Lesson 9 Practice Problems

1. Cell phone Plan A costs $70 per month and comes with a free $500 phone. Cell phone Plan B costs $50 per month but does not come with a phone. If you buy the $500 phone and choose Plan B, how many months is it until your cost is the same as Plan A's?

2. Priya and Han are biking in the same direction on the same path.

   a. Han is riding at a constant speed of 16 miles per hour. Write an expression that shows how many miles Han has gone after t hours.

   b. Priya started riding a half hour before Han. If Han has been riding for t hours, how long has Priya been riding?

   c. Priya is riding at a constant speed of 12 miles per hour. Write an expression that shows how many miles Priya has gone after Han has been riding for t hours.

   d. Use your expressions to find when Han and Priya meet.

3. Which story matches the equation $-6 + 3x = 2 + 4x$?

    A. At 5 p.m., the temperatures recorded at two weather stations in Antarctica are -6 degrees and 2 degrees. The temperature changes at the same constant rate, x degrees per hour, throughout the night at both locations. The temperature at the first station 3 hours after this recording is the same as the temperature at the second station 4 hours after this recording.

    B. Elena and Kiran play a card game. Every time they collect a pair of matching cards, they earn x points. At one point in the game, Kiran has -6 points and Elena has 2 points. After Elena collects 3 pairs and Kiran collects 4 pairs, they have the same number of points.

4. For what value of x do the expressions $\frac{2}{3}x + 2$ and $\frac{4}{3}x - 6$ have the same value?

5. Decide whether each equation is true for all, one, or no values of x.

    a. $2x + 8 = -3.5x + 19$

    b. $9(x - 2) = 7x + 5$

    c. $3(3x + 2) - 2x = 7x + 6$

(From Unit 4, Lesson 8.)

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6. Solve each equation. Explain your reasoning.

$3d + 16 = \text{-}2(5 - 3d)$
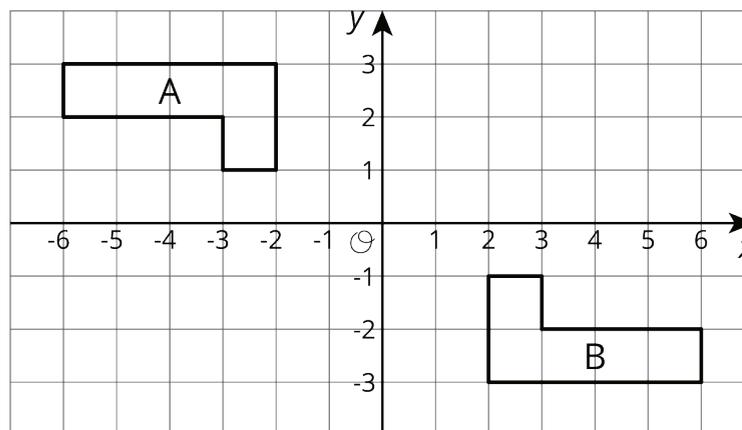
$2k - 3(4 - k) = 3k + 4$

$\dfrac{3y-6}{9} = \dfrac{4-2y}{\text{-}3}$

(From Unit 4, Lesson 6.)

7. Describe a rigid transformation that takes Polygon A to Polygon B.

(From Unit 1, Lesson 7.)

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