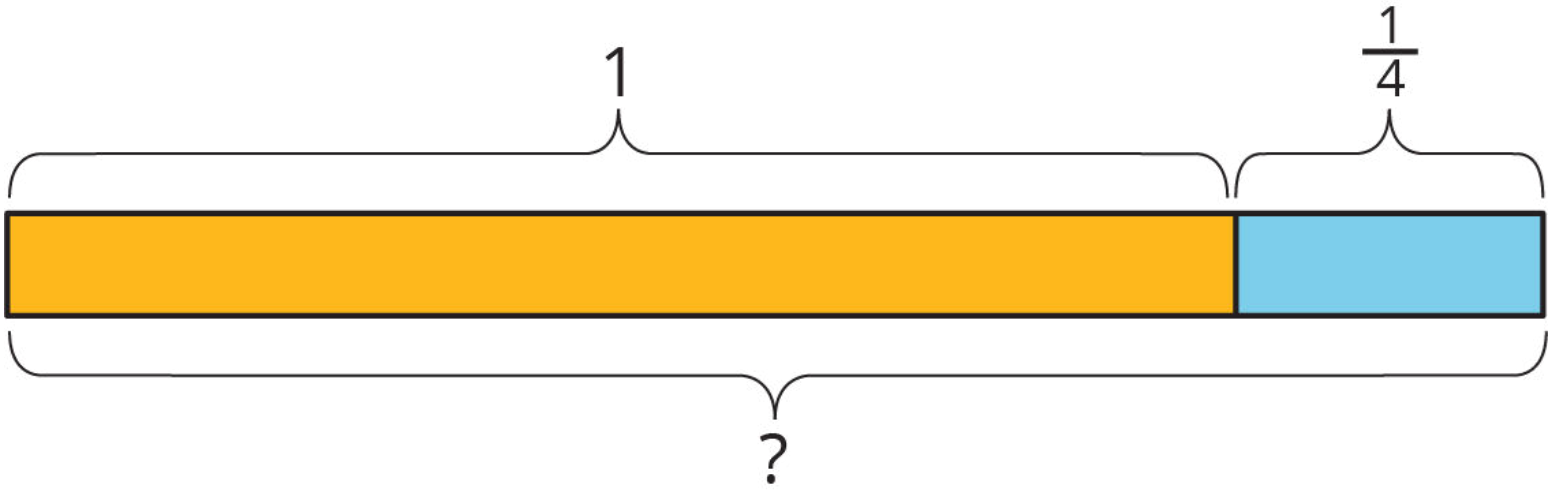
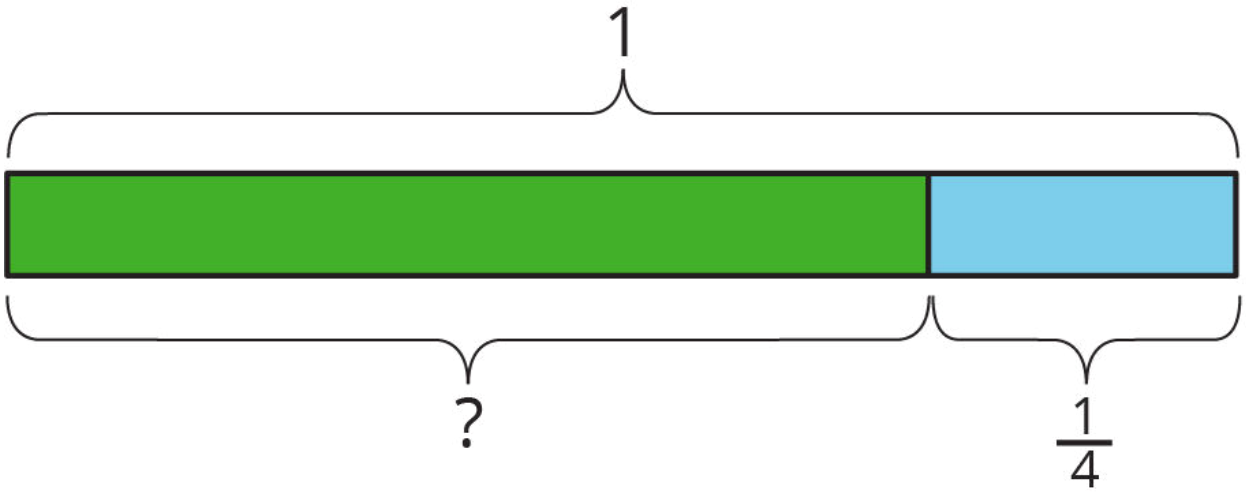
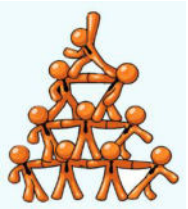
4-4: Learning Goals

- Let's use fractions to describe increases and decreases.

4-4-1: Tape Diagrams







4-4-2: Walking Half As Much Again

1. Complete the table to show the total distance walked in each case.

   a. Jada's pet turtle walked 10 feet, and then half that length again.

   b. Jada's baby brother walked 3 feet, and then half that length again.

   c. Jada's hamster walked 4.5 feet, and then half that length again.

   d. Jada's robot walked 1 foot, and then half that length again.

   e. A person walked x feet and then half that length again.

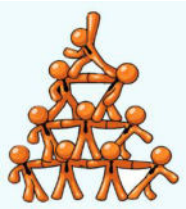
initial distance	total distance
10	
3	
4.5	
1	
x	

2. Explain how you computed the total distance in each case.

3. Two students each wrote an equation to represent the relationship between the initial distance walked (x) and the total distance walked (y).

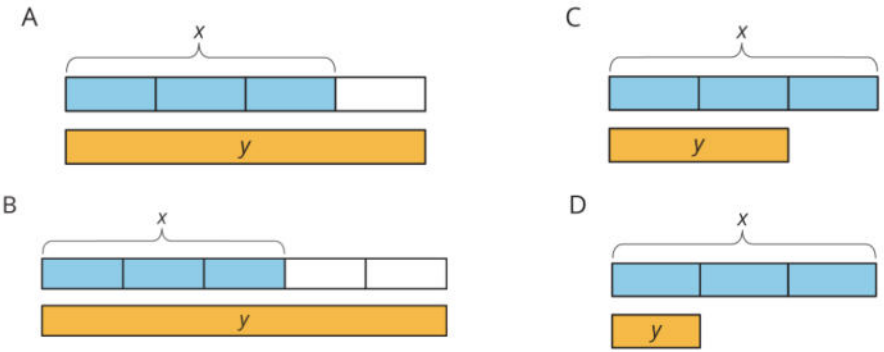
   - Mai wrote $y = x + \frac{1}{2}x$.
   - Kiran wrote $y = \frac{3}{2}x$.

   Do you agree with either of them? Explain your reasoning.



4-4-3: More and Less

1. Match each situation with a diagram. A diagram may not have a match.



1. Han ate x ounces of blueberries. Mai ate $\frac{1}{3}$ less than that.

2. Mai biked x miles. Han biked $\frac{2}{3}$ more than that.

3. Han bought x pounds of apples. Mai bought $\frac{2}{3}$ of that.

2. For each diagram, write an equation that represents the relationship between x and y.
   a. Diagram A:

   b. Diagram B:

   c. Diagram C:

   d. Diagram D:

3. Write a story for one of the diagrams that doesn't have a match.

4-4-4: Finishing the Race and More Orange Juice

Your teacher will give you a set of cards that have proportional relationships represented 3 different ways: as descriptions, equations, and tables. Mix up the cards and place them all face-up.

1. Take turns with a partner to match a description with an equation and a table.
    a. For each match you find, explain to your partner how you know it's a match.
    b. For each match your partner finds, listen carefully to their explanation, and if you disagree, explain your thinking.
2. When you agree on all of the matches, check your answers with the answer key. If there are any errors, discuss why and revise your matches.

Card Sort: Representations of Proportional Relationships

Noah ate x ounces of blueberries, and Elena ate $\frac{1}{3}$ less than that.

Card Sort: Representations of Proportional Relationships

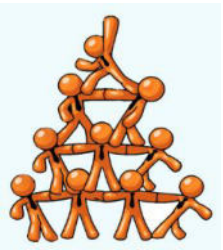
$$y = \frac{5}{3}x$$

Card Sort: Representations of Proportional Relationships

x	y
4	8
8	16

4-4: Lesson Synthesis

- Give examples of how we can use the distributive property to create equivalent expressions that make it easier for us to calculate an amount plus (or minus) a fraction of that amount.
- What does this look like in different representations?



4-4: Learning Targets

- I can use the distributive property to rewrite an expression like $x + \frac{1}{2}x$ as $(1 + \frac{1}{2})x$.
- I understand that "half as much again" and "multiply by $\frac{3}{2}$" mean the same thing.

4-4-5: Fruit Snacks and Skating

1. Tyler ate x fruit snacks, and Han ate $\frac{3}{4}$ less than that. Write an expression for the number of fruit snacks Han ate.

2. Mai skated x miles, and Clare skated $\frac{3}{5}$ farther than that. Write an expression for the distance Clare skated.