

Module 7 lesson 6

Share 6 Possible Solutions

6. Sample responses include the following.

Situation 1

h = the number of hamburgers

c = the number of cheeseburgers

$$3h + 2c = 12.35$$

$$5h + 3c = 19.52$$

Using the elimination method, multiply the first equation by 3 and the second equation by 2.

$$3 \quad 3h + 2c = 12.35 \quad \rightarrow \quad 9h + 6c = 37.05$$

$$2 \quad 5h + 3c = 19.52 \quad \rightarrow \quad 10h + 6c = 39.04$$

Subtract the equations to eliminate c .

$$\begin{array}{r} 9h + 6c = 37.05 \\ - (10h + 6c = 39.04) \\ \hline -h \quad \quad = -1.99 \end{array}$$

$$h = 1.99$$

Solve for c by subbing $h = 1.99$ into equation (1)

$$3h + 2c = 12.35$$

$$3 \quad 1.99 + 2c = 12.35$$

$$5.97 + 2c = 12.35$$

$$2c = 6.38$$

$$\frac{2c}{2} = \frac{6.38}{2}$$

$$c = 3.19$$

Verify in equation (2)

$$5h + 3c = 19.52$$

$$5(1.99) + 3(3.19) = 19.52$$

$$9.95 + 9.57 = 19.52$$

$$19.52 = 19.52$$

The cost of a hamburger is \$1.99, and the cost of a cheeseburger is \$3.19.

Situation 2

ℓ = the length of the lawn

w = the width of the lawn

$$2\ell + 2w = 28$$

$$\ell = 2w - 1$$

Using the substitution method, substitute the expression for ℓ into the first equation.

$$2\ell + 2w = 28$$

$$2(2w - 1) + 2w = 28$$

$$4w - 2 + 2w = 28$$

$$6w - 2 = 28$$

$$6w = 30$$

$$\frac{6w}{6} = \frac{30}{6}$$

$$w = 5$$

Solve for ℓ by subbing $w = 5$ into equation (2)

$$\ell = 2w - 1$$

$$\ell = 2(5) - 1$$

$$\ell = 10 - 1$$

$$\ell = 9$$

Verify in equation (1)

$$2\ell + 2w = 28$$

$$2(9) + 2(5) = 28$$

$$18 + 10 = 28$$

$$28 = 28$$

The width is 5 m and the length is 9 m.

Situation 3

h = grams of Happy Trails trail mix

w = grams of Wanderer trail mix

$$h + w = 500$$

$$0.75h + 0.55w = 0.6(500)$$

Using the elimination method, multiply the first equation by 0.75.

$$3(h + w = 500) \rightarrow 0.75h + 0.75w = 375$$

$$0.75h + 0.55w = 300 \rightarrow 0.75h + 0.55w = 300$$

Subtract the equations to eliminate h .

$$0.75h + 0.75w = 375$$

$$- (0.75h + 0.55w = 300)$$

$$0.20w = 75$$

$$\frac{0.20w}{0.20} = \frac{75}{0.20}$$

$$w = 375$$

Solve for h by subbing $w = 375$ into equation (1)

$$h + w = 500$$

$$h + 375 = 500$$

$$h = 125$$

Verify in equation (2)

$$0.75h + 0.55w = 0.6(500)$$

$$0.75(125) + 0.55(375) = 300$$

$$93.75 + 0.6.25 = 300$$

$$300 = 300$$

The mixture consists of 125 g of Happy Trails trail mix and 375 g of Wanderer trail mix.