MPM 1D9

Grade 9 Pre-AP Math
Unit 4 Test – Linear Relations – Practice Test

Victim: _____

KU	APP	TIPS	COM
/22	/21	/15	/14

INSTRUCTIONS – Read each question ***carefully!!*** For full marks, *show all work where required*.

Matching

1. Match each item with the correct statement below. **(4 KU)**

A. standard form **B.** reciprocals **C.** y-intercept **D.** x-intercept
E. point of intersection **F.** slope **G.** parallel lines **H.** perpendicular lines

_____ For a horizontal line, this is zero.
_____ These lines meet at 90°.
_____ For the line $3x-2y=6$, this is -3.
_____ This is the name for an equation of a line in the form $Ax+By+C=0$.
_____ These lines have the same slope.
_____ This is where two lines meet.
_____ The numbers 10 and 1/10 are examples.
_____ For a vertical line, the value of x is constant and equal to this.

Modified True/False

Indicate whether each statement is ***true*** or ***false***.
If false, ***change*** the ***underlined part*** to make the statement true. **(4 KU)**

2. _____ The slope of the line $x=-10$ is **zero**. **Change:** _____

3. _____ The y-intercept of the line $x-y=-3$ is **-3**. **Change:** _____

4. _____ **$y=4x-1$** and $4x+y+1=0$ represent the same line. **Change:** _____

5. _____ If the dependent variable of a linear relation decreases by 6 for every increase of 5 in the independent variable, the slope must be $-\frac{5}{6}$. **Change:** _____

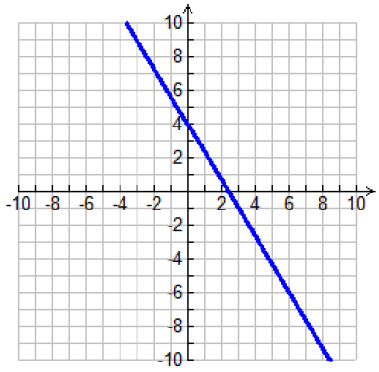
Multiple Choice

Identify the choice that best completes the statement or answers the question. **(4 KU)**

6. _____ For the line $2x-5y+10=0$, which statement is true?

(a) The x-intercept is -5, and the y-intercept is -2.
(b) The x-intercept is 5, and the y-intercept is 2.
(c) The x-intercept is 5, and the y-intercept is -2.
(d) The x-intercept is -5, and the y-intercept is 2.

7. _____ What are the slope and y-intercept of the given line?



(a) $m=\frac{5}{3}$, $b=4$
(b) $m=-\frac{5}{3}$, $b=4$
(c) $m=\frac{3}{5}$, $b=-4$
(d) $m=-\frac{5}{3}$, $b=-4$

K	–
A	–
T	–
C	–

8. _____ What is the slope of the line with an x-intercept of -10 and a y-intercept of -3?

(a) $-\frac{3}{10}$ **(b)** $\frac{3}{10}$ **(c)** $-\frac{10}{3}$ **(d)** $\frac{10}{3}$

9. _____ What is the value of p so that the line passing through $(6, 2)$ and $(10, p)$ has a slope of -2?

(a) -10 **(b)** -6 **(c)** 10 **(d)** 6

Problems

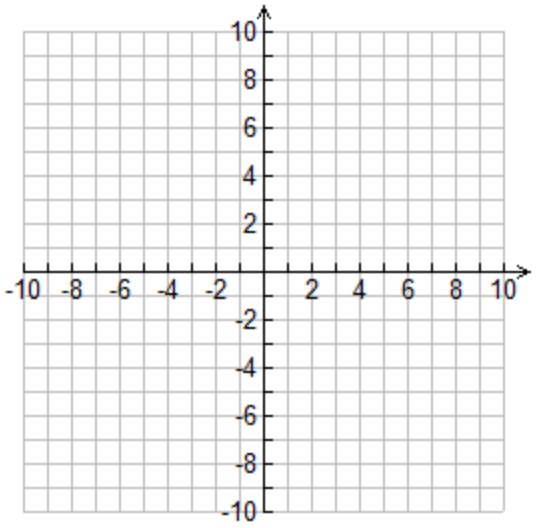
10. Determine the slope-y-intercept equation (i.e. in the form $y = mx + b$) of the line passing through the points $(-3, -5)$ and $(4, 9)$. **(5 KU)**

11. The following questions deal with the equation $5x - 6y - 30 = 0$, an equation of a line in ***standard form***.

(a) Write the equation in the form $y = mx + b$ and state the slope and y-intercept. **(4 APP)**

$\therefore m =$ _____ and $b =$ _____

(b) Use the slope-y-intercept form of the equation that you found in (a) to sketch a graph of the line. **(3 APP)**



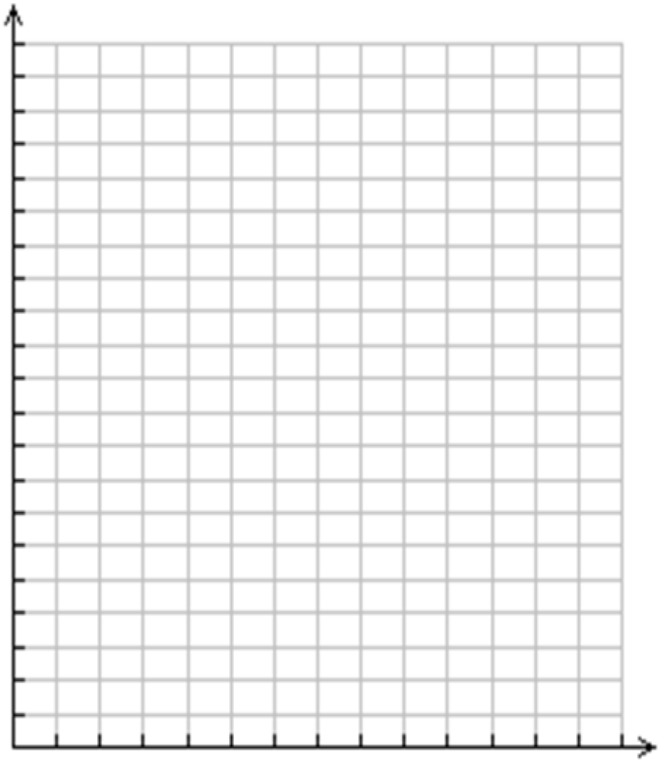
K	–	A	–	T	–	C	–

12. Sharon and Chanelle are both electricians. Sharon charges a flat fee of $60 ***plus*** $40 per hour. Chanelle, on the other hand, doesn't charge a flat fee; she simply charges $50 per hour. Let C represent the total amount charged and let t represent the time worked, in hours.

(a) For each electrician, write an equation relating C to t. **(3 APP)**

Sharon: _____ Chanelle: _____

(b) Using the grid at the right, sketch the graphs of both equations from part (a). ***Be sure to label the graph and axes appropriately***. Use an appropriate scale on both axes. **(6 APP)**



(c) State the point of intersection **and** explain what it represents in this situation. **(2 APP)**

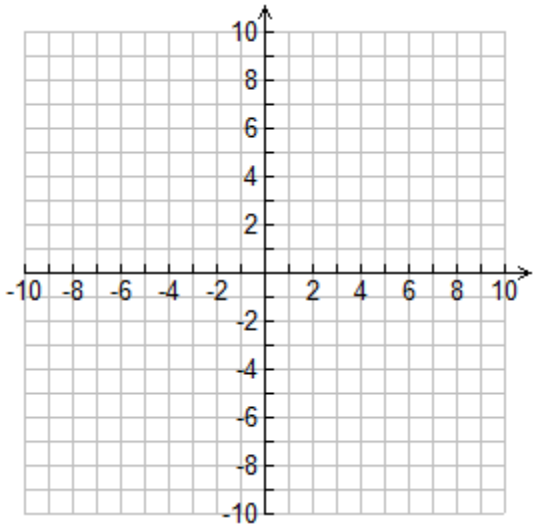
Point of Intersection: (,)

Meaning: _____

_____

(d) How would you decide which electrician to hire? Explain. **(3 APP)**

13. A line is perpendicular to the line $y = -\frac{7}{2}x + 9$ and also passes through the point of intersection of $x + y = 10$ and $3x - 4y + 12 = 0$. Determine the equation of the line in standard form. **(5 KU, 3 TIPS)**

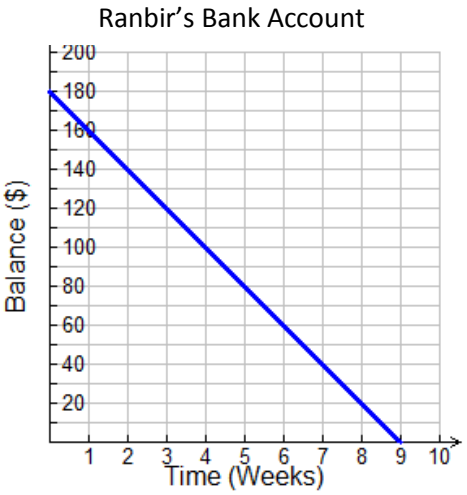


K	–	A	–	T	–	C	–

14. By tutoring classmates, Ranbir earned some money, all of which he deposited into his bank account. Once summer arrived, he stopped tutoring and began spending his money on go-cart racing. **(4 TIPS, 4 COM)**

(a) How much money did Ranbir save altogether? Explain.

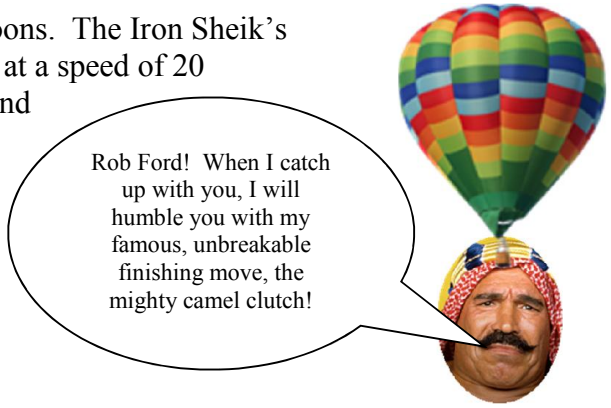
(b) How long will it take Ranbir to spend all his money? Explain.



(c) How much money will he have after 3 weeks? Explain.

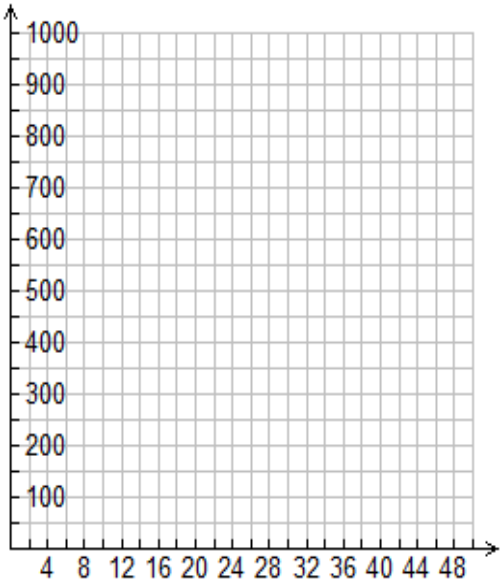
(d) Calculate the ***slope*** and explain what it means in this situation.

15. The Iron Sheik and Rob Ford are flying in separate hot-air balloons. The Iron Sheik's balloon is 300 m ***directly above*** Rob Ford's balloon and ***falling*** at a speed of 20 m per minute. Rob Ford's balloon is 700 m above the ground and ***falling*** at a speed of 10 m per minute.



Assuming that the balloons are both moving vertically, will they collide before reaching the ground?

If the balloons do collide, at what time does the collision take place? How high above the ground are the balloons when they collide? **(8 TIPS)**



K	–	A	–	T	–	C	–