Course: MPM 1DO  Unit 4 Test: Linear Relations  Name: _____

Date: _____

| K /24 | A /14 | T /18 | C /10 |
|---|---|---|---|

**Multiple Choice K[5]**

Identify the choice that best completes the statement or answers the question.

**1.** _____ For the line with equation $4x-3y-12=0$, which statement is true?

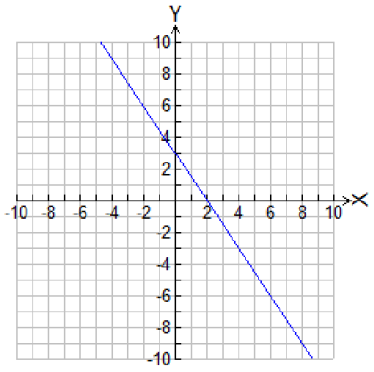
**a.** The $x$-intercept is 3, and the $y$-intercept is 4.

**b.** The $x$-intercept is 4, and the $y$-intercept is 3.

**c.** The $x$-intercept is 3, and the $y$-intercept is –4.

**d.** The $x$-intercept is 4, and the $y$-intercept is –3.

**2.** _____ What are the slope and $y$-intercept of the line shown below?




**a.** $m=\frac{3}{2}, b=3$

**b.** $m=\frac{2}{3}, b=3$

**c.** $m=-\frac{3}{2}, b=3$

**d.** $m=-\frac{2}{3}, b=3$

**3.** _____ The lines in which of the following pairs are ***parallel***?

a. $y=3x-1$, $y=2x-1$

b. $y=3x-1$, $y=-\frac{1}{3}x-7$

c. $y=4$, $y=-4$

d. $y=2x-3$, $y=\frac{1}{2}x+6$

**4.** _____ The lines in which of the following pairs are ***perpendicular***?

**a.** $y=-\frac{2}{5}x-7$, $y=\frac{5}{2}x+9$

**b.** $y=-\frac{2}{5}x-7$, $y=\frac{2}{5}x-7$

**c.** $y=5x-16$, $y=\frac{1}{5}x-13$

**d.** $y=\frac{2}{5}x-7$, $y=\frac{2}{5}x-7$

**5.** _____ What is the slope of the line with an $x$-intercept of 3 and a $y$-intercept of –4?

**a.** $-\frac{3}{4}$

**b.** $-\frac{4}{3}$

**c.** $\frac{3}{4}$

**d.** $\frac{4}{3}$

**Matching K[4]**

**6.** Match each item with the correct statement below.

**a.** perpendicular lines
**b.** slope
**c.** parallel lines
**d.** *x*-intercept
**e.** standard form
**f.** *y*-intercept
**g.** reciprocals
**h.** point of intersection

____ For a horizontal line, this is zero.

____ These lines meet at 90°.

____ For the line $y = 3x + 6$, this is 6.

____ 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 3 and $1/3$ are examples.

____ For a vertical line, the value of *x* is constant and equal to this.

**Short Answers**

**7.** What is the equation of the… **K[2]**

**a)** …vertical line that passes through the point (4, 3)?

**b)** …horizontal line that passes through the point (4, 3)?

**8.** Write the equation $4x + 3y - 9 = 0$ in the form $y = mx + b$ and state the slope and *y*-intercept. **K[4]**

**9.** Find an equation in ***standard form*** for the line that passes through the points (2, 1) and (–4, –3). **K[6]**

**10.** Find an equation of the line with $y$-intercept 2 and perpendicular to the line $y = \frac{1}{4}x - 3$. **K[3]**

**11.** At a bowling alley, Angela rented shoes for \$4 and it cost her \$3.50 to bowl each game. **A[9]**

**a)** **Graph** the given situation using the table of values method. Label the axes!

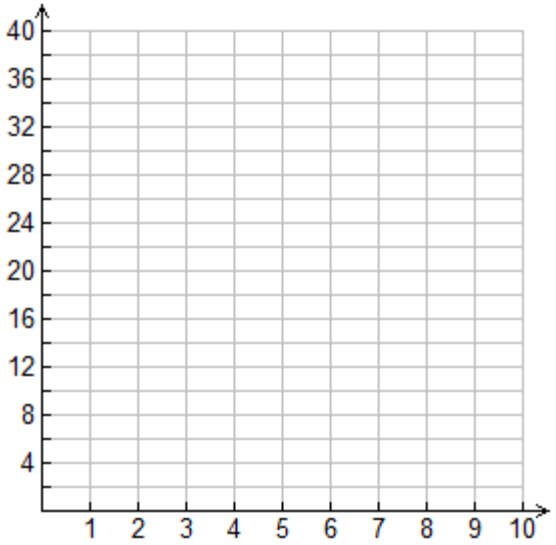



***Table of Values***

| $g$ | $C$ |
|---|---|
| | |

**b)** Find an equation, in the form $C = mg + b$, that represents the cost of bowling. $C$ represents the cost and $g$ represents the number of games bowled.

**c)** How much did it cost her to bowl four games?

**d)** How many games can she bowl for \$150?

**e)** Identify and explain what the ***slope*** and the ***C-intercept*** mean.

Slope:

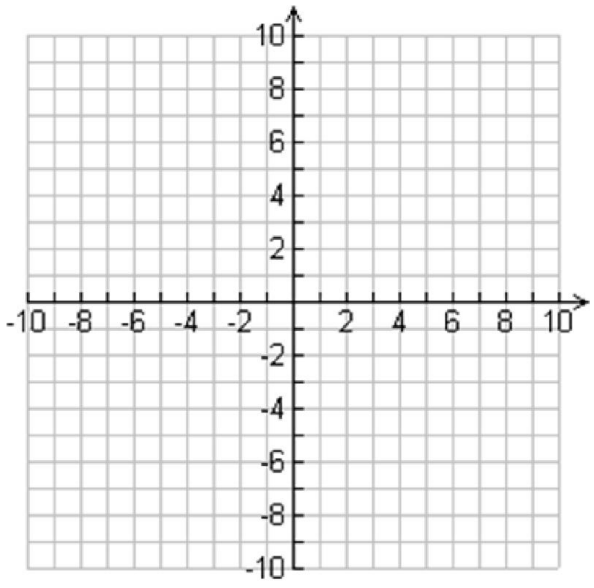
$C$-intercept:

**12.** Graph the lines with equations $y = x - 3$ and $3x + y = 1$ and find the point of intersection. Choose ***two different*** graphing methods. Show all work! **A[5]**

**Show work for graphing method used to sketch $y = x - 3$:**

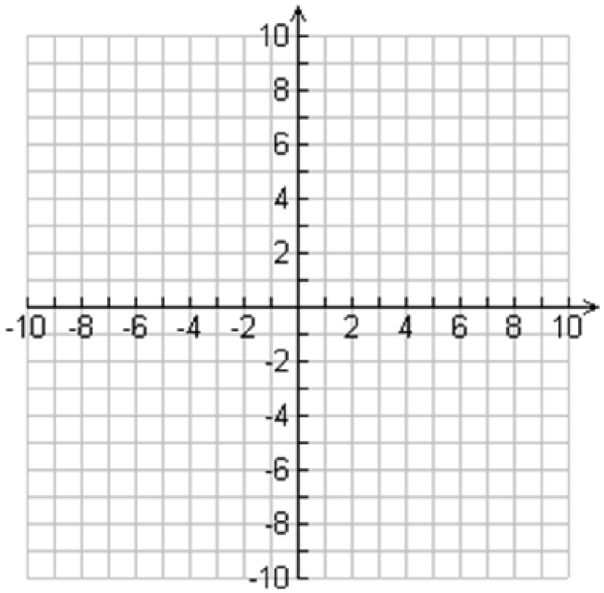
**Show work for graphing method used to sketch $3x + y = 1$:**

**State co-ordinates of point of intersection:**




**Problems**

**13.** The vertices of quadrilateral *ABCD* are *A*(0, 5), *B*(9, 2), *C*(7, –4), and *D*(–2, –1). Is *ABCD* a rectangle? Explain your reasoning. **T[8]**




**14.** For safety reasons, divers need to be aware of the pressure as they dive. At a depth of 4 m, the pressure is 140 kPa (kilopascals) and at 9 m it is 190 kPa. **T[8]**

**a)** Plot the given information and draw a line through the points. Label the axes!

**b)** Find an equation for the line in the form $p = md + b$.

**c)** Identify what the slope and the *p*-intercept represent.

**d)** At what depth is the pressure double that at the surface?