Unit 3 Lesson 4: Reasoning about Equations and Tape Diagrams (Part 1)

1 Algebra Talk: Seeing Structure (Warm up)

Student Task Statement

Find a solution to each equation without writing anything down.

$x + 1 = 5$

$2(x + 1) = 10$

$3(x + 1) = 15$

$500 = 100(x + 1)$

2 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. Diego has 7 packs of markers. Each pack has x markers in it. After Lin gives him 9 more markers, he has a total of 30 markers.

2. Elena is cutting a 30-foot piece of ribbon for a craft project. She cuts off 7 feet, and then cuts the remaining piece into 9 equal lengths of x feet each.

3. A construction manager weighs a bundle of 9 identical bricks and a 7-pound concrete block. The bundle weighs 30 pounds.

4. A skating rink charges a group rate of $9 plus a fee to rent each pair of skates. A family rents 7 pairs of skates and pays a total of $30.

5. Andre bakes 9 pans of brownies. He donates 7 pans to the school bake sale and keeps the rest to divide equally among his class of 30 students.

3 Situations, Diagrams, and Equations

Student Task Statement

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

- $7x + 9 = 30$
- $30 = 9x + 7$
- $30x + 7 = 9$

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?