## Unit 3 Lesson 5: Reasoning about Equations and Tape Diagrams (Part 2)

### 1 Algebra Talk: Seeing Structure (Warm up)

#### Student Task Statement

Solve each equation mentally.

$x−1=5$

$2\left(x−1\right)=10$

$3\left(x−1\right)=15$

$500=100\left(x−1\right)$

### 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.

* $\left(x+3\right)⋅5=20$
* $3\left(x+5\right)=20$
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?



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