Creating Linear Equations Homework

$7 + 3x \quad X = 22 \qquad 2 - \quad x = \quad \frac{1}{2}x$

1.) Seven more than three times a number, X, is 22. Translate the verbal phrase to algebraic form.

$$\boxed{7 + 3X = 22}$$

"more than": +

"is": =

2.) Two less than a number is the same as half the number plus three. Translate the verbal phrase to algebraic form.

$x + 3$

$$\boxed{X - 2 = \tfrac{1}{2}X + 3}$$

3.) Kaden turns 16 in two years. His current age is six less than twice his brother Matthew's age. Model this situation using a linear equation.

$2x \qquad x$

Kaden's current age $= 16 - 2 = 14 = x$

$\therefore \boxed{14 = 2y - 6}$

4.) Solve for the number in 2.)

$x =$

$(1 - \tfrac{1}{2})x \quad X - 2 = \tfrac{1}{2}X + 3 \quad (3+2)$

$\qquad -\tfrac{1}{2}x + 2 \quad -\tfrac{1}{2}x + 2$

$2 \cdot \tfrac{1}{2}X = 5 \cdot 2$

$\therefore \boxed{X = 10}$

5.) Solve for Matthew's age in 3.)

$14 = 2y - 6$

$+6 \qquad +6$

$\dfrac{20}{2} = \dfrac{2y}{2}$

$y = 10$

$\boxed{\text{Matthew is 10 years old.}}$

6.) A taxi ride in New York City has a base rate of \$5 and costs an additional 50 cents per mile. Write an equation to represent the total cost, *T*, of a taxi ride that travels *m* miles.

$$\boxed{T = 5 + 0.5m}$$

7.) Kayla is throwing a party for her friend and needs to purchase balloons and cupcakes from the store. Balloons cost \$5 per <u>pack of 10 balloons</u> and cupcakes go for \$15 <u>per dozen</u>.

$5b + 15c = T$

    a.) If Kayla needs 40 balloons and 36 cupcakes for the party, how much will she spend at the store?

$40 \div 10 = 4$ packs of balloons

$36 \div 12 = 3$ dozen cupcakes

$\therefore 5(4) + 15(3) = $ Total cost

$20 + 45 = 65 \qquad \therefore \boxed{\$65}$

    b.) Kayla only has \$45 in cash to spend on party supplies. If she decides to purchase 2 dozen cupcakes, how many balloons can she buy?

b

$5b + 15(2) = 45$

$5b + 30 = 45$

$\quad -30 \quad -30$

$\dfrac{5b}{5} = \dfrac{15}{5}$

$b = 3$

3 packs of 10 balloons is $3(10) = 30$

$\boxed{30 \text{ balloons}}$