

## Algebra 1 Answer Key

### Day 12

1. Use  $x$  for the unknown number.

$$38 + 2x = 124$$

$$2x = 86$$

$$x = 43$$

The unknown number is 43.

2. Two consecutive integers will differ by one.

We can represent them with  $x$  and  $x + 1$ .

$$\text{Inequality: } (x) + (x + 1) < 83$$

$$2x < 82$$

$$x < 41$$

The largest possible integer would be  $x = 40$ .

The pair of numbers with the largest sum would be 40 and 41.

- 3.

$x$



$$x + 12$$

Use  $x$  for the width, so  $x + 12$  is the length.

$$\text{Equation (perimeter): } 2(x) + 2(x + 12) = 68$$

$$4x + 24 = 68$$

$$4x = 44$$

$$x = 11$$

Length = 23m and Width = 11m.

- 4.

$x$



$$x + 4$$

Use  $x$  for the width, so  $x + 4$  is the length.

$$\text{Inequality (perimeter): } 2(x) + 2(x + 4) \geq 48$$

$$4x + 8 \geq 48$$

$$4x \geq 40$$

$$x \geq 10$$

The smallest possible value for  $x$  is 10cm.

Length = 14cm and Width = 10cm.

5. Consecutive integers are 1 unit apart, so if we use  $x$  for the smallest, then the three consecutive integers would be  $x$ ,  $x+1$ , and  $x+2$ .

The equation would be  $(x) + (x+1) + (x+2) = 171$

$$3x + 3 = 171$$

$$3x = 168$$

$$x = 56$$

So the consecutive integers are 56, 57, and 58.

6. Consecutive even integers are 2 units apart, so if we use  $x$  for the smallest, then the four consecutive even integers would be  $x$ ,  $x+2$ ,  $x+4$ , and  $x+6$ .

The equation would be  $(x) + (x+2) + (x+4) + (x+6) = 244$

$$4x + 12 = 244$$

$$4x = 232$$

$$x = 58$$

So the consecutive integers are 58, 60, 62, and 64.

7. One could use  $x$  to represent the amount of money belonging to any one of the people. I think the easiest way is to use  $x$  for Shannon's amount.

So, Shannon has  $x$  dollars, Jennifer has  $x-6$  dollars, and Alex has  $2(x-6)$  dollars.

Equation:  $(x) + (x-6) + 2(x-6) = 54$

$$x + x - 6 + 2x - 12 = 54$$

$$4x - 18 = 54$$

$$4x = 72$$

$$x = 18$$

So Shannon has \$18, Jennifer has \$12, and Alex has \$24.

8. The average of three test scores is the sum of the scores, divided by three. We will use  $x$  for the third test score.

Inequality:  $(75 + 81 + x) / 3 \geq 80$

Multiply both sides by three:  $(75 + 81 + x) \geq 240$

$$156 + x \geq 240$$

$$x \geq 84$$

The student must get at least 84.

Day 19

Fuel cost numbers will vary, here are example calculations using the averages from California and Arizona on a particular day:

California: Gas price per gallon: \$4.039  
Use  $x$  for the fuel cost.

$$\begin{aligned}\text{Equation: } x + .184 + .180 + x(.0725) &= 4.039 \\ 1.0725x + .364 &= 4.039 \\ 1.0725x &= 3.675 \\ x &= 3.427 \\ \text{Fuel cost is about } &\$3.43 \text{ for California.}\end{aligned}$$

Arizona: Gas price per gallon: \$4.039  
Use  $x$  for the fuel cost.

$$\begin{aligned}\text{Equation: } x + .184 + .180 + x(.056) &= 3.550 \\ 1.056x + .364 &= 3.550 \\ 1.056x &= 3.186 \\ x &= 3.017 \\ \text{Fuel cost is about } &\$3.02 \text{ for Arizona.}\end{aligned}$$

Day 27

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|-------------------|----------------------|-----------------|
| Event Solutions:  | $300 + 5p \leq 2000$ |                 |
|                   | $5p \leq 1700$       |                 |
|                   | $p \leq 340$         | ← Better choice |
| Parties Made Easy | $8p \leq 2000$       |                 |
|                   | $p \leq 250$         |                 |
  
- |                   |                              |                 |
|-------------------|------------------------------|-----------------|
| Acme Party Rental | $250 + 250 + 200h \leq 1500$ |                 |
|                   | $200h \leq 1000$             |                 |
|                   | $h \leq 5$                   | ← Better choice |
| Rentals-R-Us      | $0 + 100 + 350h \leq 1500$   |                 |
|                   | $350h \leq 1400$             |                 |
|                   | $h \leq 4$                   |                 |
  
- |                   |                       |                 |
|-------------------|-----------------------|-----------------|
| Tunes Inc.        | $325 + 125h \leq 825$ |                 |
|                   | $125h \leq 500$       |                 |
|                   | $h \leq 4$            |                 |
| Music Innovations | $165h \leq 825$       |                 |
|                   | $h \leq 5$            | ← Better choice |