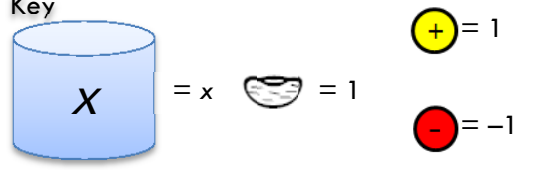


 **Solving One-Variable Equations and Inequalities**
Explore

Directions: For each problem situation below, write an equation you can use to solve the problem. Use cups and counters to solve the equation. Represent the solution on a number line and use substitution to verify your solution.

Key



1. Alfred is 5 years younger than his sister. His sister is 16 years old. How old is Alfred?

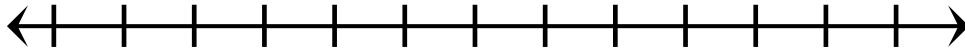
a) Write the equation.

b) Solve the equation using cups and counters. Sketch each step.

| Model | Symbols |
|-------|---------|
| | |
| | |
| | |



c) Represent the solution on a number line.



d) Use substitution to determine whether 9, 11, or 15 are solutions to the equation.

2. A square has a perimeter of 20 meters. What is the side length, x , of the square?

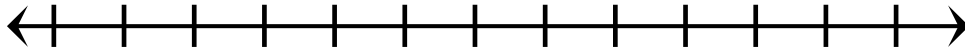
a) Write the equation.

b) Solve the equation using cups and counters. Sketch each step.

| Model | Symbols |
|-------|---------|
| | |
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| | |



c) Represent the solution on a number line.



d) Use substitution to determine whether 4, 5, or 6 are solutions to the equation.

3. There are x students in Mrs. Jackson's class. Mr. Holder's class has 22 students, which is 4 fewer than there are in Mrs. Jackson's class. How many students are in Mrs. Jackson's class?

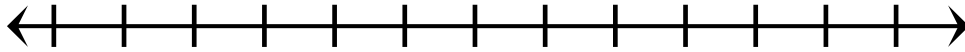
a) Write the equation.

b) Solve the equation using cups and two-color counters. Sketch each step.

| Model | Symbols |
|-------|---------|
| | |
| | |
| | |



c) Represent the solution on a number line.



d) Use substitution to determine whether 20, 26, or 28 are solutions to the equation.

4. Amanda and two friends earned \$42 in a garage sale. They decided to share the money evenly. How much money, x , will each person receive?

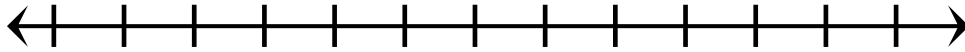
a) Write the equation.

b) Solve the equation using cups and counters. Sketch each step.

| Model | Symbols |
|-------|---------|
| | |
| | |
| | |



c) Represent the solution on a number line.



d) Use substitution to determine whether 10, 12, or 14 are solutions to the equation.

Debriefing Questions

1. How did you use the model to represent each expression?
2. For equations with a sum or difference, how did you determine the value of x ?
3. For equations with a product, how did you determine the value of x ?



Extra Practice:

Write equations for the following problem situations and solve the equations.

1. The perimeter of a square is 48 centimeters. What is the side length of the square, s ?
2. 6 containers of candy weigh 69 pounds. What is the weight, x , of each container of candy?
3. Juan caught a fish that weighed 7.5 pounds. Orlando also caught a fish. Both fish together weighed 17.3 pounds. What is the weight, x , of Orlando's fish?
4. Amy is 143 centimeters tall. Her best friend, Elizabeth, is 7 centimeters taller. What is Elizabeth's height, x ?
5. An angle has a measure of 51.4° . What is the measure of its complement, x ?
6. The measures of two of the interior angles of a triangle are 40° and 25° . What is the measure, x , of the third interior angle?

