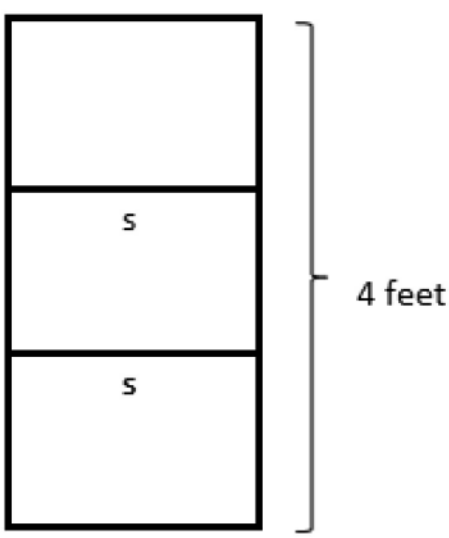
Name _____ Date_____

Comparing Tape Diagram Solutions to Algebraic Solutions

1. Eric's father works two part-time jobs, one in the morning and one in the afternoon, and works a total of 40 hours each 5-day workweek. If his schedule is the same each day, and he works 3 hours each morning, how many hours does Eric's father work each afternoon?

2. Henry is making a bookcase and has a total of 16 ft. of lumber. The left and right sides of the bookcase are each 4 ft. high. The top, bottom, and two shelves are all the same length, labeled S. How long is each shelf?



1. A taxi cab in Myrtle Beach charges $2 per mile and $1 for every person. If a taxi cab ride for two people costs $12, how far did the taxi cab travel?

2. Heather works as a waitress at her family's restaurant. She works 2 hours every morning during the breakfast shift and the same number of hours every evening during the dinner shift. In the last four days she worked 28 hours. How many hours did she work during each dinner shift?

3. Jillian exercises 5 times a week. She runs 3 miles each morning and bikes in the evening. If she exercises a total of 30 miles for the week, how many miles does she bike each evening?

4. Marc eats an egg sandwich for breakfast and a big burger for lunch every day. The egg sandwich has 250 calories. If Marc has 5,250 calories for breakfast and lunch for the week in total, how many calories are in one big burger?

5. Jackie won tickets playing the bowling game at the local arcade. The first time, she won 60 tickets. The second time she won a bonus, which was 4 times the number of tickets of the original second prize. All together she won 200 tickets. How many tickets was the original second prize?

1. **Eric's father works two part-time jobs, one in the morning, and one in the afternoon, and works a total of 40 hours each 5-day work week. If his schedule is the same each day and he works 3 hours each morning, how many hours does Eric's father work each afternoon?**

Algebraic Equation & Solution

Number of Afternoon hours: a

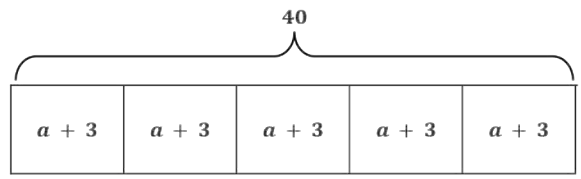
Number of Morning hours: 3

$$5(a+3)=40$$
$$5a+15-15=40-15$$
$$5a+0=25$$
$$\left(\frac{1}{5}\right)5a=25\left(\frac{1}{5}\right)$$
$$a=5$$

OR

$$5(a+3)=40$$
$$\left(\frac{1}{5}\right)5(a+3)=40\left(\frac{1}{5}\right)$$
$$a+3=8$$
$$a+3-3=8-3$$
$$a=5$$

Tape Diagram



$5(3)=15$ $\quad 40-15=25$ $\quad 25\div 5=5$

Eric's father works 5 hours in the afternoon.

2. **Henry is making a bookcase and has a total of 16 ft. of lumber. The left and right sides of the bookcase are each 4 ft. high. The top, bottom, and two shelves are all the same length. How long is each shelf?**

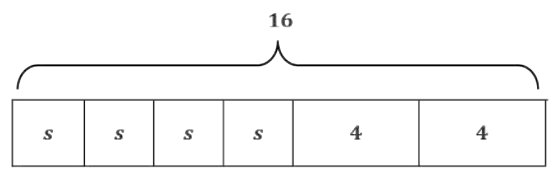
Algebraic Equation & Solution

Shelves: s *ft.*

Sides: 8 *ft.*

$$4s+8=16$$
$$4s+8-8=16-8$$
$$4s+0=8$$
$$\left(\frac{1}{4}\right)4s=8\left(\frac{1}{4}\right)$$
$$1s=2$$
$$s=2$$

Tape Diagram



$2(4)=8$ $\quad 16-8=8$ $\quad 8\div 4=2$

Each shelf is 2 ft. long.

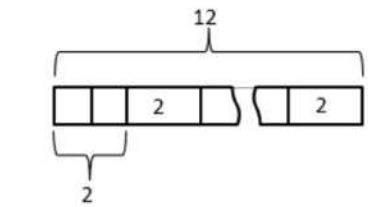
1. A taxi cab in Myrtle Beach charges $\$2$ per mile and $\$1$ for every person. If a taxi cab ride for two people costs $\$12$, how far did the taxi cab travel?

Algebraic Equation & Solution

Number of Miles: m
People: 2

$$2m + 2 = 2$$
$$2m + 2 - 2 = 12 - 2$$
$$2m + 0 = 10$$
$$\left(\frac{1}{2}\right)2m = 10\left(\frac{1}{2}\right)$$
$$1m = 5$$
$$m = 5$$

Tape Diagram



$12 - 2 = 10$ $\qquad$ $10 \div 2 = 5$

The taxi cab travelled 5 *miles.*

2. Heather works as a waitress at her family's restaurant. She works 2 hours every morning during the breakfast shift and the same number of hours every evening during the dinner shift. In the last four days she worked 28 hours. How many hours did she work during each dinner shift?

Algebraic Equation & Solution

Number of Morning hours: 2

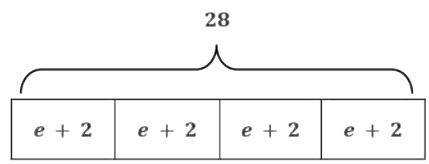
Number of Evening hours: e

$$4(e + 2) = 28$$
$$4e + 8 - 8 = 28 - 8$$
$$4e + 0 = 20$$
$$\left(\frac{1}{4}\right)4e = 20\left(\frac{1}{4}\right)$$
$$1e = 5$$
$$e = 5$$

OR

$$\left(\frac{1}{4}\right)4(e + 2) = 28\left(\frac{1}{4}\right)$$
$$e + 2 = 7$$

Tape Diagram



Day 1 *Day 2* *Day 3* *Day 4*

$4e$ $\qquad$ $28 - 8 = 20$

$4(2) = 8$ $\qquad$ $20 \div 4 = 5$

Heather worked 5 *hours in the evening.*

3. Jillian exercises 5 times a week. She runs 3 miles each morning and bikes in the evening. If she exercises a total of 30 miles for the week, how many miles does she bike each evening?

Algebraic Equation & Solution

Run: 3 *mi.*

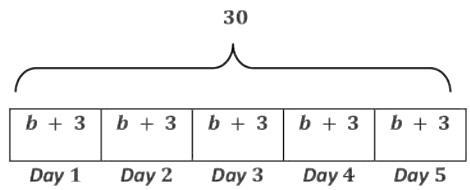
Bikes: b *mi.*

$$5(b+3)=30$$
$$5b+15-15=30-15$$
$$5b+0=15$$
$$5b=15\left(\frac{1}{5}\right)$$
$$1b=3$$
$$b=3$$

OR

$$\left(\frac{1}{5}\right)5(b+3)=30\left(\frac{1}{5}\right)$$
$$b+3=6$$

Tape Diagram



$$5(3)=15$$
$$15\div 5=3$$
$$30-15=15$$

Jillian bikes 3 *miles every evening.*

4. Marc eats an egg sandwich for breakfast and a big burger for lunch every day. The egg sandwich has 250 calories. If Marc has $5,250$ calories for breakfast and lunch for the week in total, how many calories are in one big burger?

Algebraic Equation & Solution

Egg Sandwich: 250 *cal.*

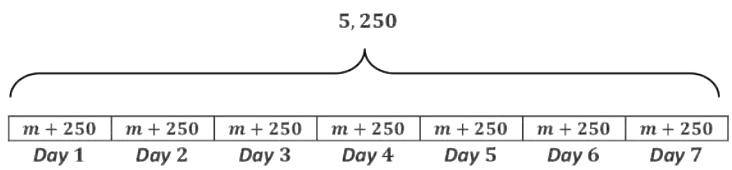
Hamburger: m *cal.*

$$7(m+250)=5,250$$
$$7m+1,750-1750=5250-1750$$
$$7m+0=3,500$$
$$\left(\frac{1}{7}\right)7m=3,500\left(\frac{1}{7}\right)$$
$$1m=500$$
$$m=500$$

OR

$$\left(\frac{1}{7}\right)7(m+250)=5,250$$
$$m+250=750$$
$$m+250-250=750-250$$
$$m=500$$

Tape Diagram



$$7(250)=1,750$$
$$5,250-1,750=3,500$$
$$7m$$
$$3,500\div 7=500$$

Each hamburger has 500 *calories.*

5. Jackie won tickets playing the bowling game at the local arcade. The first time, she won 60 tickets. The second time she won a bonus, which was 4 times the number of tickets of the original second prize. All together she won 200 tickets. How many tickets was the original second prize?

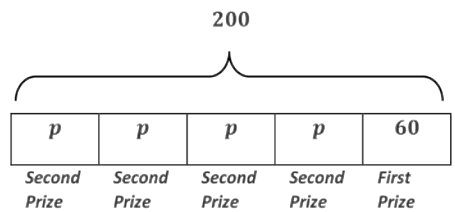
Algebraic Equation & Solution

First Prize: 60 *tickets*

Second Prize: p *tickets*

$$4p + 60 = 200$$
$$4p + 60 - 60 = 200 - 60$$
$$4p + 0 = 140$$
$$\left(\frac{1}{4}\right) 4p = 140 \left(\frac{1}{4}\right)$$
$$1p = 35$$
$$p = 35$$

Tape Diagram



$4p$

$200 - 60 = 140$

$140 \div 4 = 35$

The original second prize was 35 *tickets.*