Name: _____ Date: _____

CHAPTER 14

Fractions

Lesson 14.1 Understanding Fractions

What fractions make a whole?
Fill in the blanks.

1.

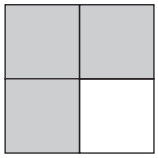
$\frac{\square}{7} + \frac{3}{7} = \frac{7}{7}$

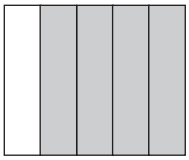
_____-sevenths and _____-sevenths make 1 whole.

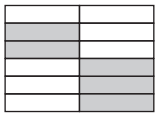
What fraction of each figure is shaded?
Fill in each box with the missing numerator.

2.

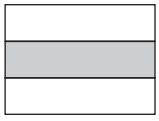
e $\frac{\square}{8}$

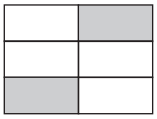
c  $\frac{\square}{4}$

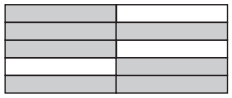
r  $\frac{\square}{5}$

a  $\frac{\square}{12}$

s $\frac{\square}{8}$

u  $\frac{\square}{3}$

q  $\frac{\square}{6}$

k  $\frac{\square}{10}$

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Match the letters in Exercise 2 with the answers to solve the riddle.

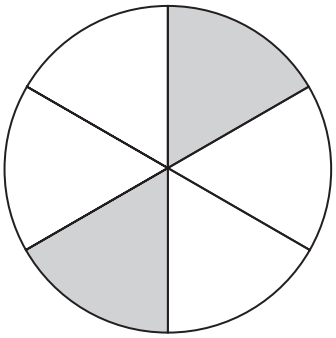
Put three ducks in a box.
What do you have?

A box of _____ _____ _____ _____ _____ _____ _____ _____

(2) (1) (5) (3) (7) (8) (4) (6)

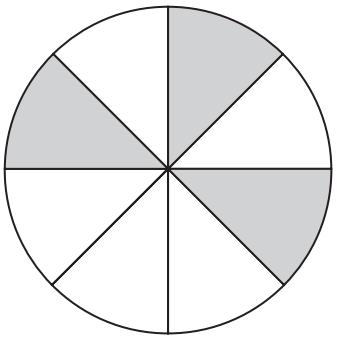
What fraction of each figure is shaded? Fill in each box with the missing denominator.

3.



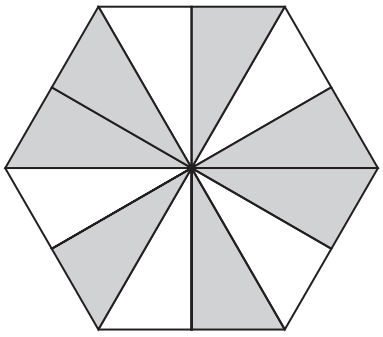
$\frac{2}{\square}$

4.



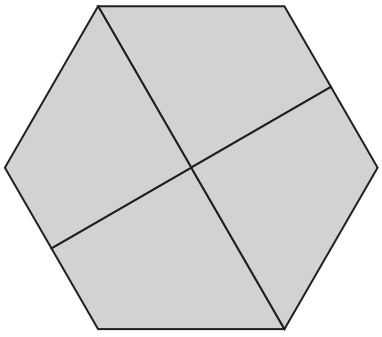
$\frac{3}{\square}$

5.



$\frac{7}{\square}$

6.



$\frac{4}{\square}$

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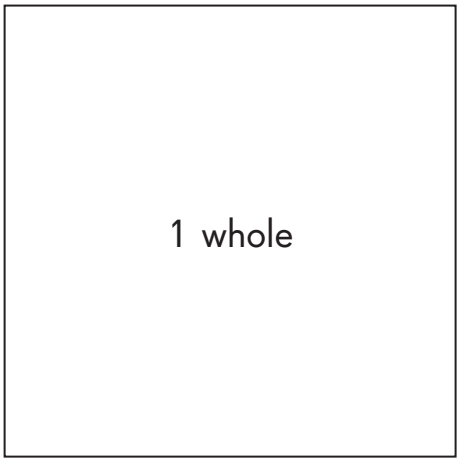
Lesson 14.2 Understanding Equivalent Fractions

Cut out the fraction pieces on pages 59 and 61.
Then place them on the unit square to help you find the equivalent fractions.

Unit square



Example $\frac{1}{2} = \frac{\square}{6}$

Step 1 Place a $\frac{1}{2}$-piece on the unit square.

Step 2 Next, completely cover the $\frac{1}{2}$-piece with $\frac{1}{6}$-pieces.

Step 3 Note the number of $\frac{1}{6}$-pieces needed to cover the $\frac{1}{2}$-piece completely.

Answer: Three $\frac{1}{6}$-pieces are needed to cover the $\frac{1}{2}$-piece completely.

$\frac{1}{2} = \frac{3}{6}$

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Fill in the missing numerator or denominator.

1. $\frac{1}{6} = \frac{\square}{12}$

2. $\frac{1}{4} = \frac{2}{\square}$

3. $\frac{1}{3} = \frac{\square}{6}$

4. $\frac{1}{2} = \frac{4}{\square}$

5. $\frac{3}{4} = \frac{\square}{8}$

6. $\frac{2}{5} = \frac{\square}{10}$

7. $\frac{2}{3} = \frac{\square}{12}$

8. $\frac{5}{6} = \frac{\square}{12}$

9. $\frac{4}{5} = \frac{8}{\square}$

10. $\frac{3}{4} = \frac{9}{\square}$

11. $\frac{2}{6} = \frac{4}{\square}$

12. $\frac{2}{3} = \frac{6}{\square}$

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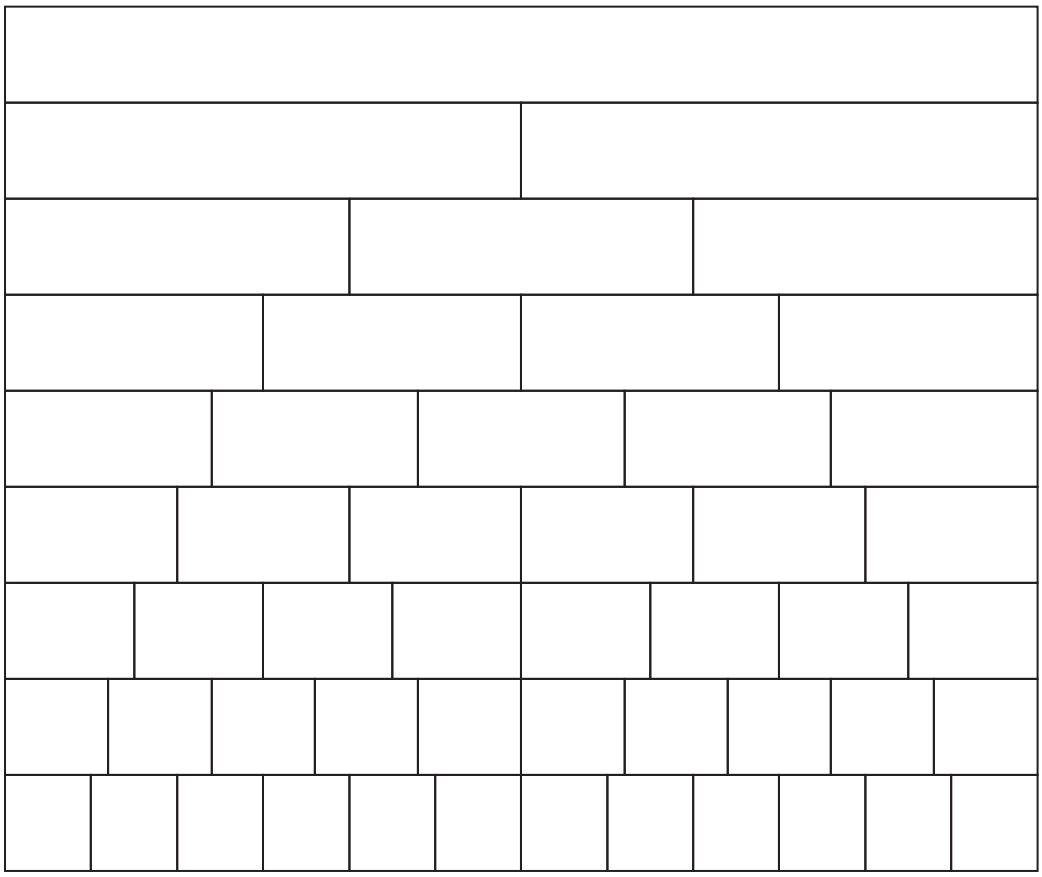
Use different colors to color the mat below to show the fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$, $\frac{1}{8}$, $\frac{1}{10}$, and $\frac{1}{12}$.

13.



Look at the mat above and circle the pairs of fractions that are equivalent fractions.

14. $\frac{1}{5}$ and $\frac{2}{10}$

15. $\frac{2}{3}$ and $\frac{5}{6}$

16. $\frac{2}{4}$ and $\frac{5}{8}$

17. $\frac{1}{2}$ and $\frac{5}{10}$

18. $\frac{2}{5}$ and $\frac{4}{10}$

19. $\frac{1}{4}$ and $\frac{6}{12}$

20. $\frac{3}{4}$ and $\frac{6}{8}$

21. $\frac{2}{3}$ and $\frac{4}{6}$

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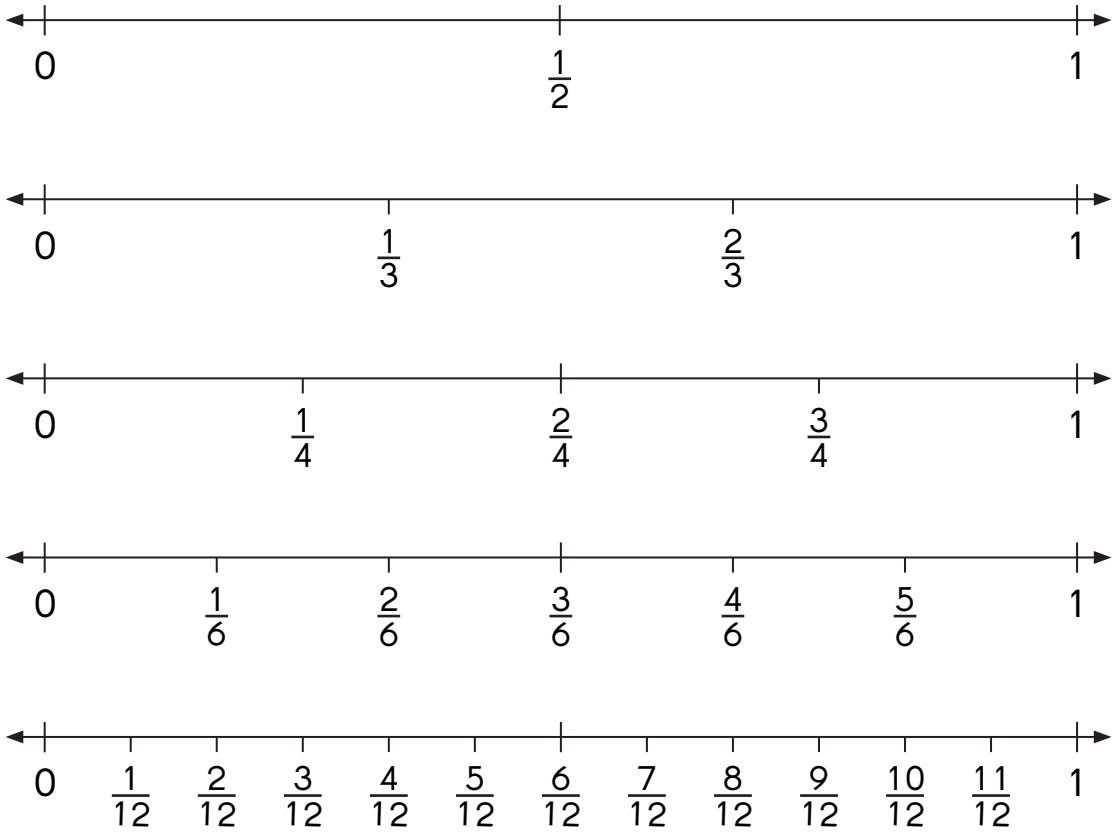
Use the number lines to find the equivalent fractions.
Fill in the missing numerators.



22. $\frac{1}{2} = \frac{\square}{4} = \frac{\square}{6} = \frac{\square}{12}$

23. $\frac{3}{4} = \frac{\square}{12}$

24. $\frac{2}{3} = \frac{\square}{6} = \frac{\square}{12}$

25. $\frac{5}{6} = \frac{\square}{12}$

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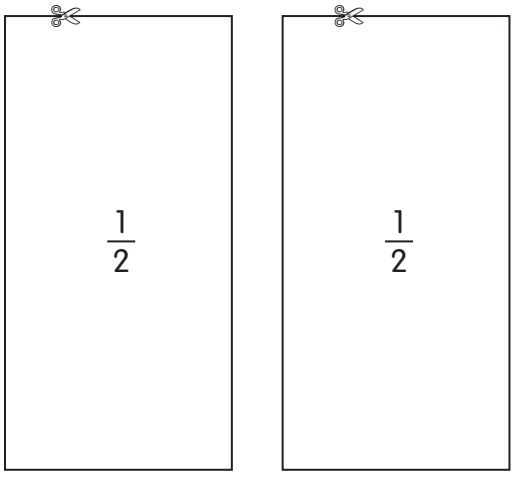
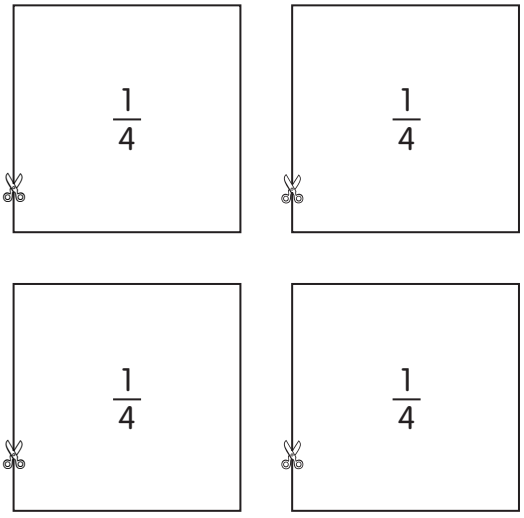
Fraction Pieces

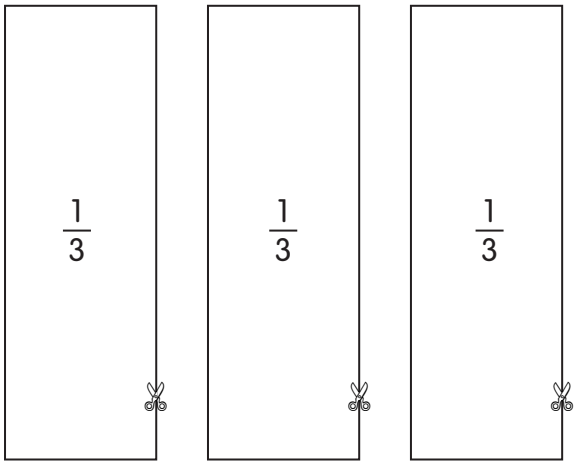
Halves



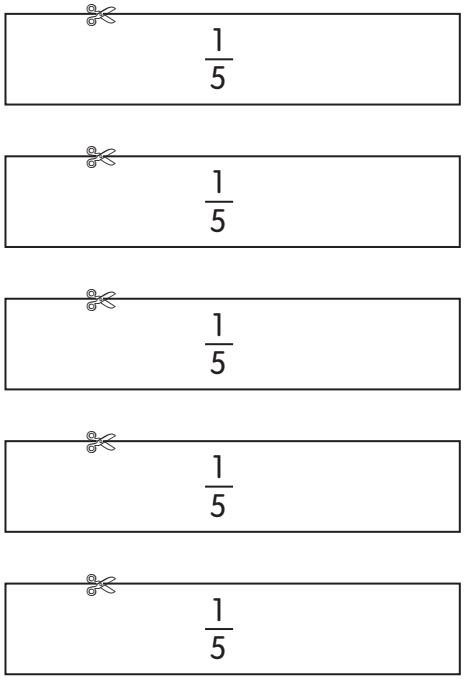
Fourths



Thirds



Fifths



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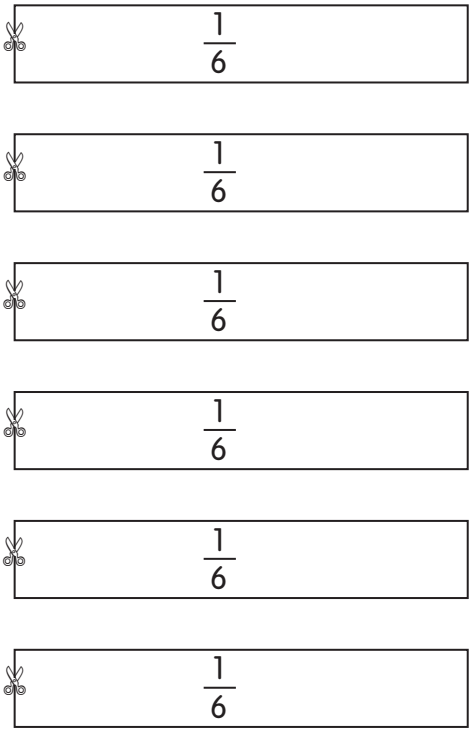
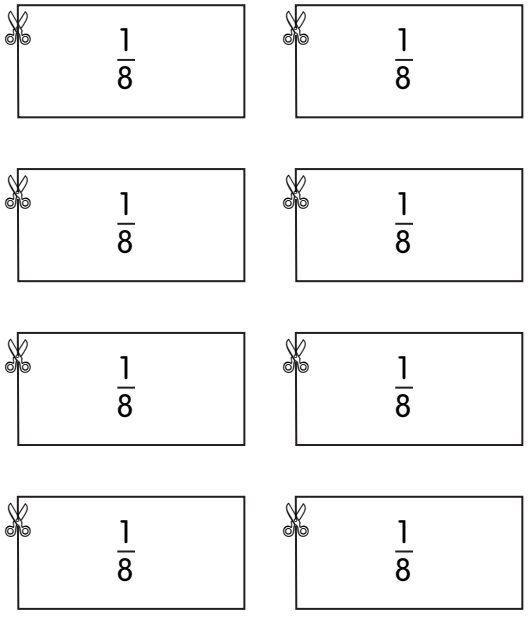
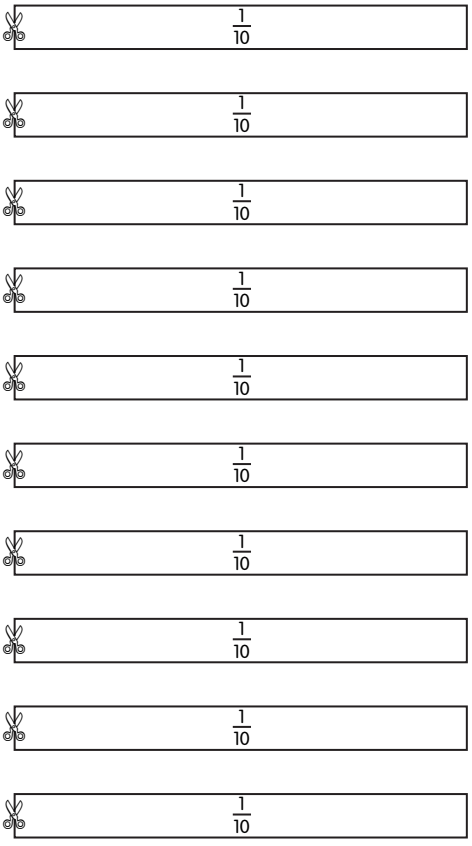
Sixths



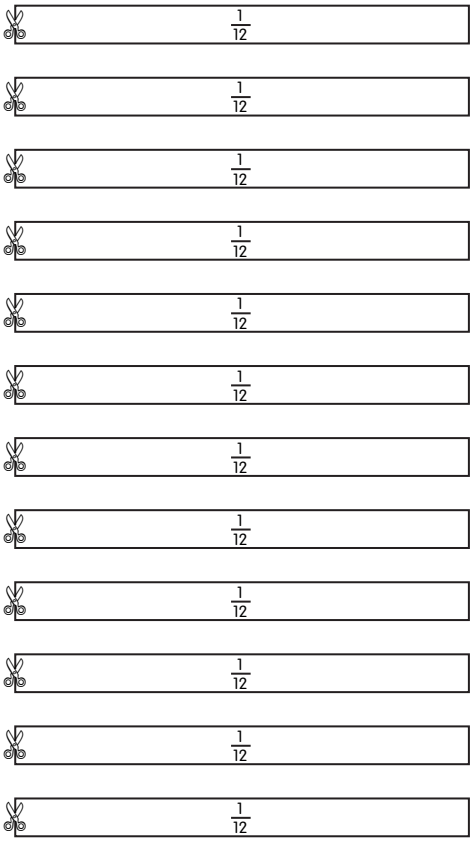
Eighths



Tenths



Twelfths



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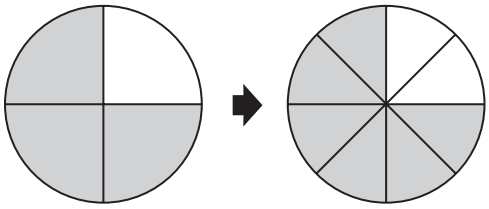
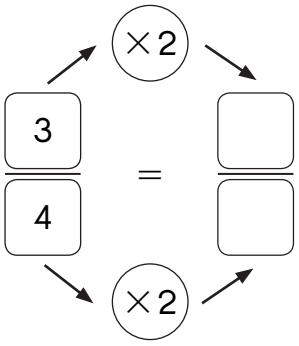
Lesson 14.3 More Equivalent Fractions

Write the missing numerator, denominator, and fraction.

1.

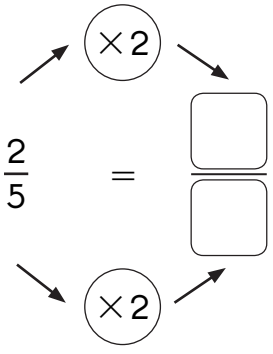




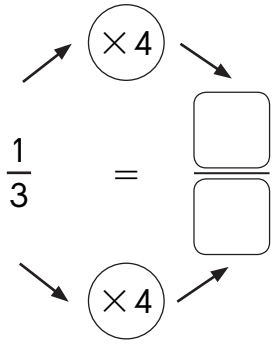
$\frac{3}{4}$ is equivalent to ☐.

Find the missing numerators and denominators.

2.



3.



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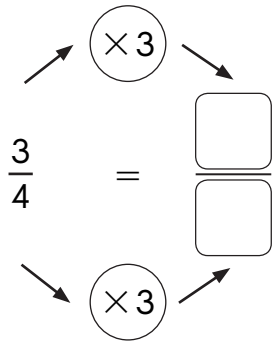
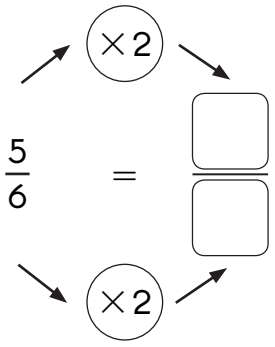
4.



5.



Find the missing numerators or denominators.

6. $\frac{4}{5} = \frac{\square}{10}$

7. $\frac{1}{2} = \frac{6}{\square}$

8. $\frac{2}{3} = \frac{6}{\square}$

9. $\frac{2}{9} = \frac{4}{\square}$

10. $\frac{3}{4} = \frac{\square}{8} = \frac{\square}{12} = \frac{\square}{16}$

11. $\frac{3}{3} = \frac{6}{\square} = \frac{9}{\square} = \frac{12}{\square}$

12. $\frac{3}{5} = \frac{\square}{10} = \frac{\square}{15} = \frac{\square}{20}$

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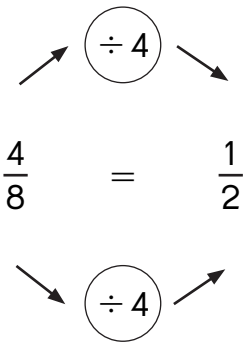
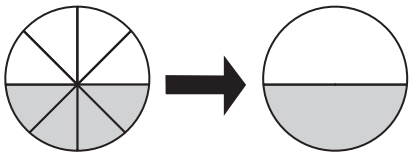
Draw to show the simplest fraction.
Then write the fraction in the boxes.

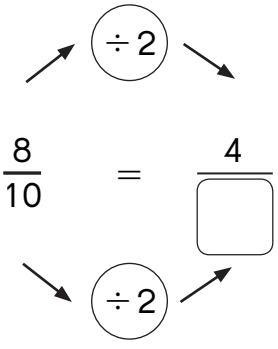
Example

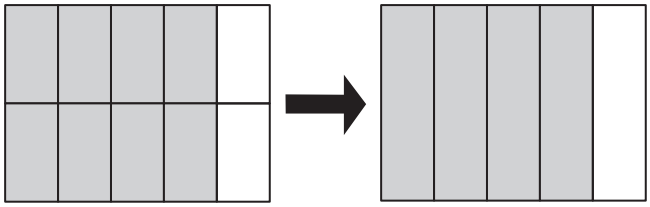




$\frac{4}{8}$ is equivalent to $\frac{1}{2}$.

13.

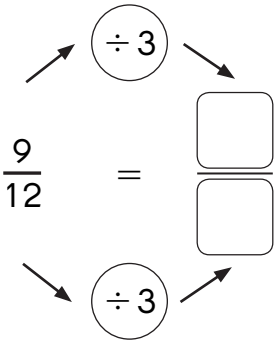




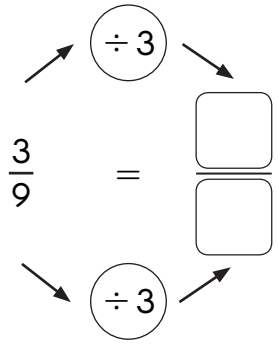
$\frac{8}{10}$ is equivalent to ____.

Find the missing numerators and denominators.

14.



15.



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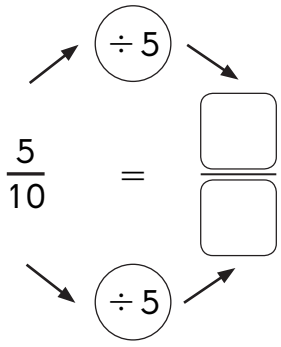
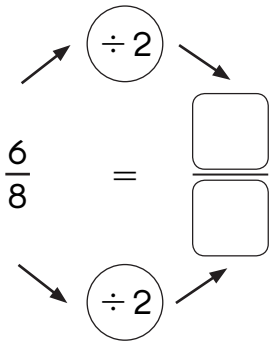
16.



17.



Write each fraction in simplest form.

18. $\frac{2}{6} = \frac{\square}{\square}$

19. $\frac{4}{8} = \frac{\square}{\square}$

20. $\frac{6}{10} = \frac{\square}{\square}$

21. $\frac{8}{10} = \frac{\square}{\square}$

22. $\frac{3}{12} = \frac{\square}{\square}$

23. $\frac{9}{12} = \frac{\square}{\square}$

24. $\frac{8}{12} = \frac{\square}{\square}$

25. $\frac{10}{12} = \frac{\square}{\square}$

26. $\frac{2}{8} = \frac{\square}{\square}$

27. $\frac{4}{10} = \frac{\square}{\square}$

28. $\frac{15}{20} = \frac{\square}{\square}$

29. $\frac{6}{9} = \frac{\square}{\square}$

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Lesson 14.4 Comparing Fractions

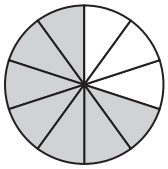
Compare the fractions.

1. $\frac{5}{7}$

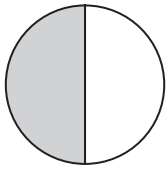
$\frac{1}{2}$

_____ is less than _____.

2.



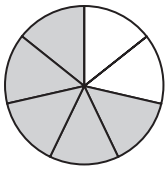
$\frac{7}{10}$



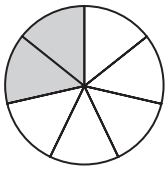
$\frac{1}{2}$

_____ is greater than _____.

3.



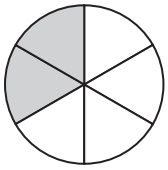
$\frac{5}{7}$



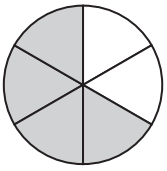
$\frac{2}{7}$

_____ is less than _____.

4.



$\frac{2}{6}$



$\frac{4}{6}$

_____ is greater than _____.

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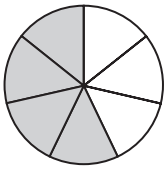
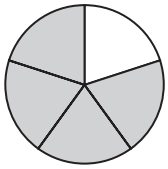
5.



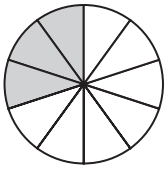
$\frac{4}{7}$



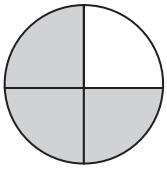
$\frac{4}{5}$

_____ is less than _____.

6.



$\frac{3}{10}$



$\frac{3}{4}$

_____ is greater than _____.

Compare the fractions.

7. Which is less, $\frac{2}{3}$ or $\frac{7}{12}$?

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

_____ < _____

8. Which is greater, $\frac{5}{8}$ or $\frac{1}{4}$?

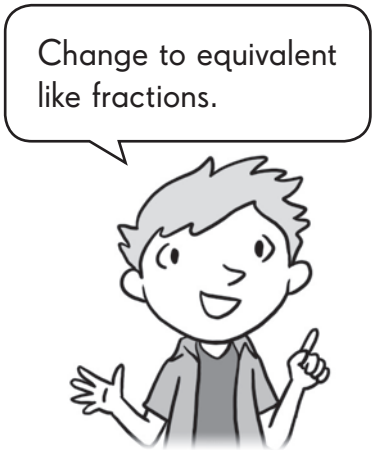
$\frac{1}{4} =$ _____

_____ > _____

9. Which is less, $\frac{2}{3}$ or $\frac{2}{9}$?

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

_____ < _____



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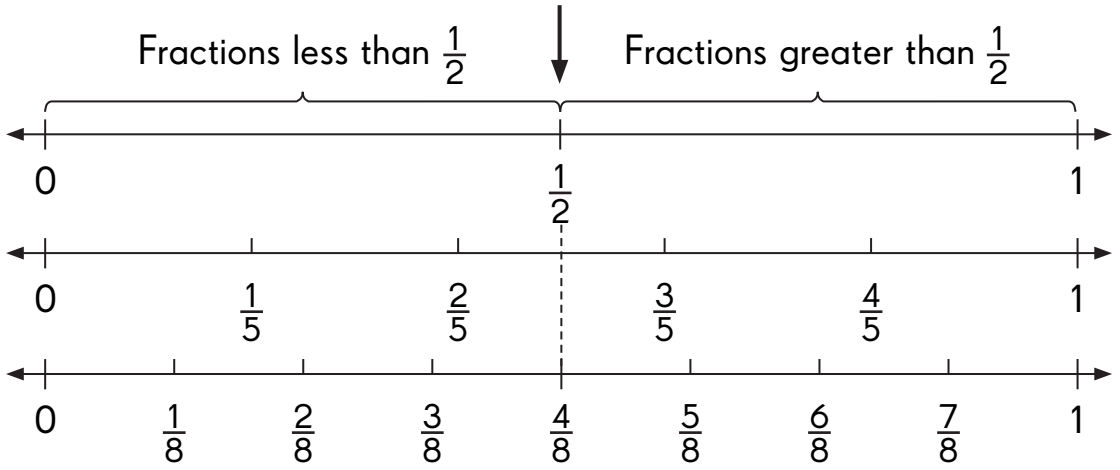
Compare. Write < or >.

Use $\frac{1}{2}$ as a benchmark.

10.



$\frac{2}{5}$ ◯ $\frac{1}{2}$

$\frac{5}{8}$ ◯ $\frac{1}{2}$

So, $\frac{2}{5}$ ◯ $\frac{5}{8}$.

Compare the fractions. Fill in the blanks.

11. $\frac{1}{3}$ and $\frac{2}{3}$

_____ is greater.

12. $\frac{4}{5}$ and $\frac{6}{10}$

_____ is greater.

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13. $\frac{10}{11}$ and $\frac{1}{2}$

_____ is greater.

14. $\frac{4}{7}$ and $\frac{4}{8}$

_____ is greater.

Order the fractions from least to the greatest.

15. $\frac{1}{2}, \frac{1}{4}, \frac{1}{6}$ _____

16. $\frac{3}{4}, \frac{5}{6}, \frac{2}{3}$ _____

17. $\frac{3}{4}, \frac{7}{12}, \frac{2}{6}$ _____

18. $\frac{5}{6}, \frac{5}{8}, \frac{5}{12}$ _____

Order the fractions from greatest to the least.

19. $\frac{3}{8}, \frac{3}{4}, \frac{1}{2}$ _____

20. $\frac{1}{6}, \frac{1}{3}, \frac{1}{9}$ _____

21. $\frac{11}{12}, \frac{3}{4}, \frac{5}{6}$ _____

22. $\frac{2}{4}, \frac{2}{6}, \frac{2}{3}$ _____

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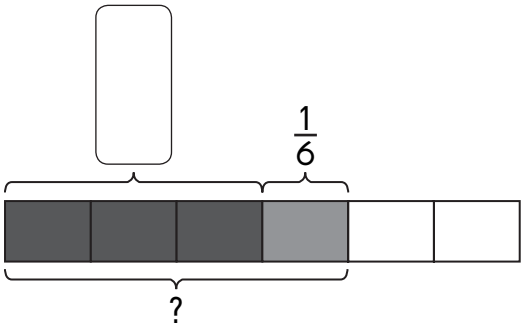
Lesson 14.5 Adding and Subtracting Like Fractions (Part 1)

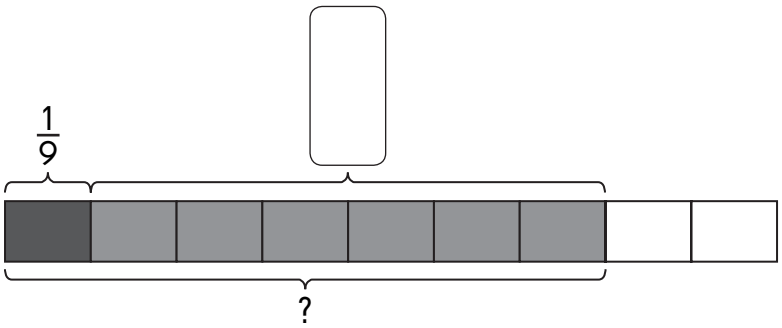
Complete the model.
Add the fractions.

1.



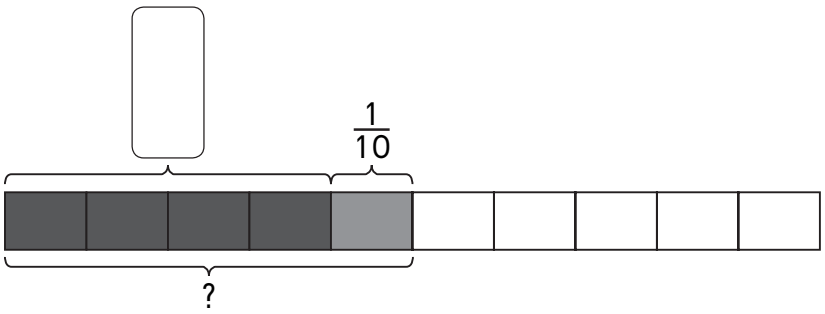
$\frac{\square}{6} + \frac{1}{6} = \square$

2.



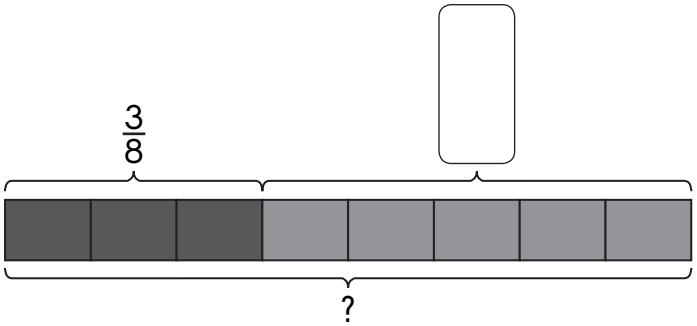
$\frac{1}{9} + \frac{\square}{9} = \square$

3.



$\frac{\square}{10} + \frac{1}{10} = \square$

4.



$\frac{3}{8} + \frac{\square}{8} = \square$

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Add.

5. $\frac{1}{2} + \frac{1}{2} =$ ☐

6. $\frac{1}{3} + \frac{2}{3} =$ ☐

7. $\frac{2}{5} + \frac{1}{5} =$ ☐

8. $\frac{1}{6} + \frac{3}{6} =$ ☐

Solve.

9. What fraction should you add to the sum of $\frac{3}{8}$ and $\frac{3}{8}$ to get 1 whole? ☐

10. What fraction should you add to the sum of $\frac{2}{10}$ and $\frac{3}{10}$ to get 1 whole? ☐

11. What fraction should you add to the sum of $\frac{2}{9}$ and $\frac{4}{9}$ to get 1 whole? ☐

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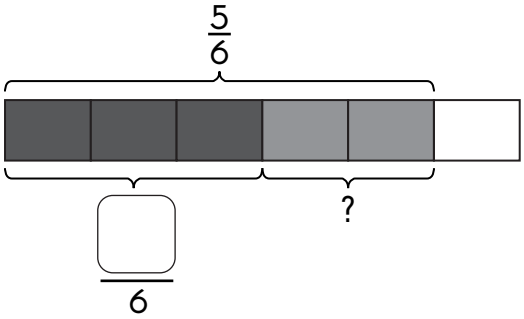
Lesson 14.5 Adding and Subtracting Like Fractions (Part 2)

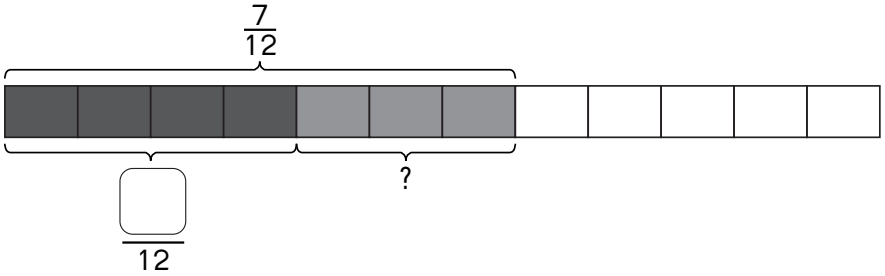
Complete the model.
Subtract the fractions.

1.



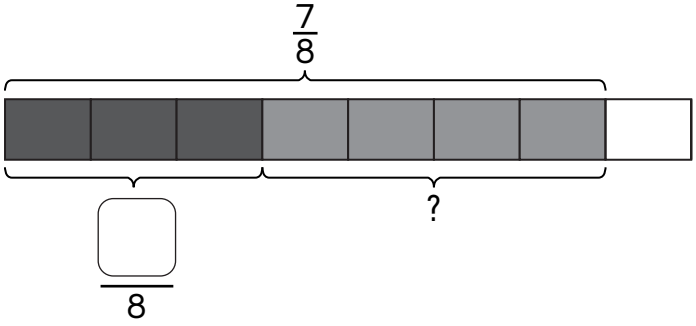
$\frac{5}{6} - \frac{\square}{6} = \square$

2.



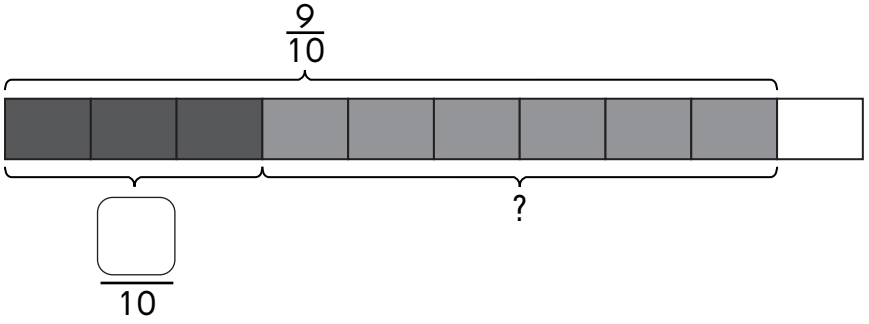
$\frac{7}{12} - \frac{\square}{12} = \square$

3.



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

4.



$\frac{9}{10} - \frac{\square}{10} = \square$

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Subtract.

5. $\frac{5}{8} - \frac{2}{8} =$ ☐

6. $\frac{8}{9} - \frac{4}{9} =$ ☐

7. $\frac{6}{7} - \frac{4}{7} =$ ☐

8. $\frac{7}{11} - \frac{2}{11} =$ ☐

9. $\frac{5}{6} - \frac{2}{6} - \frac{1}{6} =$ ☐

10. $\frac{7}{12} - \frac{5}{12} - \frac{1}{12} =$ ☐

11. $1 - \frac{3}{4} =$ ☐

12. $1 - \frac{2}{3} =$ ☐

Solve.

13. What fraction should you add to the difference of $\frac{8}{12}$ and $\frac{1}{12}$ to get 1 whole? ☐

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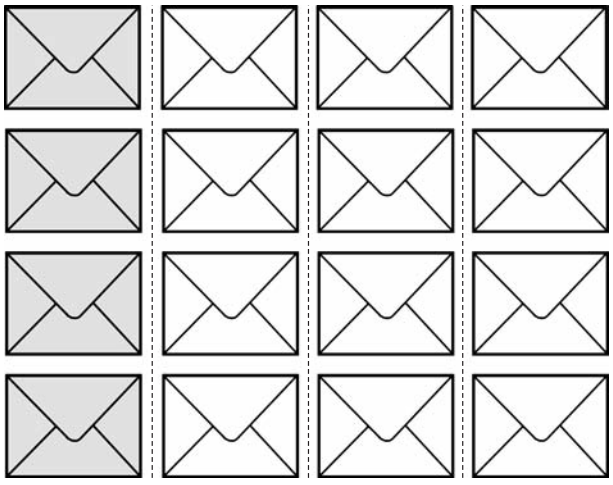
Lesson 14.6 Fraction of a Set

What fraction of each set of objects is shaded? Fill in the blanks.

1.

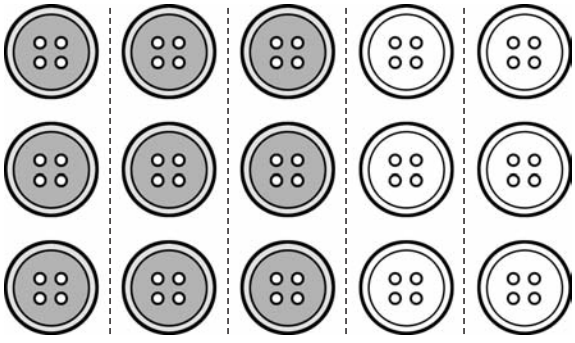
_____

2.



_____

3.



_____

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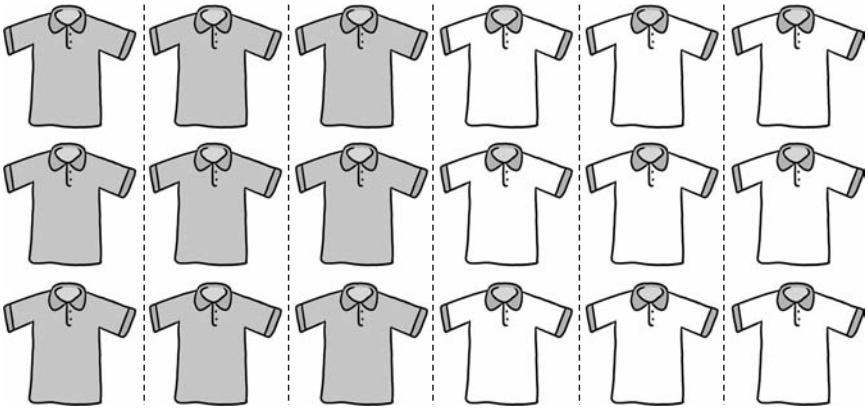
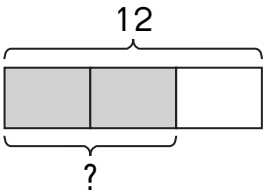
4.

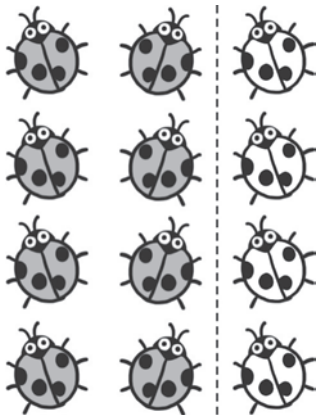


_____

Solve. Use pictures and bar models to help you.

5. $\frac{2}{3}$ of the 12 beetles are brown. How many beetles are brown?





3 units ⟶ 12

1 unit ⟶ ☐ ÷ ☐

= ☐

2 units ⟶ ☐ × ☐

= ☐

$\frac{2}{3}$ of 12 is ☐.

So, ☐ of the beetles are brown.

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6. $\frac{3}{4}$ of the 16 apples are green.
How many apples are green? ☐

7. $\frac{5}{8}$ of the 24 oranges were eaten.
How many oranges were eaten? ☐

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8. $\frac{4}{7}$ of the 21 breakfast bars are vanilla flavored.
How many breakfast bars are vanilla flavored? ☐

9. $\frac{2}{3}$ of the 60 shirts are blue.
How many shirts are blue? ☐

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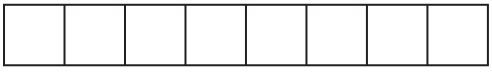
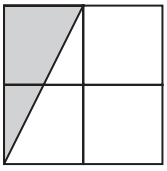
Put on Your Thinking Cap!

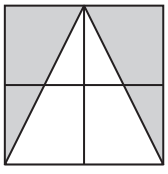
Shade the two fractions in each model and solve the problem.

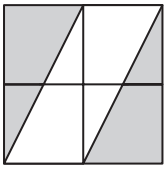
1. Maria bought 1 liter of mango juice.
She used $\frac{3}{8}$ liter of the juice on the first day and $\frac{1}{4}$ liter on the second day.
How much mango juice is left at the end of the second day?

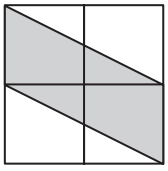


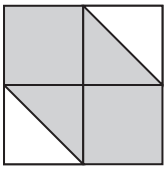
2. What fraction of each square is shaded?

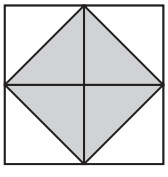
a.  _____

b.  _____

c.  _____

d.  _____

e.  _____

f.  _____

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Solve. Draw models to help you.

3. Box X and Box Y are the same size.
$\frac{2}{3}$ of Box X contains sand and $\frac{2}{9}$ of Box Y contains sand.
How much sand from Box X must be poured into Box Y so that the boxes contain the same amount of sand?

4. Alvin had $\frac{5}{6}$ of a pizza.
Tom had a part of an equal-sized pizza.
Alvin gave $\frac{1}{6}$ of his pizza to Tom.
Now, both of them have the same amount of pizza.
What fraction of a pizza did Tom have at first?

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