end{aligned}$$

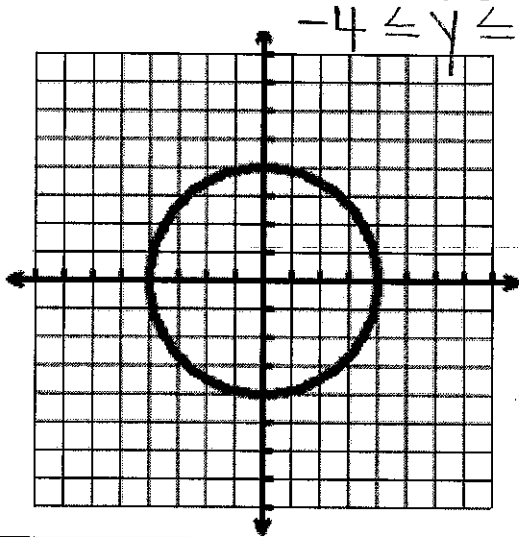
$x = \frac{20}{7}$

21.) What is the domain of the graph below?



all real #s

22.) What is the range of the graph below?



23.) Given the function,  $f(x) = \frac{x-4}{3}$ , what is the value of  $f(-2)$ ?

$$\frac{-2-4}{3} = \frac{-6}{3} = -2$$

24.) The lengths of the sides of triangle are three consecutive even integers. If the perimeter of the triangle is 72 inches, what is the length of the longest side?

$$\begin{aligned} n + (n+2) + (n+4) &= 72 \\ 3n + 6 &= 72 \\ 3n &= 66 \\ n &= 22 \end{aligned}$$

20 in

25.) The function  $f(x) = -0.5x + 10$  models the length of a sparkler  $x$  seconds after it is lit. What is the meaning of the y-intercept of this function?

- A. The final length of the sparkler
- B. The initial length of the sparkler
- C. The rate at which the sparkler is burning
- D. The amount of time it takes the sparkler to burn

26.) The length of a rectangle is 2 times 1 less than 3.5 times the width. The perimeter is 60 cm. Find the width of the rectangle.

$$\begin{aligned} L &= 2(3.5W - 1) = 7W - 2 \\ W &= W \\ 7W - 2 &= 10W - 4 \\ 10W - 4 &= 60 \\ 10W &= 64 \\ W &= 4 \text{ cm} \end{aligned}$$

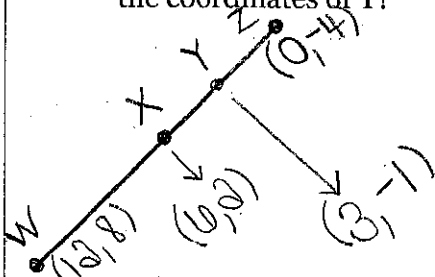
27.) The expression  $2T + 3F + 4M + 10E$  gives the number of points a student earns on a test when the student correctly answers  $T$  true-false questions,  $F$  fill-in-the-blank questions,  $M$  multiple-choice questions, and  $E$  extended-response questions.

True or False:

F The term  $2T$  represents the number of total number of points earned for answering 2 true or false questions correctly.

$7W - 2$

28.) X is the midpoint of line segment WZ. Y is the midpoint of line segment XZ. W is located at (12, 8) and Z is at (0, -4). What are the coordinates of Y?



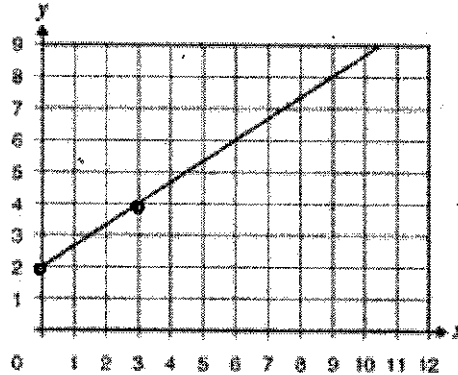
(3, -1)

29.) The area of a trapezoid is given by the equation  $A = \frac{1}{2}h(b_1 + b_2)$ . Solve for  $b_1$ .

$$\frac{2A}{h} = \frac{h(b_1 + b_2)}{h}$$

$$\frac{2A}{h} - b_2 = b_1$$

30.) A builder is using the street grid below to plan the location of streets in a new development.



$$m = \frac{2}{3}$$

$$m = -\frac{3}{2}$$

Which of the following equations represents a street that that could be perpendicular to the graphed street and passes through the point (8, -4)?

A.  $y = -\frac{2}{3}x + 4$

B.  $y = -\frac{3}{2}x + 8$

C.  $y = \frac{3}{2}x + 8$

D.  $y = \frac{2}{3}x + 4$

$$-4 = \left(-\frac{3}{2}\right)(8) + b$$

$$-4 = -12 + b$$

$$b = 8$$