

*Key*

**Final Exam – Tuesday, June 12 & Wednesday, June 13**

1. Matt and Connor are training for a marathon. Matt runs 10 miles the first week, and then 2 miles each week after. Connor runs 4 miles the first week, and then 5 miles each week after. Determine the number of weeks it will take for Matt and Connor to run the same number of miles.

**Part A** Write an equation to determine the number of weeks will it be before they have run the same number of miles.

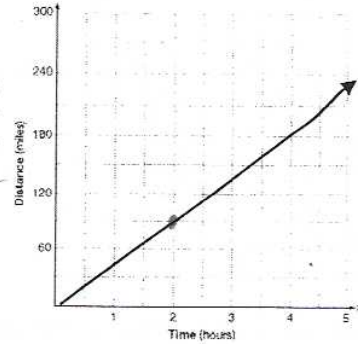
*math = Connor*

Equation  $10 + 2w = 4 + 5w$

**Part B** Solve your equation from Part A.

$$\begin{array}{r}
 10 + 2w = 4 + 5w \\
 -10 \qquad -10 \\
 \hline
 2w = -6 + 5w \\
 -5w \qquad -5w \\
 \hline
 -3w = -6 \\
 \div 3 \quad \div 3 \\
 \hline
 w = 2 \text{ weeks}
 \end{array}$$

2. Kayleigh and her family are driving to Florida during their summer vacation. The distance they travel is represented by the graph below.



Based on the graph, which of the following statements is true?

- A They are traveling at a constant speed of 75 miles per hour.
- B Their speed is increasing as the time increases.
- C They are traveling at a constant speed of 40 miles per hour.
- D They are traveling at a constant speed of 45 miles per hour.**

3. Solve for x.

$\frac{2x+5}{4} = \frac{3x-1}{8}$

**A -11**  
 B -1  
 C 1  
 D 11

$$\begin{array}{r}
 4(3x-1) = 8(2x+5) \\
 12x - 4 = 16x + 40 \\
 -12x \qquad -12x \\
 \hline
 -4 = 4x + 40 \\
 -40 \qquad -40 \\
 \hline
 -40 = 4x \\
 \frac{-40}{4} = \frac{4x}{4} \\
 -10 = x
 \end{array}$$

4. Write the equation of the line that passes through the points (3, 11) and (-2, 1).

$$\begin{array}{r}
 x \quad y \quad \Delta y \quad m = \frac{\Delta y}{\Delta x} = \frac{-10}{-5} = +2 \\
 3 \quad 11 \quad -10 \\
 -2 \quad 1
 \end{array}$$

$$\begin{array}{r}
 y = mx + b \\
 (11) = (+2)(3) + b \\
 11 = 6 + b \\
 -6 \quad -6 \\
 \hline
 5 = b
 \end{array}$$

**$y = 2x + 5$**

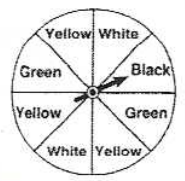
5. What is the smallest integer in the solution set?

$$\begin{array}{r}
 2x + 5 > 11 \\
 -5 \quad -5 \\
 \hline
 2x > 6 \\
 \div 2 \quad \div 2 \\
 \hline
 x > 3
 \end{array}$$

Graph the solution set:  $\leftarrow \frac{1}{-3} \quad 0 \quad 3 \rightarrow$

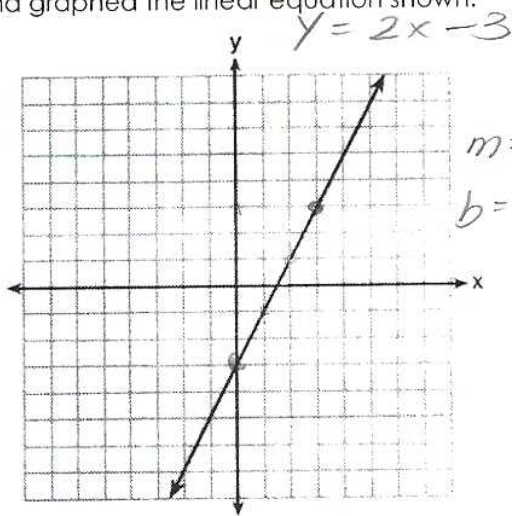
6. A spinner is divided into eight equal regions as shown in the diagram below. Maya spins the spinner three times. What is the probability all three spins will land on green?

$$P(g) \cdot P(g) \cdot P(g) \\
 \frac{2}{8} \cdot \frac{2}{8} \cdot \frac{2}{8} \\
 \frac{1}{4} \cdot \frac{1}{4} \cdot \frac{1}{4}$$



**1/64**

7. Emma graphed the linear equation shown.



Which of the equations below has the same y-intercept as Emma's?

~~A~~  $6y + x = 18$   

$$\frac{6y}{6} + \frac{x}{6} = \frac{18}{6}$$

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

$$y = -\frac{x}{6} + 3$$

C  $27 + 3y = 6x$   

$$\frac{3y}{3} = \frac{6x - 27}{3}$$

$$y = 2x - 9$$

B  $y + 3 = 6x$   

$$\frac{y}{1} + \frac{3}{-3} = \frac{6x}{-3}$$

$$y - 3 = -2x$$

$$y = -2x + 3$$

~~D~~  $y = -3x + 6$

8. Desmond compared his quiz grades for the first and second semester of his math class.

Semester 1: 78, 83, 88, 91, 94

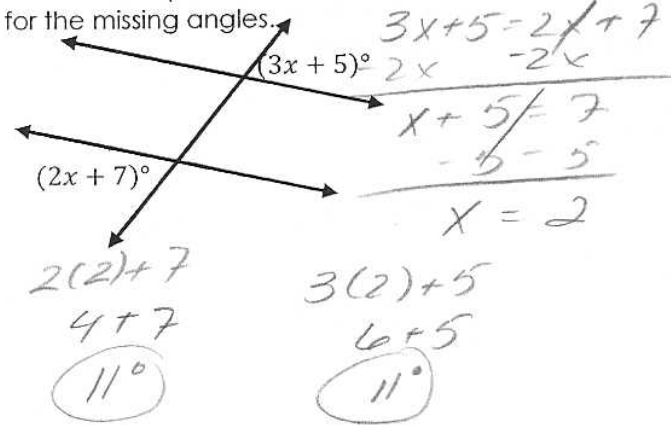
Semester 2: 77, 80, 85, 88, 91, 92, 97

$$\begin{aligned} \text{Semester 1: } & \text{med} = 88 \\ & Q_1 = 80.5 \\ & Q_3 = 92.5 \\ & IQR = 12 \end{aligned} \quad \left. \begin{aligned} & \text{Semester 2: } \\ & \text{med} = 88 \\ & Q_1 = 80 \\ & Q_3 = 92 \\ & IQR = 12 \end{aligned} \right\} \begin{aligned} & \text{med} = 88 \\ & Q_1 = 80 \\ & Q_3 = 92 \end{aligned}$$

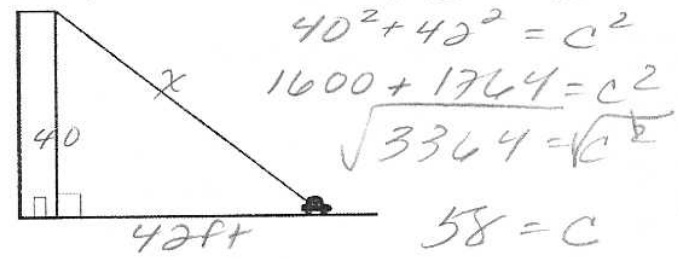
Which statement about Desmond's quiz grades is **not** true?

- A The interquartile range for semester 1 is greater than the interquartile range for semester 2.
- B The median score for semester 1 is greater than the median score for semester 2.   
  $88 > 88$
- C The lower quartile for semester 1 is greater than the lower quartile for semester 2.   
  $80.5 > 80$
- D The upper quartile for semester 2 is greater than the upper quartile for semester 1.

9. Given two parallel lines cut by a transversal. Solve for the missing angles.



10. A car is parked 42 feet away from an apartment building. The height of the building is 40 feet. What is the distance from the top of the apartment building to the parked car?



11. The mold for a giant Crayola crayon is shown below. Determine the amount of wax needed to fill the mold in terms of  $\pi$ .

$$\begin{aligned} V &= \frac{1}{3}\pi(2)^2(3) \\ &= \frac{1}{3}\pi(4)(3) \\ &= 4\pi \end{aligned} \quad + \quad \begin{aligned} V &= \pi(2)^2(8) \\ &= \pi(4)(8) \\ &= 32\pi \end{aligned}$$

$V = 36\pi \text{ in}^3$

