

- 1) Chaz has DVDs and CDs. The number of CDs he has can be modelled with the formula $C = 2D + 11$, where C represents the number of CDs and D represents the number of DVDs. If he has 41 CDs, how many DVDs does he have?

$$\begin{aligned}
 C &= \text{CDs} & C &= 2D + 11 \\
 D &= \text{DVDs} & 41 &= 2D + 11 \\
 & & 41 - 11 &= 2D + 11 - 11 \\
 & & 30 &= \frac{2D}{2} & D &= 15 \text{ DVDs}
 \end{aligned}$$

- 2) A camp charges \$75 per day to use the camp plus \$15 per day for food and supplies for each student. The cost for one day can be modelled using the following equation $C = 15s + 75$.

- a. What do the variables C and S represent?

$$\begin{aligned}
 C &= \text{cost} \\
 S &= \text{students}
 \end{aligned}$$

- b. A school raised \$375 for a one-day trip. How many students can go?

$$\begin{aligned}
 C &= 15s + 75 \\
 375 &= 15s + 75 \\
 375 - 75 &= 15s + 75 - 75 \\
 300 &= 15s \\
 \frac{300}{15} &= \frac{15s}{15} & 20 &= s & \underline{20 \text{ students}}
 \end{aligned}$$

- 3) Juanita has a coupon for the following coupon: "Buy two day passes at a special price and each tube rental is only \$3. No tax." One pays \$54 for two day passes and two tube rentals.

- a. What equation models the situation?

$$54 = 2p + 6 \leftarrow 2 \text{ tube rentals at } \$3 \text{ each.}$$

- b. What is the cost of each day pass?

$$\begin{aligned}
 54 &= 2p + 6 \\
 54 - 6 &= 2p + 6 - 6 \\
 \frac{48}{2} &= \frac{2p}{2} & 24 &= p & \text{It is } \$24 \text{ per person}
 \end{aligned}$$

- 4) Sofia has 3 more rose quartz stones than twice the number of white quartz stones in her collection. If she has 15 rose quartz stones, how many white quartz stones does she have?

$$\begin{aligned}
 \text{Rose Quartz} &= R & R &= 2w + 3 \\
 \text{White Quartz} &= w
 \end{aligned}$$

$$\begin{aligned}
 15 &= 2w + 3 \\
 15 - 3 &= 2w + 3 - 3 \\
 \frac{12}{2} &= \frac{2w}{2} & 6 &= w & \text{6 white quartz}
 \end{aligned}$$

- 5) Spencer collects hockey cards and baseball cards. The number of hockey cards he has is 21 more than twice the number of baseball cards. If he has 75 hockey cards, how many baseball cards does he have? Use an equation to help solve this problem.

$$\begin{aligned}
 h &= \text{hockey} \\
 b &= \text{baseball}
 \end{aligned}$$

$$\begin{aligned}
 h &= 2b + 21 \\
 75 &= 2b + 21 \\
 75 - 21 &= 2b + 21 - 21 \\
 \underline{54} &= \underline{2b} & 27 &= b & \underline{27 \text{ baseball cards}}
 \end{aligned}$$

6) Beth's age is one third Ryan's age. ^{Beth} ~~She~~ is 21 years old.

a) Write an equation to represent this situation.

B = Beth
R = Ryan

$$B = \frac{R}{3}$$

$$R = 63$$

Ryan is 63 years old

$$21 = \frac{R}{3}$$

b) How old is Ryan.

$$21 \cdot 3 = \frac{R \cdot 3}{3}$$

7) In a recent basketball game Ava scored by making foul shots and 2 point baskets. She made five foul shots, which are each worth one point. In total she scored 33 points. How many 2 point baskets did she make? Ava's score = S Two point baskets = b

$$S = 2b + 5 \quad 33 - 5 = 2b + 5 - 5$$

$$33 = 2b + 5 \quad \frac{28}{2} = \frac{2b}{2} \quad b = 14 \text{ } \underline{\underline{2 \text{ point shots}}}$$

8) Breanne is sewing two types of trim on a new fur coat. The length of leather trim is 20 more than 5 times the length of the fur trim. She uses 245 cm of leather trim. How much fur trim does she use?

a) Write an equation to represent the situation.

L = leather trim
F = fur trim

$$L = 5f + 20$$

$$245 = 5f + 20$$

$$245 - 20 = 5f + 20 - 20$$

$$\frac{225}{5} = \frac{5f}{5}$$

$$\boxed{45 = f}$$

b) Solve the equation and check your answer.

$$245 = 5f + 20$$

$$245 = 5(45) + 20$$

$$245 = 225 + 20$$

$$245 = 245 \checkmark$$

check is good!

9) Izzy's cell phone plan charges 30 cents per call plus 12 cents per minute. The cost per call can be modeled using the equation $C = 12t + 30$.

a) What do the variables C and t represent?

C = cost

t = time

b) If Izzy talks for 4 minutes, how much will the call cost? Show your thinking.

$$C = 12t + 30$$

$$C = 12(4) + 30$$

$$C = 48 + 30$$

$$C = 78 \text{ cents.}$$

10) Complete the following questions and show a check for each.

a) $4n - 2 = 14$

$$4n - 2 + 2 = 14 + 2$$

$$4n = 16$$

$$\frac{4n}{4} = \frac{16}{4}$$

$$n = 4$$

Check:

$$4n - 2 = 14$$

$$4(4) - 2 = 14$$

$$16 - 2 = 14$$

$$14 = 14 \checkmark$$

$$b) 6x + 7.3 = 25$$

Check:

$$6x + 7.3 - 7.3 = 25 - 7.3$$

$$\frac{6x}{6} = \frac{17.7}{6} \quad \boxed{x = 2.95}$$

check
 $6(2.95) + 7.3 = 25$
 $17.7 + 7.3 = 25$
 $25 = 25 \checkmark$

$$c) 29 = 12n + 5.2$$

Check:

$$29 - 5.2 = 12n + 5.2 - 5.2$$

$$\frac{23.8}{12} = \frac{12n}{12}$$

$$1.983 = n \quad \boxed{n = 1.983}$$

$$29 = 12n + 5.2$$

$$29 = 12(1.98333) + 5.2$$

$$29 = 28.9$$

$$29 = 29 \checkmark$$

$$d) 4 + 9g = 22$$

Check:

$$4 - 4 + 9g = 22 - 4$$

$$\frac{9g}{9} = \frac{18}{9}$$

$$\boxed{g = 2}$$

$$4 + 9g = 22$$

$$4 + 9(2) = 22$$

$$4 + 18 = 22$$

$$22 = 22 \checkmark$$

$$e) 22 = 10.4 + 2x$$

Check:

$$22 - 10.4 = 10.4 - 10.4 + 2x$$

$$\frac{11.6}{2} = \frac{2x}{2}$$

$$\boxed{5.8 = x}$$

$$22 = 10.4 + 2x$$

$$22 = 10.4 + 2(5.8)$$

$$22 = 10.4 + 11.6$$

$$22 = 22 \checkmark$$

$$f) 8x + 8.1 = 25$$

Check:

$$8x + 8.1 - 8.1 = 25 - 8.1$$

$$\frac{8x}{8} = \frac{16.9}{8}$$

$$\boxed{x = 2.1125}$$

$$8(2.1125) + 8.1 = 25$$

$$16.9 + 8.1 = 25$$

$$25 = 25 \checkmark$$

$$g) 4x - (-9) = 27$$

Check:

$$4x + 9 = 27$$

$$4x + 9 - 9 = 27 - 9$$

$$\frac{4x}{4} = \frac{18}{4} = \boxed{x = 4.5}$$

$$4x - (-9) = 27$$

$$4(4.5) - (-9) = 27$$

$$18 + 9 = 27$$

$$27 = 27 \checkmark$$

$$h) 3x + (-15) = 12$$

Check:

$$3x - 15 = 12$$

$$3x - 15 + 15 = 12 + 15$$

$$\frac{3x}{3} = \frac{27}{3}$$

$$\boxed{x = 9}$$

$$3x + (-15) = 12$$

$$3x - 15 = 12$$

$$3(9) - 15 = 12$$

$$27 - 15 = 12$$

$$12 = 12 \checkmark$$