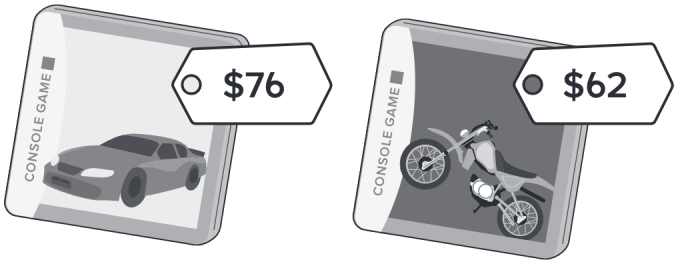
Discuss

Division: Halving two-digit numbers

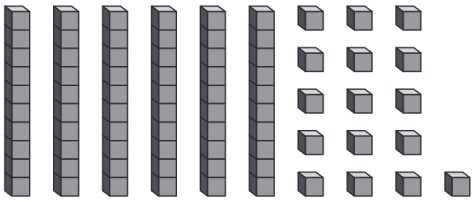
Two friends share the cost of the motorcycle racing game.



What amount should each pay?
How do you know?

Imagine they share the cost of the car racing game.
How could you calculate the amount they each pay?

Ramon uses blocks.



Julia uses multiplication.

$2 \times \square = 76$

$2 \times 35 = 70$ $35 each is not enough.

$2 \times 40 = 80$ $40 each is too much.

$2 \times 36 = 72$ $36 each is almost enough.

so

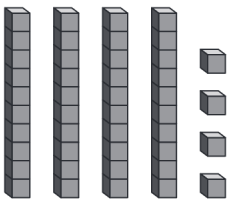
$2 \times 38 = 76$ They each pay $38.

Look carefully at Ramon's blocks.
Why did he regroup 7 tens and 6 ones as 6 tens and 16 ones?

Look carefully at Julia's strategy.
How did she calculate the amount each person should pay?

Complete each of these. Use the blocks shown to help your thinking.

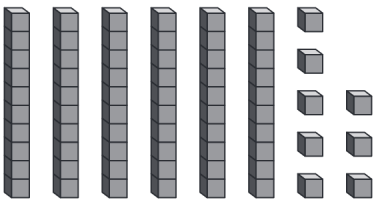
a.



Half of 44 is ____

44 ÷ 2 = ____

b.



Half of 68 is ____

68 ÷ 2 = ____

This activity reviews and practices strategies to divide by 2. Base-10 blocks are used as a model. Multiplication equations are also used to relate the operations of multiplication and division.

Practice

Division: Halving two-digit numbers

Complete each equation. Show your thinking.

a. $64 \div 2 =$ _____	**b.** $82 \div 2 =$ _____
c. $48 \div 2 =$ _____	**d.** $72 \div 2 =$ _____
e. $50 \div 2 =$ _____	**f.** $84 \div 2 =$ _____
g. $56 \div 2 =$ _____	**h.** $92 \div 2 =$ _____

This activity practices strategies to divide by 2. Base-10 blocks are a useful model for this concept.

Discuss

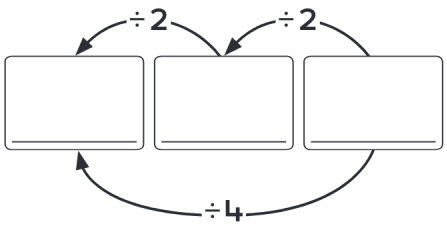
Division: Halving to divide by four and eight

Look at the numbers on this strip.

74	75	76	77	78

Circle the numbers you could divide evenly by 2.
What digits did you look at to help you decide?

Which number could you divide by 4?
Write numbers in this diagram to show your thinking.



Think double double to multiply by 4.
Think halve halve to divide by 4.

How could you extend this strategy to divide by 8?

Write the missing numbers. Then complete each equation.

a.

68 ÷ 4 = ____

Half of 68 = 34

Half of 34 = ____

b.

112 ÷ 8 = ____

Half of ____ = ____

Half of ____ = ____

Half of ____ = ____

c.

64 ÷ 4 = ____

Half of ____ = ____

Half of ____ = ____

Half of ____ = ____

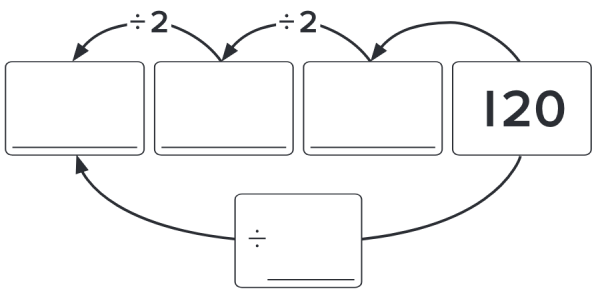
This activity reviews strategies to divide by 2, 4, and 8. Diagrams are used to show the relationship between halving strategies. Base-10 blocks are useful to model the sharing if required.

Practice

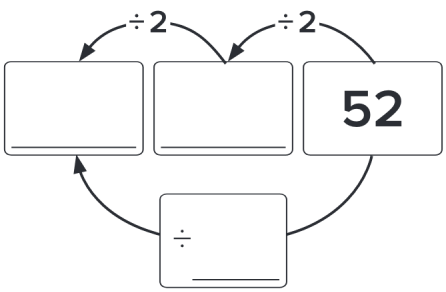
Division: Halving to divide by four and eight

1. Complete each diagram.

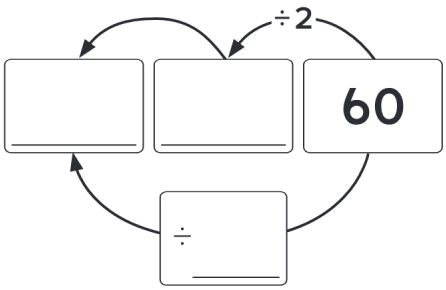
a.



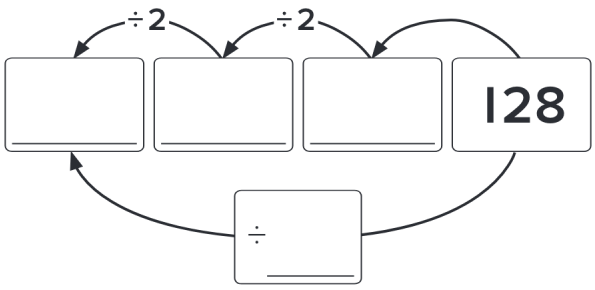
b.



c.



d.



2. Complete each equation. Show your thinking.

a. $116 \div 4 =$ ____

b. $96 \div 8 =$ ____

c. $100 \div 4 =$ ____

d. $136 \div 8 =$ ____

e. $124 \div 4 =$ ____

f. $144 \div 8 =$ ____

This activity practices strategies to divide by 2, 4, and 8. Diagrams are used to show the relationship between halving strategies. Encourage your child to explain their choice of strategy.

Discuss

Division: Finding whole number quotients and remainders

Look at this jar of marbles.

Dakota wants to share the jar of 25 marbles equally among 3 friends.

How many marbles will be in each share? _____ marbles

Explain your thinking.

How many marbles will be left over? _____ marble

The amount left over in a division problem is called the **remainder**.
This can be shown with an uppercase letter R.

Sumi is packing muffins into bags of 8. There are 37 muffins to pack.

How many bags will she use? _____ bags

Explain your thinking.

How many muffins will be left over? _____ muffins

This activity focuses on solving division problems that involve whole-number quotients and finding the amount left over or the remainder (e.g. in 27 ÷ 4 = 6 r 3, 6 is the quotient that is a whole number and the remainder is 3).

Practice

Division: Finding whole number quotients and remainders

1. Share each jar of marbles into bags of 6. Write the multiplication fact that helped you calculate the number of bags. Then write the number of marbles left over.

a.

____ × ____ = ____

____ bags with ____ marbles left over

b.

____ × ____ = ____

____ bags with ____ marbles left over

2. Share these marbles. Write the multiplication fact that helped you calculate the number in each share. Then write the number left over.

a. 38 marbles shared by 7 people

____ × ____ = ____

____ each, remainder ____

b. 65 marbles shared by 9 people

____ × ____ = ____

____ each, remainder ____

c. 44 marbles shared by 5 people

____ × ____ = ____

____ each, remainder ____

d. 61 marbles shared by 8 people

____ × ____ = ____

____ each, remainder ____

3. Think of a multiplication fact to help you solve each division problem. Then write the answer.

a. 25 ÷ 3 = ____ remainder ____

b. 23 ÷ 9 = ____ remainder ____

c. 47 ÷ 7 = ____ remainder ____

d. 35 ÷ 8 = ____ remainder ____

e. 43 ÷ 5 = ____ remainder ____

f. 57 ÷ 6 = ____ remainder ____

This activity focuses on solving division problems that involve whole-number quotients and finding the amount left over or the remainder (e.g. in 27 ÷ 4 = 6 r 3, 6 is the quotient that is a whole number and the remainder is 3).

Discuss

Division: Solving word problems with remainders

Read each of these problems.

An animal rescue shelter needs to house 30 dogs. Each pen holds 4 dogs. How many dog pens will they need?	There are 30 people waiting to ride a Ferris wheel. 4 people fit in each carriage. How many carriages will be filled?	A piece of fencing wire is 30 yards long. It is cut into 4 equal lengths. How long is each piece of fencing wire?

What is the same about each problem? What is different?

The remainders mean different things in each problem. How do the remainders help you answer each problem?

The remainder in the first problem represents a number of dogs. The dogs cannot live outside, so another pen is needed.

The remainder is not required to answer the second problem. The leftover people will not fill a carriage.

The remainder in the third problem could be broken into a fractional amount and shared. Each piece of wire is $7\frac{1}{2}$ yards long.

Solve each problem. Show your thinking.

a. 20 berries are shared evenly onto 3 plates. How many berries are left over?

_____ berries

b. Samuru has a goal to run 34 miles. He runs 3 miles each day. How many days until he reaches his goal?

_____ days

This activity practices solving division problems that involve remainders. Each division problem requires consideration of how to treat the remainder in order to calculate a solution.

Practice

Division: Solving word problems with remainders

Solve each problem. Show your thinking.

a. 8 friends are sharing a bag of marbles. There are 60 marbles. How many marbles will be left over?

_____ marbles

b. Natalie has 42 balloons. She is making bunches of 5 to decorate a room. How many bunches can she make?

_____ bunches

c. Dwane is saving $4 a week to buy a $50 bottle of perfume for his mom's birthday. How many weeks will it be before he can buy the perfume?

_____ weeks

d. Gloria is packing 40 apples into bags for a group hike. Each bag holds 7 apples. How many apples will be left over?

_____ apples

e. A roll of ribbon is 22 meters long. Terri cuts the ribbon into 4 meter lengths. How many lengths of ribbon can she cut?

_____ lengths

f. Liam is reading 25 books to raise money for a charity. He can read 3 books each week. How many weeks will it take him to finish the books?

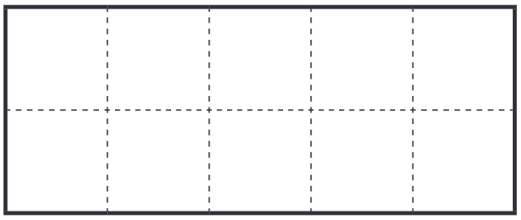
_____ weeks

This activity practices solving division problems that involve remainders. Each division problem requires consideration of how to treat the remainder in order to calculate a solution.

Discuss

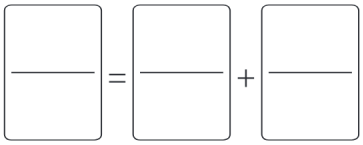
Common fractions: Adding with same denominators

This large rectangle is one whole.
Color 5 parts blue.
Color 3 parts red.



What fraction of the whole shape is shaded?

Complete this equation to match.

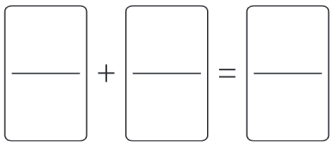


How could you use this number line to calculate $\frac{2}{3} + \frac{4}{3}$?

Draw jumps on this number line to show the addition.

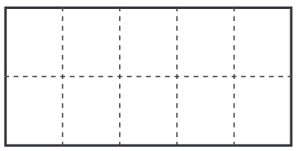
Complete this equation to match.

When you add fractions, what happens to the numerator? What happens to the denominator?



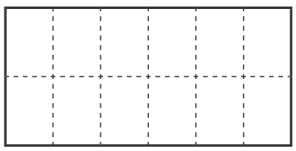
Each large rectangle is one whole. Shade parts using different colours to show each fraction. Then write the total fraction that is shaded.

a.



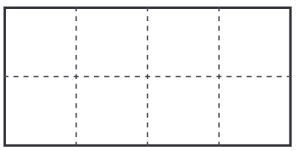
$\frac{5}{10} + \frac{2}{10} =$ ____

b.



$\frac{2}{12} + \frac{6}{12} =$ ____

c.



$\frac{1}{8} + \frac{5}{8} =$ ____

In this activity, area models (grids) are used to represent the addition of proper fractions with the same denominator (e.g. $\frac{1}{4} + \frac{2}{4}$). Equations are then written to show the addition symbolically.

Practice

Common fractions: Adding with same denominators

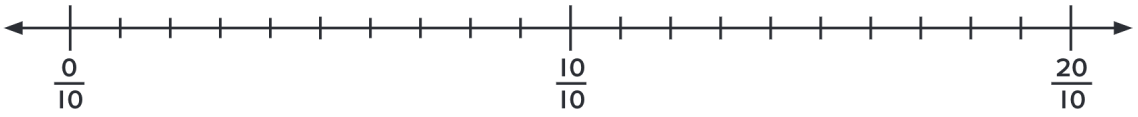
1. Draw jumps to match each equation.

a.

$\frac{3}{8} + \frac{8}{8} = \frac{11}{8}$

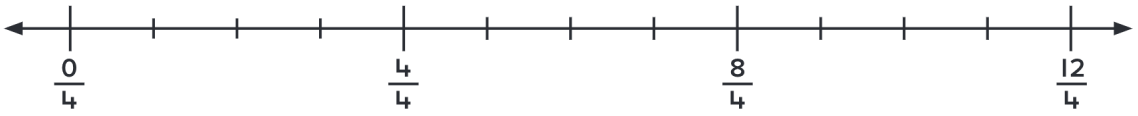
b.

$\frac{6}{10} + \frac{13}{10} = \frac{19}{10}$

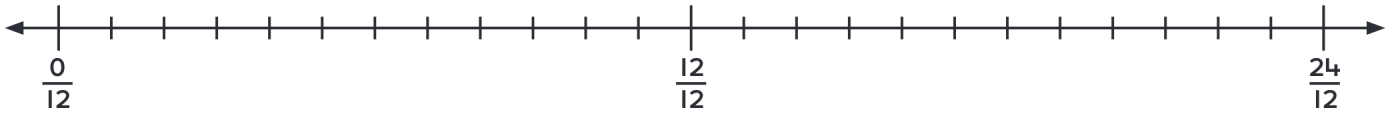


c.

$\frac{7}{4} + \frac{5}{4} = \frac{12}{4}$



2. Use this number line to help you write the totals below.



a. $\frac{7}{12} + \frac{9}{12} =$ ____

b. $\frac{8}{12} + \frac{5}{12} =$ ____

c. $\frac{11}{12} + \frac{9}{12} =$ ____

d. $\frac{4}{12} + \frac{17}{12} =$ ____

e. $\frac{13}{12} + \frac{10}{12} =$ ____

f. $\frac{14}{12} + \frac{7}{12} =$ ____

3. Use what you know about adding fractions to complete each equation.

a. $\frac{9}{10} + \frac{4}{10} =$ ____

b. $\frac{9}{5} + \frac{13}{5} =$ ____

c. $\frac{7}{4} + \frac{0}{4} =$ ____

d. $\frac{17}{12} + \frac{16}{12} =$ ____

e. $\frac{10}{8} + \frac{6}{8} + \frac{7}{8} =$ ____

f. $\frac{3}{6} + \frac{12}{6} + \frac{4}{6} =$ ____

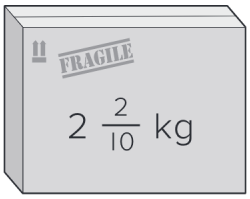
4. Look at the totals in Question 3. Circle the totals that are greater than 3.

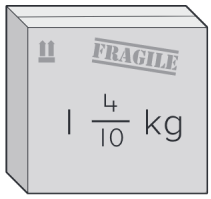
In this activity, a number line is used to show the addition of common fractions with the same denominator that give a total greater than 1 whole (e.g. $\frac{1}{4} + \frac{2}{4}$).

Discuss

Common fractions: Adding mixed numbers

Look at these packages.
How could you calculate the total mass?

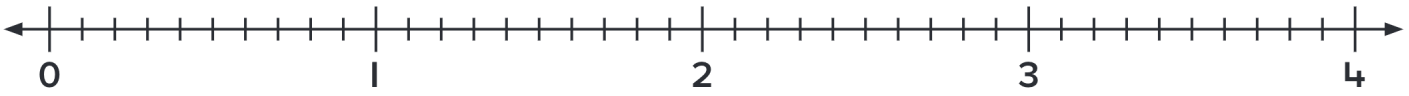




Reece split the mixed numbers into whole numbers and common fractions first.

Write an equation to show what Reece did. Then write the total as a mixed number.

Lisa started with the greater number and added the other number.
Draw jumps on this number line to show her thinking.



Use Reese's method to add these mixed numbers. Show your thinking.

a. $2\frac{1}{6} + 2\frac{4}{6} =$ ☐

b. $5\frac{3}{8} + 3\frac{2}{8} =$ ☐

In this activity, mixed numbers with the same denominators are added using two strategies: splitting the two numbers into parts and adding the whole numbers then the fractions (e.g. $2\frac{4}{10} + 1\frac{3}{10} = 2 + 1 + \frac{4}{10} + \frac{3}{10}$); and starting with the greater number and adding on the smaller number (e.g. $2\frac{4}{10} + 1 + \frac{3}{10}$).

Practice

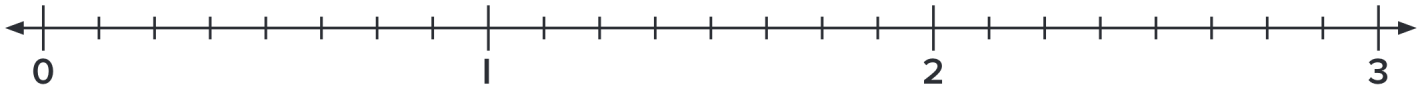
Common fractions: Adding mixed numbers

1. Use Lisa's method to add these mixed numbers. Show your thinking on the number line.

a. $2\frac{1}{4} + 2\frac{2}{4} =$ ☐

b. $1\frac{2}{6} + 2\frac{3}{6} =$ ☐

c. $1\frac{1}{8} + 1\frac{5}{8} =$ ☐



2. Complete each equation. Show your thinking.

a. $6\frac{4}{6} + 2\frac{1}{6} =$ ☐	**b.** $2\frac{1}{8} + 4\frac{5}{8} =$ ☐	**c.** $3\frac{7}{10} + 6\frac{2}{10} =$ ☐
d. $4\frac{3}{12} + 3\frac{7}{12} =$ ☐	**e.** $9\frac{3}{8} + 6\frac{2}{8} =$ ☐	**f.** $3\frac{5}{12} + 5\frac{1}{12} =$ ☐

In this activity, mixed numbers with the same denominators are added using two strategies: splitting the two numbers into parts and adding the whole numbers then the fractions (e.g. $2\frac{4}{10} + 1\frac{3}{10} = 2 + 1 + \frac{4}{10} + \frac{3}{10}$); and starting with the greater number and adding on the smaller number (e.g. $2\frac{4}{10} + 1 + \frac{3}{10}$).

Discuss

Common fractions: Adding mixed numbers (composing whole numbers)

Lillian ran $1\frac{3}{4}$ miles on Monday and $2\frac{2}{4}$ miles on Tuesday.
How many miles did she run in total?

Start with the greater number and count on the parts of the lesser number.

Write an equation
to show the addition.

In a standard mixed number, the fractional part
has a numerator that is less than the denominator.
Rewrite the total distance as a standard mixed number.

Ruben jogged $3\frac{5}{8}$ miles on Wednesday and $4\frac{6}{8}$ miles on Thursday.
How many miles did he jog in total?

Split the mixed numbers into whole numbers and common fractions.
Add the whole numbers first then the fractions.

Write an equation
to show the addition.

Rewrite the total distance as a standard mixed number.

Use one of the strategies above to calculate each total. Show your thinking.

a. $3\frac{4}{6} + 1\frac{3}{6} =$

b. $5\frac{7}{12} + 3\frac{11}{12} =$

This activity consolidates addition of two mixed numbers that involve the same denominators.
All examples require regrouping to compose a whole number.

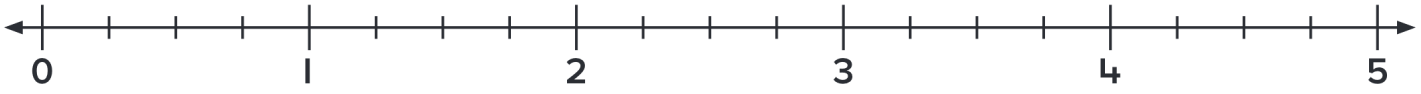
Practice

Common fractions: Adding mixed numbers (composing whole numbers)

1. Count on from one mixed number to calculate the total. Draw jumps on the number line to show your thinking.

a. $1\frac{5}{6} + 1\frac{3}{6} =$ ☐

b. $2\frac{3}{4} + 1\frac{2}{4} =$ ☐



2. Split each mixed number into whole numbers and fractions before adding. Then write the total. Show your thinking.

a. $6\frac{4}{6} + 3\frac{3}{6} =$ ☐

b. $3\frac{3}{4} + 4\frac{3}{4} =$ ☐

c. $2\frac{7}{8} + 5\frac{4}{8} =$ ☐

d. $4\frac{5}{8} + 4\frac{6}{8} =$ ☐

e. $7\frac{9}{12} + 6\frac{8}{12} =$ ☐

f. $5\frac{2}{5} + 3\frac{4}{5} =$ ☐

This activity consolidates addition of two mixed numbers that involve the same denominators. All examples require regrouping to compose a whole number.

Discuss

Common fractions: Subtracting with same denominators

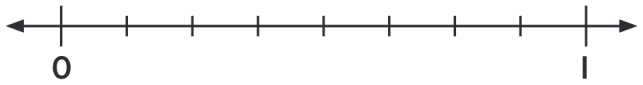
There was $\frac{5}{8}$ of a pizza left over from last night. Felix took $\frac{3}{8}$ for his lunch at work. How much pizza was left?

Write an equation to show the problem. $\square - \square = \square$

When you subtract fractions what happens to the numerator?

When you subtract fractions what happens to the denominator?

Show the difference on this number line.



Draw and label jumps to help you calculate the difference.

$\frac{13}{4} - \frac{9}{4} = \square$

In this activity, a number line is used to subtract common fractions with the same denominator.

Practice

Common fractions: Subtracting with same denominators

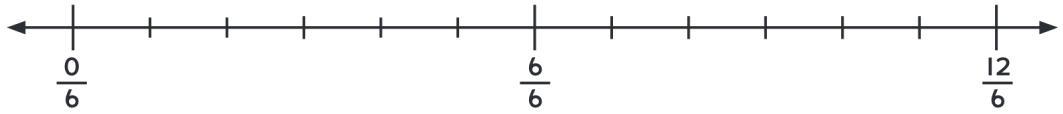
1. Draw and label jumps to match each equation.

a.

$\frac{12}{8} - \frac{7}{8} = \frac{5}{8}$

b.

$\frac{10}{6} - \frac{3}{6} = \frac{7}{6}$



2. Use this number line to help you calculate the differences.

a. $\frac{17}{6} - \frac{3}{6} = \square$

b. $\square = \frac{22}{6} - \frac{11}{6}$

c. $\frac{19}{6} - \frac{5}{6} = \square$

3. Use what you know about subtracting fractions to calculate the difference between each pair of numbers.

a. $\frac{24}{4}$ $\frac{9}{4}$

Difference $\square$

b. $\frac{6}{10}$

Difference $\square$

c. $\frac{19}{12}$ $\frac{21}{12}$

Difference $\square$

d. $\frac{17}{8}$ $\frac{28}{8}$

Difference $\square$

4. Write the missing fraction in each equation.

a. $\frac{9}{4} = \frac{14}{4} - \square$

b. $\frac{31}{12} - \square = \frac{27}{12}$

c. $\frac{7}{8} = \square - \frac{18}{8}$

In this activity, a number line is used to subtract common fractions with the same denominator.

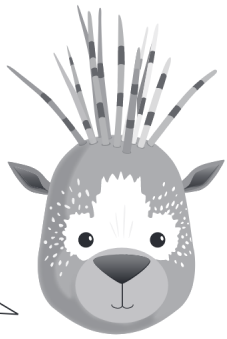
Discuss

Common fractions: Calculating the difference between mixed numbers

Ruth bought $4\frac{5}{8}$ pounds of ground beef.

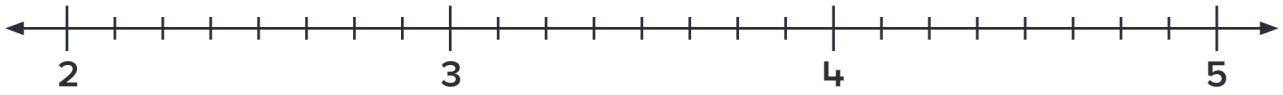
Chayton bought $2\frac{3}{8}$ pounds of ground beef.

How much more meat did Ruth buy than Chayton?



I would start with $2\frac{2}{8}$ and count on to $4\frac{5}{8}$.

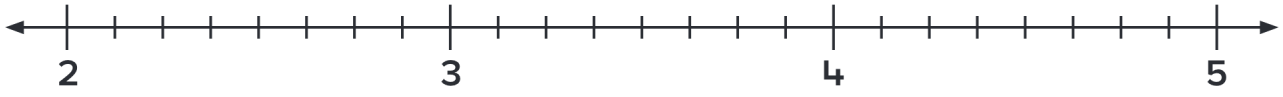
Draw jumps on this number line to show how addition can be used to calculate the difference.



Where is the difference shown on the number line?

I would start with $4\frac{5}{8}$ then take away $2\frac{3}{8}$ in smaller jumps.

Draw jumps on this number line to show how subtraction can be used to calculate the difference.



Where is the difference shown on the number line?

In this activity, a number line is used to subtract mixed numbers. The fraction parts of the mixed numbers have the same denominator.

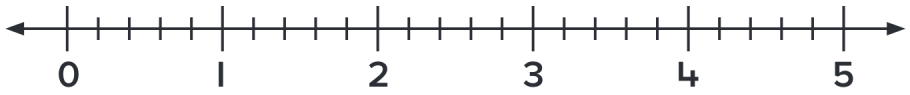
Practice

Common fractions: Calculating the difference between mixed numbers

1. Calculate the difference. Draw jumps on the number line to show your thinking.

a.

$4\frac{3}{5} - 2\frac{2}{5} =$ ☐

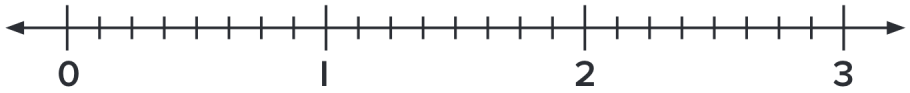


b.

$3\frac{3}{6} - 2\frac{1}{6} =$ ☐

c.

$2\frac{7}{8} - 1\frac{5}{8} =$ ☐



2. Calculate the difference. Show your thinking.

a. $5\frac{3}{4} - 1\frac{1}{4} =$ ☐

b. $7\frac{11}{12} - 4\frac{8}{12} =$ ☐

c. $6\frac{5}{8} - 3\frac{2}{8} =$ ☐

d. $12\frac{4}{6} - 4\frac{2}{6} =$ ☐

e. $13\frac{8}{10} - 3\frac{1}{10} =$ ☐

f. $8\frac{4}{5} - 6\frac{1}{5} =$ ☐

In this activity, a number line is used to subtract mixed numbers. The fraction parts of the mixed numbers have the same denominator.

Discuss

Common fractions: Calculating the difference between mixed numbers (decomposing whole numbers)

Jamar has $5\frac{7}{8}$ lb of apples. He needs $7\frac{3}{8}$ lb of apples to make some pies.

How could you calculate how many more pounds he needs to buy?

Selena figured it out as shown on the right.

Write the difference.

What did she do to make the subtraction easier?

How could you use addition to help you calculate the difference?

$$7\frac{3}{8} - 5\frac{7}{8}$$

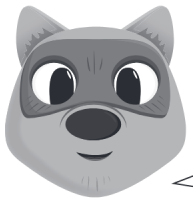
is equivalent to

$$6\frac{11}{8} - 5\frac{7}{8}$$

$$6 - 5 = 1$$

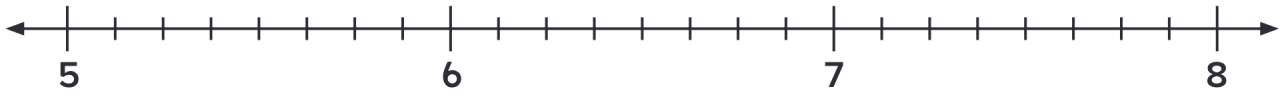
$$\frac{11}{8} - \frac{7}{8} = \frac{4}{8}$$

The difference is ☐.

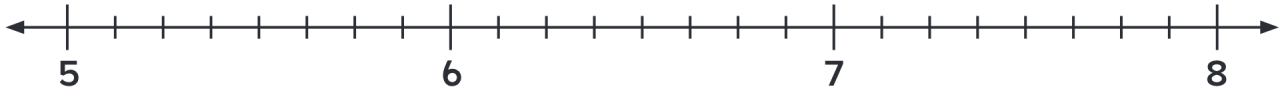


You could also start at $5\frac{7}{8}$ and count on to $7\frac{3}{8}$.

Draw jumps on this number line to show how addition can be used to calculate the difference.



Draw jumps on this number line to show a different way to calculate the difference using addition.



Where is the difference shown on the number line?

In this activity, whole numbers are decomposed (broken down) into equivalent fractions in order to subtract mixed numbers. The fraction parts have the same denominators.

Practice

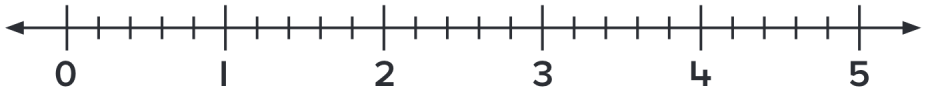
Common fractions: Calculating the difference between mixed numbers (decomposing whole numbers)

1. Calculate the difference. Draw jumps on the number line to show your thinking.

a.

b.

c.



2. Calculate the difference. Show your thinking.

a. $6\frac{6}{10} - 2\frac{9}{10} =$ ☐

b. $8\frac{3}{5} - 2\frac{3}{5} =$ ☐

c. $5\frac{4}{6} - 1\frac{5}{6} =$ ☐

d. $18\frac{3}{12} - 9\frac{11}{12} =$ ☐

e. $12\frac{5}{8} - 3\frac{7}{8} =$ ☐

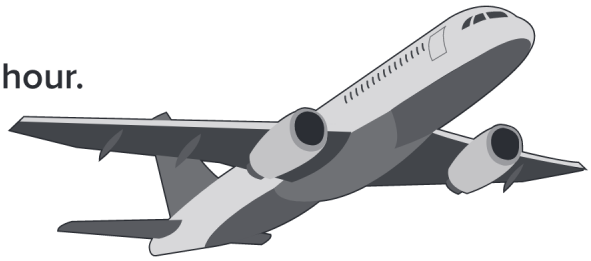
f. $4 - 1\frac{3}{6} =$ ☐

In this activity, whole numbers are decomposed (broken down) into equivalent fractions in order to subtract mixed numbers. The fraction parts have the same denominators.

Discuss

Common fractions: Solving word problems

Connor traveled by plane to visit his aunt.
On the way there, the flying time was $5\frac{1}{4}$ hours.
There were 2 connections and each lasted for $\frac{1}{2}$ hour.
The direct flight home only took $3\frac{3}{4}$ hours.



How much less time did the trip home take?
How would you calculate the answer?

Vishaya ran for $1\frac{2}{5}$ miles, then she walked for $2\frac{1}{5}$ miles.
She rested for 10 minutes, then ran another $2\frac{3}{5}$ miles.

What is the difference between the distance she walked and the distance she ran?
Which operations will you use to calculate the amount?

Write an equation to represent each of the problems above. Use a letter to represent the unknown amount. You do not need to calculate the final answer. Then solve the word problems below.

a. Connor's problem	**b.** Vishaya's problem
c. Jacob made a block tower that was $9\frac{1}{4}$ inches tall. Morgan added another $3\frac{7}{8}$ inches of blocks. How tall was the tower now?	**d.** Dorothy cut 2 pieces of string. One was $5\frac{6}{10}$ m long and the other was $6\frac{7}{10}$ m long. How much string did she use in total?

This activity focuses on solving word problems that involve addition and mixed numbers with the same denominators. Some problems involve numbers that require regrouping to compose a whole number.

Practice

Common fractions: Solving word problems

Solve each problem. Show your thinking.

a. During a storm it snowed 10 $\frac{3}{8}$ inches. The next week there was still 3 $\frac{5}{8}$ inches of snow on the ground. How many inches of snow had melted?

☐ inches

b. Antonio and his friends ordered 6 small pizzas that were each cut into sixths. They ate 4 $\frac{5}{6}$ pizzas. How much pizza was left over?

☐ pizzas

c. Kasem watched her favorite TV show that had two commercials. Each commercial was 2 $\frac{3}{4}$ minutes long. What was the total time of the commercials?

☐ minutes

d. Susan picked up 2 $\frac{2}{5}$ bags of trash and Jerome picked up 1 $\frac{4}{5}$ bags. How many bags was that in total?

☐ bags

e. Rita and Robert are twins. At birth, Rita weighed 4 $\frac{7}{8}$ lb and Robert weighed 5 $\frac{3}{8}$ lb. What is their combined birth mass?

☐ lb

f. Amber's baby brother weighed 7 $\frac{6}{10}$ lb when he was born. After the first month he weighed 11 $\frac{2}{10}$ lb and after the second month he weighed 14 $\frac{3}{10}$ lb. How much mass did he gain in two months?

☐ lb

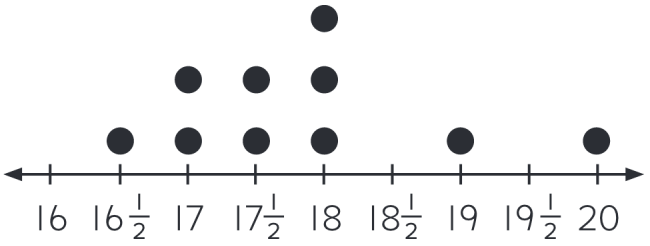
This activity focuses on solving word problems that involve addition and mixed numbers with the same denominators. Some problems involve numbers that require regrouping to compose a whole number.

Discuss

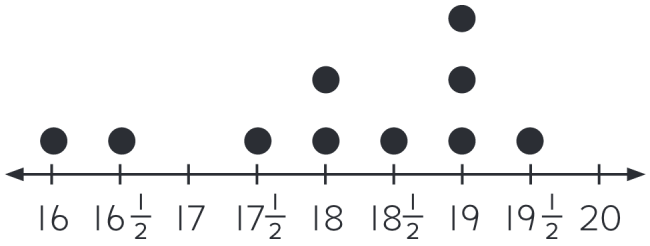
Common fractions: Interpreting line plots to solve word problems

Two farms compared the mass of some watermelons they grew using line plots. The line plots show the mass of the watermelons they weighed.

Mass of Watermelons (Farm A)



Mass of Watermelons (Farm B)



Use the line plots above to answer these questions.

a. How many watermelons did each farm weigh? _____

b. Which farm had the heaviest watermelon? _____

c. What was the most common mass at Farm B? _____ lb

d. What is the difference in mass between the watermelons with the greatest and least mass on each farm?

Farm A _____

Farm B _____

e. Write your own question below that could be answered using the information in the line plots above.

_____

This activity practices using line plots to read and interpret data involving mixed numbers.

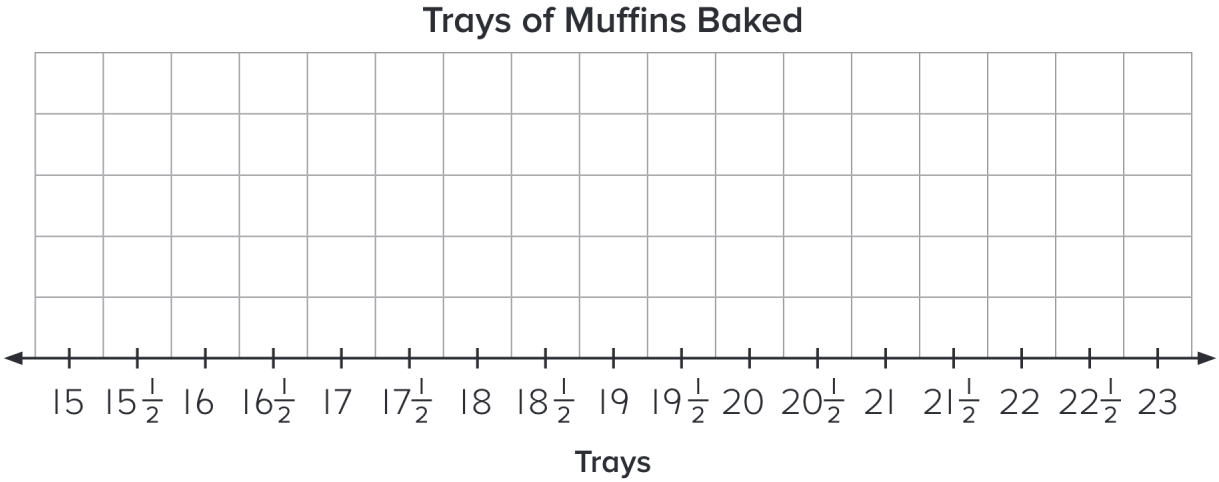
Practice

Common fractions: Interpreting line plots to solve word problems

A popular bakery recorded how many trays of muffins they baked each day. Their results are in the table below.

21 trays	18 trays	$22\frac{1}{2}$ trays	$15\frac{1}{2}$ trays	18 trays
15 trays	$18\frac{1}{2}$ trays	$18\frac{1}{2}$ trays	20 trays	$20\frac{1}{2}$ trays
19 trays	$18\frac{1}{2}$ trays	21 trays	18 trays	$21\frac{1}{2}$ trays
21 trays	19 trays	$15\frac{1}{2}$ trays	19 trays	$18\frac{1}{2}$ trays

1. Draw ● on the line plot below to show the number of trays baked each day.



2. Use the line plot above to answer these questions.

a. How many days did they record? _____ days

b. What was the greatest number of trays baked? _____ trays

c. What was the most frequent number of trays? _____ trays

d. What is the difference between the greatest and least number of trays baked? _____ trays

This activity practices using line plots to read and interpret data involving mixed numbers.