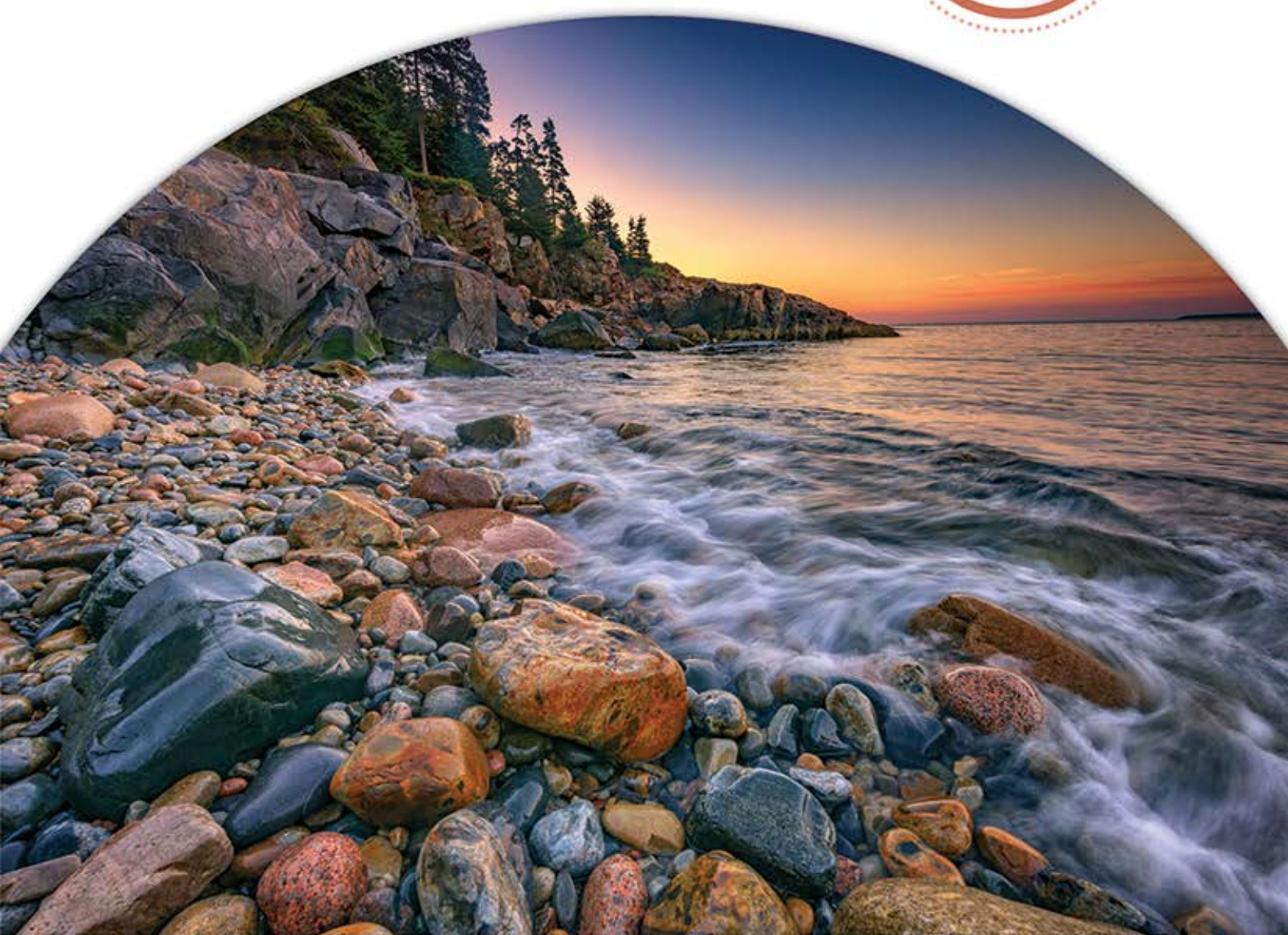


Revised Edition

Performance Coach[™] Mathematics



4



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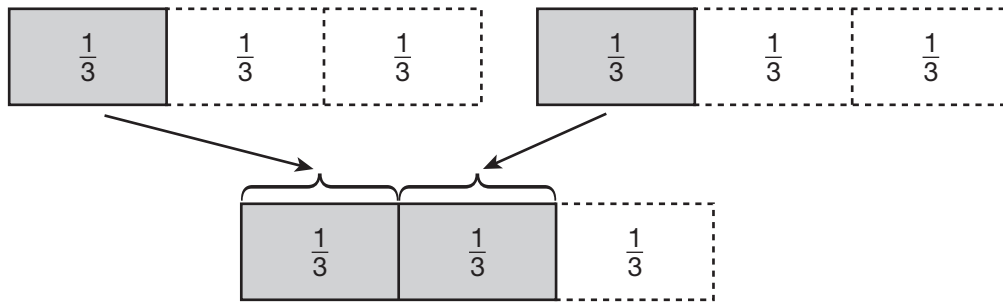
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Adding and Subtracting Fractions

1 GETTING THE IDEA

Adding is joining parts together.

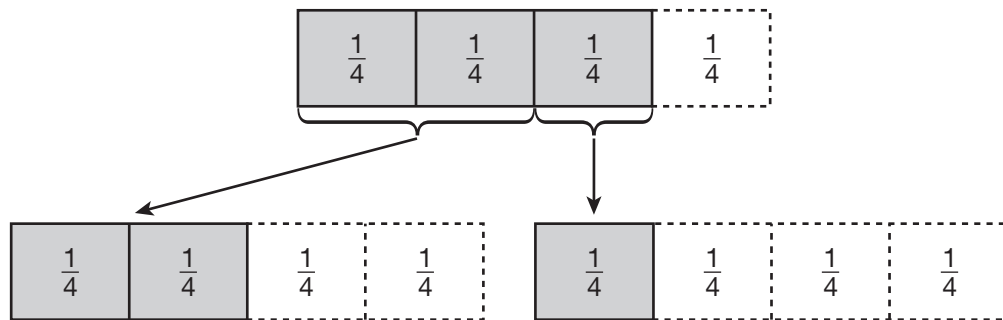
To add $\frac{1}{3} + \frac{1}{3}$, join the two parts together.



$$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$$

Subtracting is separating into parts.

To subtract $\frac{3}{4} - \frac{2}{4}$, separate $\frac{3}{4}$ into parts.



$$\frac{3}{4} - \frac{2}{4} = \frac{1}{4}$$

Example 1

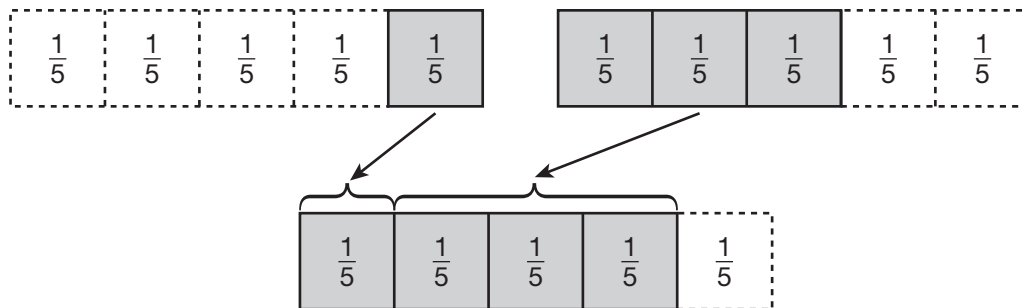
Add $\frac{1}{5} + \frac{3}{5}$.

Strategy Use fraction strips to model the sum.

Step 1 Model each fraction.



Step 2 Join the two groups to model the sum.



Step 3 Add the numerators to find the sum.

$$\frac{1}{5} + \frac{3}{5} = \frac{4}{5}$$

The model also shows $\frac{4}{5}$. The sum is $\frac{4}{5}$.

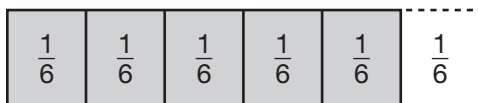
Solution $\frac{1}{5} + \frac{3}{5} = \frac{4}{5}$

Example 2

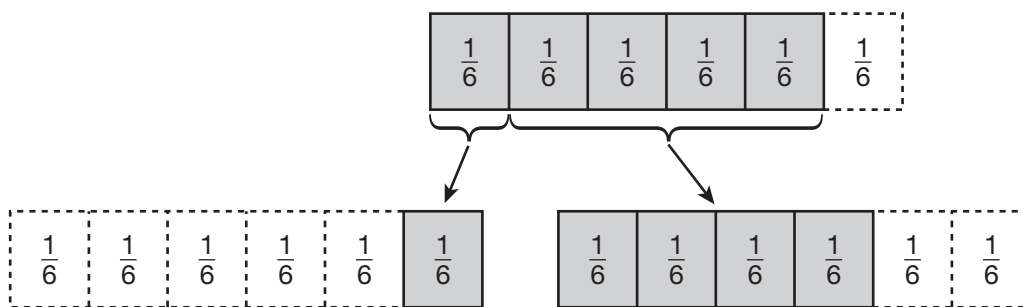
Subtract $\frac{5}{6} - \frac{1}{6}$.

Strategy Use fraction strips.

Step 1 Model the first fraction.



Step 2 Separate into two groups.
Put $\frac{1}{6}$ in one group.



Step 3 Subtract the numerators to find the difference.

$$\frac{5}{6} - \frac{1}{6} = \frac{4}{6}$$

The model shows $\frac{4}{6}$ left after separating out $\frac{1}{6}$. The difference is $\frac{4}{6}$.

Solution $\frac{5}{6} - \frac{1}{6} = \frac{4}{6}$

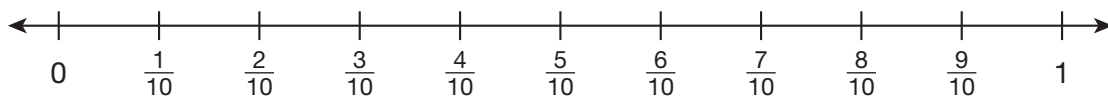
Example 3

Add $\frac{3}{10} + \frac{2}{10}$.

Strategy Use a number line.

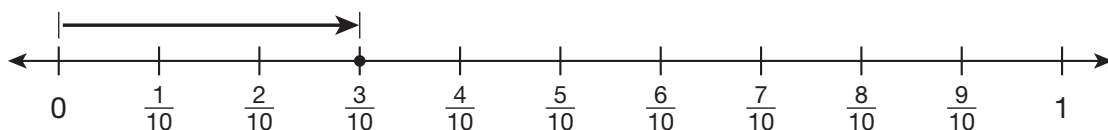
Step 1 Draw and label a number line.

The denominator of the fractions is 10. Divide one whole into ten parts. Label each part on the number line.



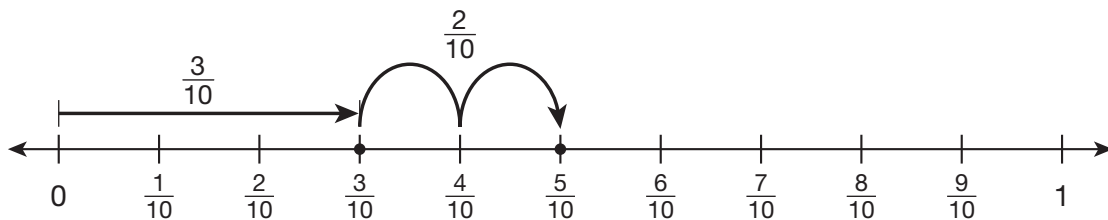
Step 2 Locate the first fraction on the number line.

Start at 0 and draw a line to $\frac{3}{10}$.



Step 3 Move the distance of the second fraction on the number line.

The second fraction is $\frac{2}{10}$, so move $\frac{2}{10}$ farther on the number line.
 $\frac{3}{10} + \frac{2}{10}$



Step 4 Find the sum on the number line.

The sum is the endpoint. When you added $\frac{2}{10}$ more, you ended on $\frac{5}{10}$.
 $\frac{3}{10} + \frac{2}{10} = \frac{5}{10}$

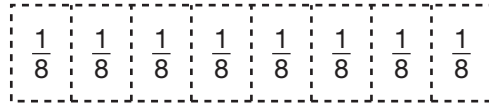
Solution $\frac{3}{10} + \frac{2}{10} = \frac{5}{10}$

2 COACHED EXAMPLE

Subtract $\frac{7}{8} - \frac{3}{8}$.

Draw a fraction strip model to show $\frac{7}{8}$.

To model $\frac{7}{8}$, I shade _____ parts out of _____.



Separate $\frac{7}{8}$ into _____ groups.

Draw two more models. To subtract $\frac{3}{8}$, shade _____ parts of the first model.

Shade the second model so that the two models combined have _____ parts shaded.



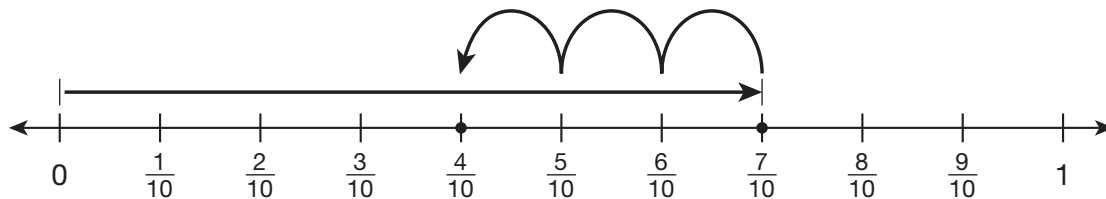
The model shows _____ left after separating out _____.

Record the difference. Subtract the _____ to find the difference.

$$\frac{7}{8} - \frac{3}{8} = \frac{\square}{\square}$$

3 LESSON PRACTICE

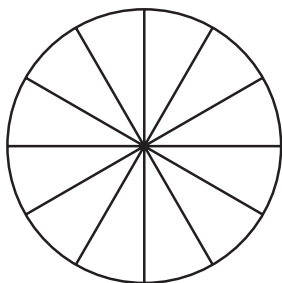
1 Jasmine drew this number line model.



Which statement describes the model?

- A.** Jasmine added $\frac{3}{10}$. **C.** The model shows a sum of $\frac{7}{10}$.
 B. Jasmine subtracted $\frac{6}{10}$. **D.** The model shows a difference of $\frac{4}{10}$.

2 Charlie shaded $\frac{2}{12}$ of the circle blue and $\frac{3}{12}$ of the circle red.



What fraction of the circle is shaded?

- A.** $\frac{1}{12}$ **C.** $\frac{7}{12}$
 B. $\frac{5}{12}$ **D.** $\frac{5}{24}$

3 What is the sum?

$$\frac{2}{6} + \frac{1}{6}$$

- A.** $\frac{1}{6}$ **C.** $\frac{4}{5}$
 B. $\frac{3}{6}$ **D.** $\frac{3}{12}$

4 What is the difference?

$$\frac{7}{10} - \frac{4}{10}$$

- A.** $\frac{3}{6}$ **C.** $\frac{3}{10}$
 B. $\frac{1}{3}$ **D.** $\frac{9}{10}$

5 Which equation has $\frac{2}{8}$ as the missing fraction?

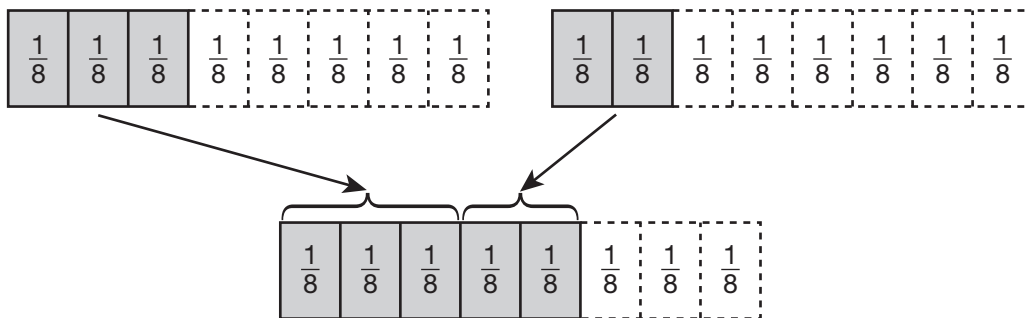
A. $\frac{6}{8} + \frac{\square}{\square} = \frac{7}{8}$

B. $\frac{5}{8} - \frac{\square}{\square} = \frac{2}{8}$

C. $\frac{3}{8} + \frac{\square}{\square} = \frac{7}{8}$

D. $\frac{\square}{\square} + \frac{4}{8} = \frac{6}{8}$

6 Look at the model.



Which statement is true? Mark all that apply.

- A. The model shows separating into two groups.
- B. The model shows joining two groups.
- C. The model shows $\frac{2}{8} + \frac{3}{8}$.
- D. The model shows $\frac{3}{8} - \frac{2}{8}$.
- E. The sum is $\frac{5}{8}$.
- F. The sum is $\frac{5}{16}$.

7 Find each sum or difference. Compare the result to $\frac{1}{2}$. Write the problem in the correct box.

$$\frac{7}{8} - \frac{1}{8}$$

$$\frac{1}{3} + \frac{1}{3}$$

$$\frac{1}{6} + \frac{1}{6}$$

$$\frac{9}{10} - \frac{6}{10}$$

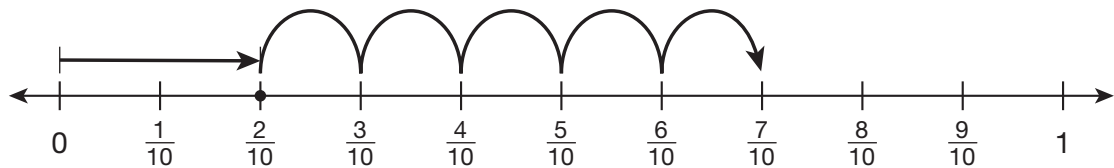
$$\frac{7}{12} - \frac{4}{12}$$

$$\frac{1}{4} + \frac{2}{4}$$

Less than $\frac{1}{2}$	Greater than $\frac{1}{2}$

- 8 Megan wants to add $\frac{4}{8}$ and $\frac{1}{8}$. Show and explain how she can add the fractions. Write the sum.

- 9 Ivan drew a model for $\frac{2}{10} + \frac{6}{10}$.



Ivan's Model

Part A Is the model correct? Use words or numbers to justify your answer.

Part B Complete the equation.

$$\frac{2}{10} + \frac{6}{10} = \frac{\boxed{}}{\boxed{}}$$