Unit 6 Lesson 5: Reasoning about Equations and Tape Diagrams (Part 2)

1 Algebra Talk: Seeing Structure (Warm up)

Student Task Statement

Solve each equation mentally.

$x - 1 = 5$

$2(x - 1) = 10$

$3(x - 1) = 15$

$500 = 100(x - 1)$

2 More Situations and Diagrams

Student Task Statement

Draw a tape diagram to represent each situation. For some of the situations, you need to decide what to represent with a variable.

1. Each of 5 gift bags contains x pencils. Tyler adds 3 more pencils to each bag. Altogether, the gift bags contain 20 pencils.
2. Noah drew an equilateral triangle with sides of length 5 inches. He wants to increase the length of each side by x inches so the triangle is still equilateral and has a perimeter of 20 inches.

3. An art class charges each student $3 to attend plus a fee for supplies. Today, $20 was collected for the 5 students attending the class.
4. Elena ran 20 miles this week, which was three times as far as Clare ran this week. Clare ran 5 more miles this week than she did last week.

3 More Situations, Diagrams, and Equations

Student Task Statement

Each situation in the previous activity is represented by one of the equations.

- $(x + 3) \cdot 5 = 20$
- $3(x + 5) = 20$

1. Match each situation to an equation.
2. Find the solution to each equation. Use your diagrams to help you reason.
3. What does each solution tell you about its situation?