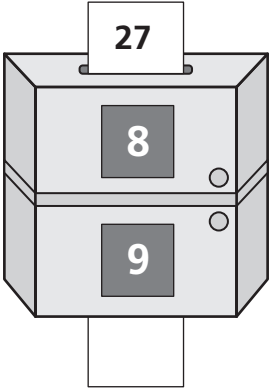
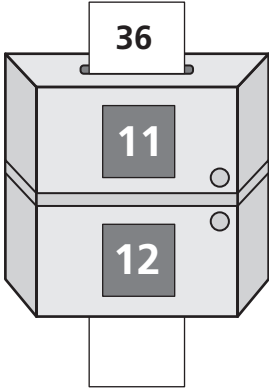
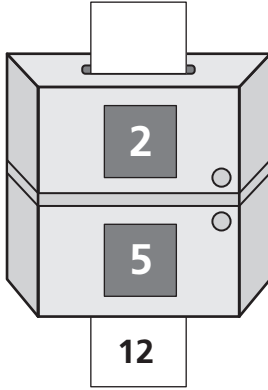
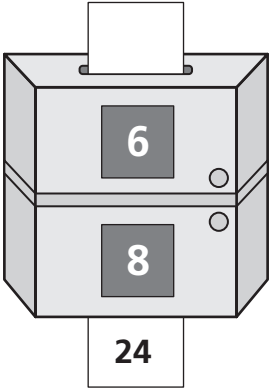
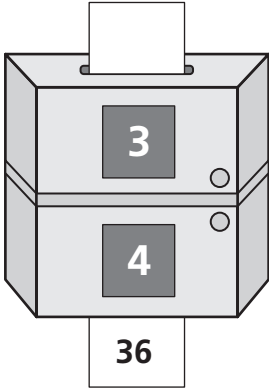
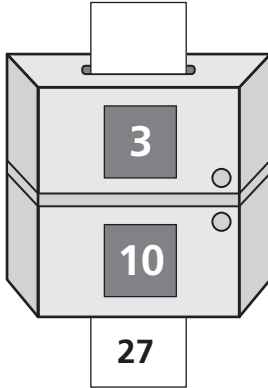
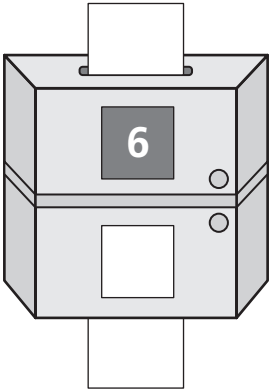
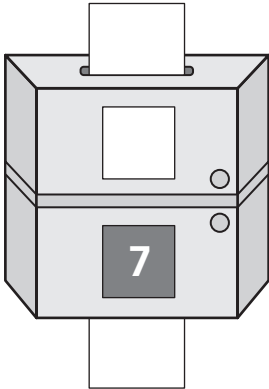
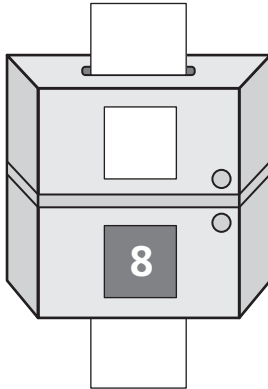


# Investigating the Result of Two Operations

Fill in the missing numbers.

<p>1</p> 	<p>2</p> 	<p>3</p> 
<p>4</p> 	<p>5</p> 	<p>6</p> 
<p>7</p> 	<p>8</p> 	<p>9</p> 

# Investigating the Order of Two Operations

Shade the bars to match the rules.

1



2



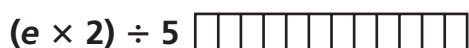
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4



5



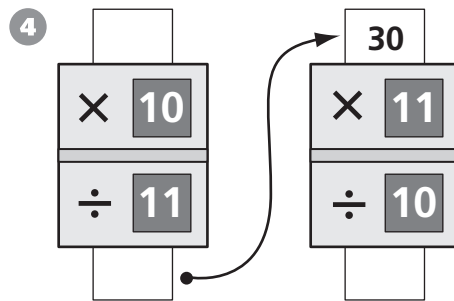
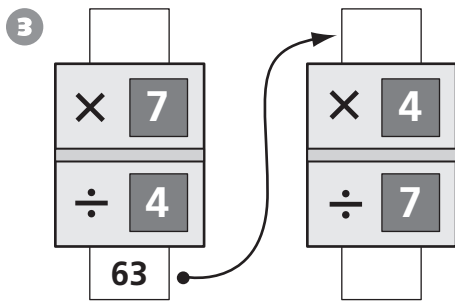
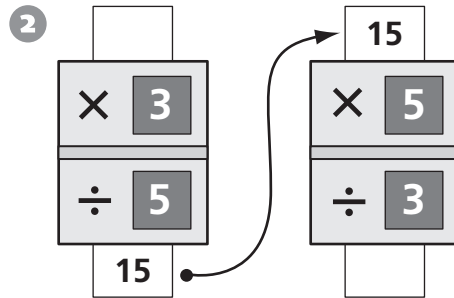
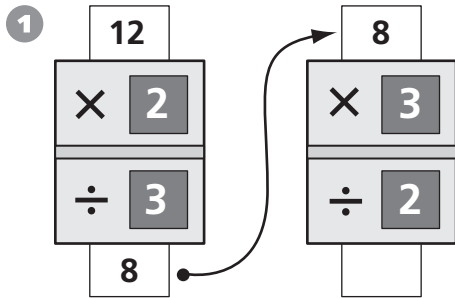
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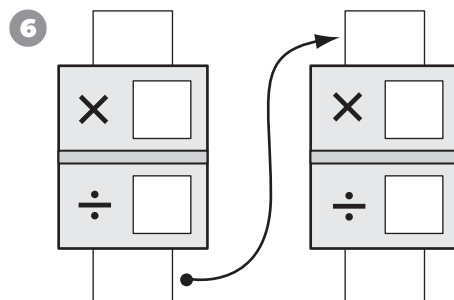
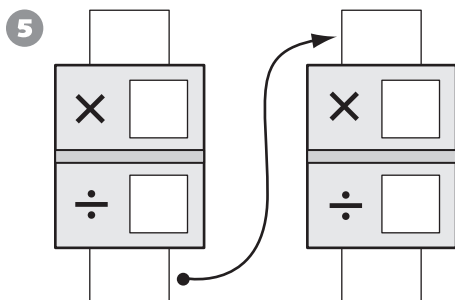
# Finding Equivalent Fractions

These fraction machines are “reciprocals” of each other. A fraction’s reciprocal is another fraction in which the numerator and denominator have switched places. For example,  $\frac{2}{3}$  and  $\frac{3}{2}$  are reciprocals of each other.

Fill in the missing numbers.



Make your own reciprocal machines with inputs and outputs.



7 What happens when a number goes through a fraction machine and its reciprocal machine? Do you see a pattern? Why does this pattern always occur?

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# Equivalent Fractions Using Dot Sketches

**Complete the number sentences of equivalent fractions.**

1  $\frac{\boxed{4}}{\boxed{8}} = \frac{\boxed{\phantom{00}}}{\boxed{16}} = \frac{\boxed{2}}{\boxed{\phantom{00}}} = \frac{\boxed{\phantom{00}}}{\boxed{6}} = \frac{\boxed{\phantom{00}}}{\boxed{2}}$

2  $\frac{\boxed{6}}{\boxed{9}} = \frac{\boxed{\phantom{00}}}{\boxed{3}} = \frac{\boxed{\phantom{00}}}{\boxed{30}} = \frac{\boxed{8}}{\boxed{\phantom{00}}} = \frac{\boxed{\phantom{00}}}{\boxed{15}}$

3  $\frac{\boxed{\phantom{00}}}{\boxed{10}} = \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \frac{\boxed{15}}{\boxed{\phantom{00}}} = \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \frac{\boxed{3}}{\boxed{5}}$

4  $\frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \frac{\boxed{8}}{\boxed{10}}$

**Make up your own equivalent fractions.**

5  $\frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}}$

6  $\frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}}$

# Strategies for Comparing Fractions

To find a *common denominator* for two fractions,

- (1) multiply the denominators together, or  
 (2) use some other common multiple.

Example

$$\frac{1}{4} = \frac{8}{32}$$

$$\frac{1}{4} = \frac{2}{8}$$

Convert  $\frac{1}{4}$  and  $\frac{5}{8}$  to equivalent fractions with a common denominator.

$$\frac{5}{8} = \frac{20}{32}$$

or

$$\frac{5}{8} = \frac{5}{8}$$

Find a common denominator for each pair of fractions, then convert to equivalent fractions.

1

$$\frac{2}{3} = \frac{\boxed{\phantom{000}}}{\boxed{\phantom{000}}}$$

$$\frac{5}{9} = \frac{\boxed{\phantom{000}}}{\boxed{\phantom{000}}}$$

2

$$\frac{2}{3} = \frac{\boxed{\phantom{000}}}{\boxed{\phantom{000}}}$$

$$\frac{3}{5} = \frac{\boxed{\phantom{000}}}{\boxed{\phantom{000}}}$$

3

$$\frac{1}{2} = \frac{\boxed{\phantom{000}}}{\boxed{\phantom{000}}}$$

$$\frac{2}{3} = \frac{\boxed{\phantom{000}}}{\boxed{\phantom{000}}}$$

4

$$\frac{7}{8} = \frac{\boxed{\phantom{000}}}{\boxed{\phantom{000}}}$$

$$\frac{1}{3} = \frac{\boxed{\phantom{000}}}{\boxed{\phantom{000}}}$$

5

$$\frac{1}{6} = \frac{\boxed{\phantom{000}}}{\boxed{\phantom{000}}}$$

$$\frac{2}{4} = \frac{\boxed{\phantom{000}}}{\boxed{\phantom{000}}}$$

6

$$\frac{5}{6} = \frac{\boxed{\phantom{000}}}{\boxed{\phantom{000}}}$$

$$\frac{6}{4} = \frac{\boxed{\phantom{000}}}{\boxed{\phantom{000}}}$$

# Comparing Fractions Using Common Denominators

- Write equivalent fractions for the fractions in each pair so that the new fractions have the same denominator.
- Answer the questions.

1

$$\frac{4}{6} = \frac{\square}{\square}$$

$$\frac{3}{4} = \frac{\square}{\square}$$

Which fraction is greater?

2

$$\frac{5}{9} = \frac{\square}{\square}$$

$$\frac{16}{18} = \frac{\square}{\square}$$

What is their difference?

3

$$\frac{1}{2} = \frac{\square}{\square}$$

$$\frac{2}{3} = \frac{\square}{\square}$$

What is their sum?

4

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

$$\frac{4}{9} = \frac{\square}{\square}$$

Which fraction is greater?

5

$$\frac{5}{8} = \frac{\square}{\square}$$

$$\frac{2}{3} = \frac{\square}{\square}$$

What is their difference?

6

$$\frac{1}{3} = \frac{\square}{\square}$$

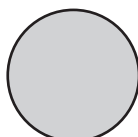
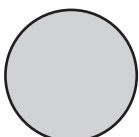
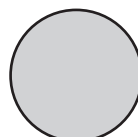


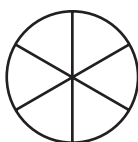
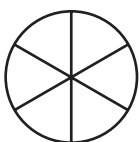

$$\frac{4}{5} = \frac{\square}{\square}$$

What is their sum?

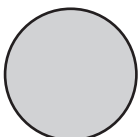
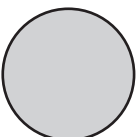
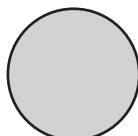


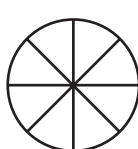


# Area Models and Number Lines

In each group, write equivalent fractions and shade sketches to match. You may need to draw lines to split up some of the pieces.

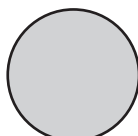
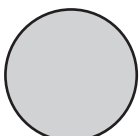
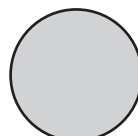





1

				
$\frac{2}{6}$	=		=	
				

2

				
$\frac{1}{4}$	=		=	
				

3

				
$\frac{4}{12}$	=		=	
				

# Numbers Greater Than 1

You might think about recording the conversion of a fraction greater than 1 to a mixed number like this:

$$\frac{14}{6}$$

Fraction  $> 1$

$$14 \div 6 = 2\frac{2}{6}$$

Number Sentence

$$6 \overline{)14} \begin{array}{r} 2 \\ 2 \\ \hline 2 \end{array}$$

Division Record

Record these using number sentences.

1

$$\frac{12}{8}$$

$$12 \div 8 =$$

2

$$\frac{23}{6}$$

3

$$\frac{29}{4}$$

4

$$\frac{38}{5}$$

Write these using division records.

5  $\frac{65}{7}$

$$7 \overline{)65}$$

6  $\frac{19}{5}$

7  $\frac{100}{11}$

8  $\frac{76}{9}$



# Equivalent Fractions Greater Than 1

To add fractions greater than 1, you can . . .

- A.** Add them with common denominators and convert the sum to a mixed number.

$$\frac{9}{8} + \frac{7}{3} = \frac{27}{24} + \frac{56}{24} = \frac{83}{24} = 3\frac{11}{24}$$

- B.** Convert them to mixed numbers, and add with common denominators.

$$\frac{9}{8} + \frac{7}{3} = 1\frac{1}{8} + 2\frac{1}{3} = 1\frac{3}{24} + 2\frac{8}{24} = 1 + \frac{3}{24} + 2 + \frac{8}{24} = 3 + \frac{11}{24} = 3\frac{11}{24}$$

---

**Add these fractions.**

1  $\frac{10}{9} + \frac{4}{3} =$

---

2  $\frac{13}{6} + \frac{10}{8} =$

---

3  $\frac{26}{4} + \frac{22}{5} =$

---

4  $\frac{28}{5} + \frac{27}{8} =$