Unit 6, Lesson 6

Distinguishing between Two Types of Situations

Let's think about equations with and without parentheses and the kinds of situations they describe.

6.1 Which Three Go Together: Seeing Structure

Which three go together? Why do they go together?

A

$$4(x + 3) = 9$$

B

$$4 \cdot x + 12 = 9$$

C

$$4 + 3x = 9$$

D

$$9 = 12 + 4x$$

6.2 Card Sort: Categories of Equations

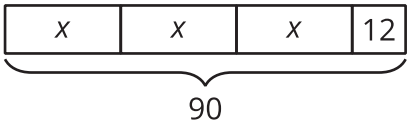
Your teacher will give you a set of cards. Work with your partner to choose two categories to sort the cards into. Take turns with your partner to sort each equation into a category.

1. For each equation that you sort into a category, explain to your partner why it belongs to the category.
2. For each equation your partner sorts, listen carefully to their explanation. If you disagree, discuss your thinking and work to reach an agreement.

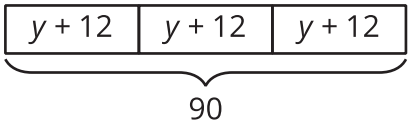
Then sort the cards into two categories in a different way.

6.3 Even More Situations, Diagrams, and Equations

A



B



Story 1: Lin had 90 flyers to hang up around the school. She gave 12 flyers to each of three volunteers. Then she took the remaining flyers and divided them up equally between the three volunteers.

Story 2: Lin had 90 flyers to hang up around the school. After giving the same number of flyers to each of three volunteers, she had 12 left to hang up by herself.

1. Which diagram goes with which story? Be prepared to explain your reasoning.

2. In each diagram, what part of the story does the variable represent?

3. Write an equation corresponding to each story. If you get stuck, use the diagram.

4. Find the value of the variable in the story.

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Lesson 6 Summary

In this lesson, we encountered two main types of situations that can be represented with an equation. Here is an example of each type:

1. After adding 8 students to each of 6 same-sized teams, there were 72 students altogether.
2. After adding an 8-pound box of tennis rackets to a crate with 6 identical boxes of table tennis paddles, the crate weighed 72 pounds.

The first situation has all equal parts, since additions are made to *each* team. An equation that represents this situation is $6(x + 8) = 72$, where x represents the original number of students on each team. Eight students were added to each group, there are 6 groups, and there are a total of 72 students.

In the second situation, there are 6 equal parts added to one other part. An equation that represents this situation is $6x + 8 = 72$, where x represents the weight of each box of table tennis paddles. There are 6 boxes of table tennis paddles, an additional box that weighs 8 pounds, and the crate weighs 72 pounds altogether.

In the first situation, there were 6 equal groups, and 8 students added to each group.
$6(x + 8) = 72$.

In the second situation, there were 6 equal groups, but 8 more pounds in addition to that.
$6x + 8 = 72$.