

### Answers

1. For example, she knew that  $S + W$  is equal to 16. So she replaced  $S + W$  in the equation for Adele's money with 16.
2. For example, if I did not know how much Uncle Wally gave Adele at first, I could not use the same variable in the equation. Because the problem says that Uncle Wally gave Adele another gift and that it is the same as what he already gave her before, I can solve the equation.
3. a) For example, it represents Team 1.  $E$  is the variable representing the number of experienced players.  $N$  is the variable representing the number of novice players. If I add the number of experienced players and novice players, I get 16.
- b) For example, it represents Team 2. There are three experienced players.  $N$  is the variable representing the number of novice players. If I add the number of experienced players and novice players, I get 12.
- c) For example, I know  $9 + 3 = 12$ , so there must be nine novices on Team 2.
- d) For example, there are the same number of novices on each team. So I can use 9 for  $N$  in  $E + N = 16$  to get  $E + 9 = 16$ . I know  $7 + 9 = 16$ , so there must be seven experienced players on Team 1.

4. a) For example, it represents the number of cards Sal has.  $V$  is the variable representing the number of valuable cards.  $R$  is the variable representing the number of regular cards. If I add the number of valuable and regular cards, I get 50.
  - b) For example, it represents the relationship between the number of valuable cards and the number of regular cards. The number of regular cards plus 16 is the same as the number of valuable cards.
  - c) For example, it represents the number of cards Sal has.  $V$  is replaced by  $R + 16$ .
  - d) For example, I can solve the equation in part c) by guessing and checking. I know 20 is too much.  
 Try 15:  $15 + 16 + 15 = 46$       Not enough.  
 Try 17:  $17 + 16 + 17 = 50$       Correct.  
 There are 17 regular cards. I can use 17 for  $R$  in  $V = R + 16$  to get  $V = 17 + 16$ . I know  $17 + 16 = 33$ , so Sal must have 33 valuable cards.
- 5. a) For example, it represents the amount of fruit.  $A$  is the variable representing the number of apples.  $O$  is the variable representing the number of oranges. If I add the number of apples and oranges, I get 9.

5. b) For example, it represents the relationship between the number of apples and the number of oranges. The number of apples is the same as two times the number of oranges.
- c) For example, I can replace  $A$  in the first equation with  $O + O$  to get  $O + O + O = 9$ . I know three 3s are 9, so there are 3 oranges. I can use 3 for  $O$  in  $A = O + O$  to get  $A = 3 + 3$ . I know  $3 + 3 = 6$ , so there must be 6 apples.
6. a) Yes, the two equal sides are both 6 cm longer than the short side.
- b) Yes, the two equal sides are both 6 cm shorter than the long side.
- c) For part a), I can replace  $L$  in the first equation with  $S + 6$  to get  $S + 6 + S + 6 + S = 39$ . I can solve the equation by guessing and checking. I know 10 is too much.  
 Try 8:  $8 + 6 + 8 + 6 + 8 = 36$       Not enough.  
 Try 9:  $9 + 6 + 9 + 6 + 9 = 39$       Correct.  
 The short side is 9 cm. I can use 9 for  $S$  in  $L = S + 6$  to get  $L = 9 + 6$ . I know  $9 + 6 = 15$ , so the long sides must each be 15 cm.  
 For part b), I can replace  $L$  in the first equation with  $S + 6$  to get  $S + S + S + 6 = 39$ . I can solve the equation by guessing and checking. I know 10 is not enough.  
 Try 11:  $11 + 11 + 11 + 6 = 39$       Correct.  
 The short sides are each 11 cm. I can use 11 for  $S$  in  $L = S + 6$  to get  $L = 11 + 6$ . I know  $11 + 6 = 17$ , so the long side must be 17 cm.