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The first page of a lesson is a maths problem. Don't look at the next page until you have had a go! The third and fourth pages give you practice, so you can check your understanding.

Lesson 1

Adding and subtracting fractions with the same denominator

Discover

1 **a)** Lexi chooses two cards.

Her cards add to $1\frac{3}{8}$.

Which two cards could Lexi have chosen?

b) Lexi chooses two different cards.

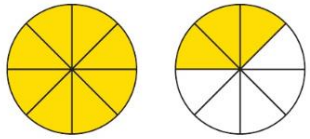
The two cards have a sum of 1 and their difference is $\frac{1}{4}$.

Which two cards did Lexi choose?

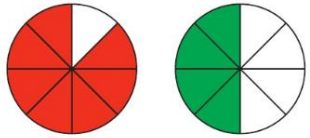
Share

a) Change $1\frac{3}{8}$ to an improper fraction.

When the denominators are the same, I can add the numerators and leave the denominator the same.



$1\frac{3}{8} = \frac{11}{8}$

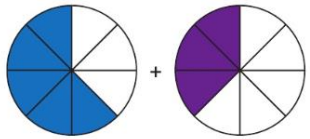


$\frac{7}{8} + \frac{4}{8} = \frac{11}{8}$

$\frac{6}{8} + \frac{5}{8} = \frac{11}{8}$

Lexi could have chosen $\frac{7}{8}$ and $\frac{4}{8}$, or $\frac{6}{8}$ and $\frac{5}{8}$.

b) The cards have a sum of 1.



$\frac{5}{8} + \frac{3}{8} = \frac{8}{8} = 1$

The cards have a difference of $\frac{1}{4}$.

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

$\frac{5}{8} - \frac{3}{8} = \frac{2}{8} = \frac{1}{4}$

The fraction cards Lexi chose were $\frac{5}{8}$ and $\frac{3}{8}$.

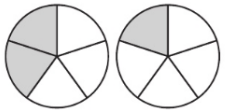
I remember that I can also write 1 as $\frac{8}{8}$.

Lesson 1

Adding and subtracting fractions with the same denominator

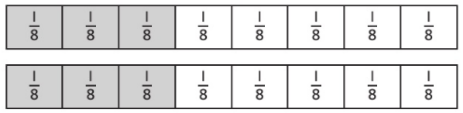
1 Work out the following calculations.

a) $\frac{2}{5} + \frac{1}{5} = \frac{\square}{\square}$



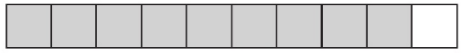
b) $\frac{3}{8} + \frac{3}{8} = \frac{\square}{\square}$

$= \frac{\square}{\square}$



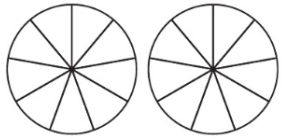
c) $\frac{9}{10} - \frac{7}{10} = \frac{\square}{\square}$

$= \frac{\square}{\square}$



2 Work out each of the following calculations.

a) $\frac{5}{9} + \frac{8}{9} = \frac{\square}{\square} = \square\frac{\square}{\square}$



b) $\frac{5}{7} + \frac{4}{7} + \frac{1}{7} = \frac{\square}{\square} = \square\frac{\square}{\square}$

3 a) Circle all the calculations that have an answer less than 1.

$\frac{7}{12} + \frac{3}{12}$ $\frac{7}{9} - \frac{4}{9}$ $\frac{7}{10} + \frac{8}{10}$ $\frac{2}{3} + \frac{2}{3}$

b) Circle all the calculations that have an answer greater than 1.

$\frac{3}{4} + \frac{3}{4}$ $\frac{5}{6} - \frac{3}{6}$ $\frac{6}{10} + \frac{2}{10}$ $\frac{7}{8} + \frac{9}{8}$

4 Complete the calculations, stating each answer in its simplest form.

a) $\frac{2}{5} + \frac{1}{5} = \frac{\square}{5}$

b) $\frac{7}{9} - \frac{6}{9} = \frac{\square}{\square}$

c) $\frac{3}{10} + \frac{8}{10} = \frac{\square}{\square} = \square\frac{\square}{\square}$

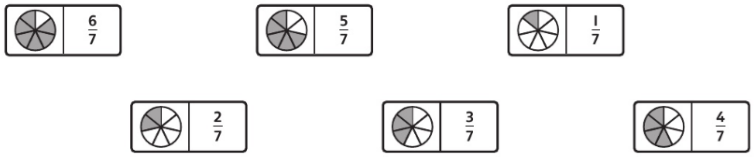
d) $\frac{7}{12} - \frac{1}{12} = \frac{\square}{\square} = \frac{\square}{\square}$

e) $\frac{2}{3} + \frac{2}{3} + \frac{1}{3} = \frac{\square}{\square} = \square\frac{\square}{\square}$

f) $\frac{3}{11} + \frac{5}{11} - \frac{2}{11} = \frac{\square}{\square}$

g) $\frac{3}{8} + \frac{7}{8} + \frac{5}{8} = \frac{\square}{\square} = \square\frac{\square}{\square}$

5 Draw lines to join the fractions that sum to make 1.



Explain how you made your choices.

Lesson 2

Adding fractions 1

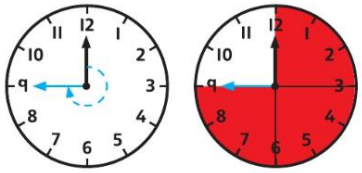
Discover

1 a) What fraction of an hour did Reena spend on her maths homework?

b) How much time did Reena spend in total on her maths and English homework? Write your answer as a fraction.

Share

a)



I drew a clock and showed that 45 minutes is equal to $\frac{3}{4}$ of an hour.

45 minutes is $\frac{3}{4}$ of an hour.

Reena spent $\frac{3}{4}$ of an hour on her maths homework.

b) Reena spent $\frac{5}{12}$ of an hour on her English homework.

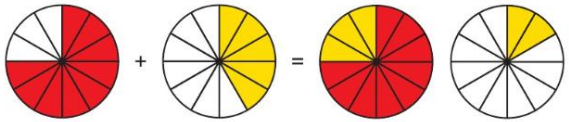
The total time is $\frac{3}{4} + \frac{5}{12}$.

Maths: $\frac{3}{4}$ of an hour English: $\frac{5}{12}$ of an hour

A common denominator is 12.

$\frac{3}{4} = \frac{9}{12}$ (× 3)

First I found a common denominator. Then I added the fractions to find the total.



$\frac{9}{12} + \frac{5}{12} = \frac{14}{12} = 1\frac{2}{12} = 1\frac{1}{6}$

Lesson 2

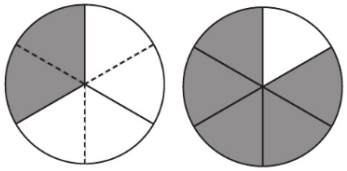
Adding fractions 1

1 **a)** Work out $\frac{5}{6} + \frac{1}{3}$.

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

$\frac{5}{6} + \frac{1}{3} = \frac{5}{6} + \frac{\square}{6}$

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



b) Work out $\frac{1}{2} + \frac{9}{10}$.

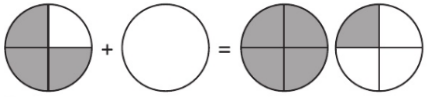
$\frac{1}{2} = \frac{\square}{10}$

$\frac{1}{2} + \frac{9}{10} = \frac{\square}{10} + \frac{9}{10}$

$= \frac{\square}{10} = \square\frac{\square}{5}$

2 Danny adds two fractions.

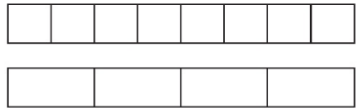
What is the missing fraction?



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

3 Use the diagrams to help you work out the calculations.

a) $\frac{3}{8} + \frac{3}{4}$



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

$\frac{3}{8} + \frac{3}{4} = \frac{3}{8} + \frac{\square}{8} = \frac{\square}{8} = \square\frac{\square}{\square}$

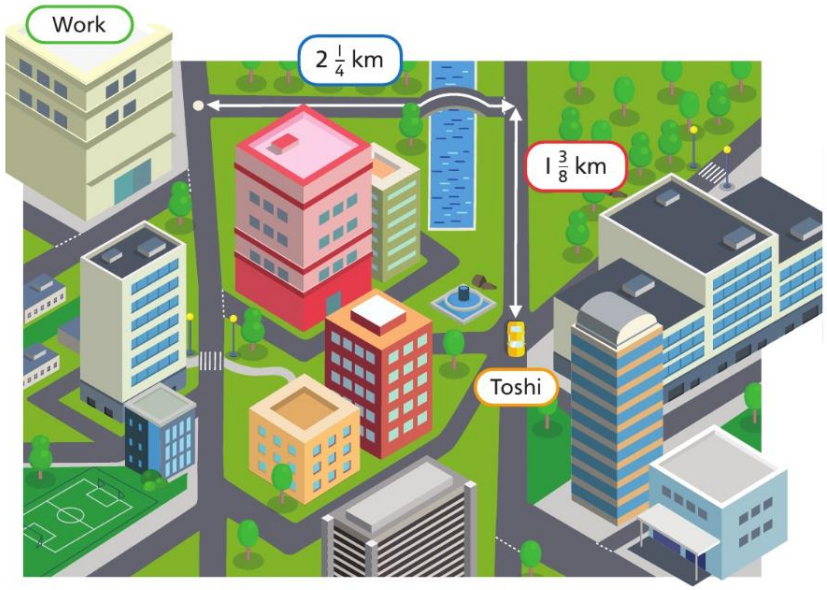
b) $\frac{5}{12} + \frac{2}{3}$

4 What is the total amount of juice in the two bottles, in litres?

Lesson 3

Adding fractions 2

Discover



1 **a)** Toshi leaves work and drives along two roads in the city.

How far has Toshi driven so far?

b) Toshi turns left and drives along another street to his home.

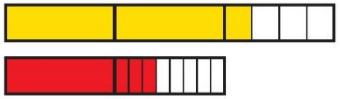
He has now driven $4\frac{1}{8}$ km in total.

How far did Toshi drive along the third road?

Share

a) The first road is $2\frac{1}{4}$ km long and the second road is $1\frac{3}{8}$ km long.

Find $2\frac{1}{4} + 1\frac{3}{8}$.



I will add the wholes first and then add the parts.

Add the wholes first: $2 + 1 = 3$

Then add the parts: $\frac{1}{4} + \frac{3}{8}$

A common denominator is 8: $\frac{1}{4} = \frac{2}{8}$ (×2)

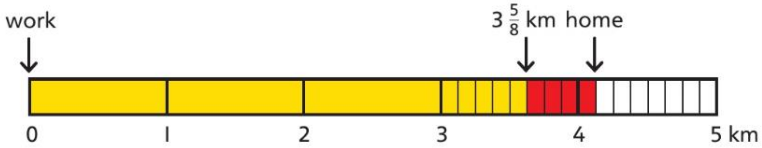
So $\frac{1}{4} + \frac{3}{8} = \frac{2}{8} + \frac{3}{8} = \frac{5}{8}$

Add the wholes and the parts: $3 + \frac{5}{8} = 3\frac{5}{8}$

Toshi has driven $3\frac{5}{8}$ km in total along the two roads.

b) The total distance from work to home is $4\frac{1}{8}$ km. The first two roads added to $3\frac{5}{8}$ km.

Find the difference between $3\frac{5}{8}$ and $4\frac{1}{8}$.



$\frac{4}{8} = \frac{1}{2}$ Toshi drove $\frac{1}{2}$ km down the third road.

Lesson 3

Adding fractions 2

1 Olivia walks $2\frac{1}{4}$ km on Monday. On Tuesday she walks $1\frac{3}{8}$ km.

How far does she walk in total?

Add the wholes: $2 + 1 =$ ☐

Find a common denominator: $\frac{1}{4} = \frac{\square}{8}$

Add the parts: $\frac{1}{4} + \frac{3}{8} = \frac{\square}{8} + \frac{3}{8} = \frac{\square}{8}$

Olivia walks ☐ $\frac{\square}{\square}$ km in total.

2 Work out $3\frac{3}{5} + 2\frac{9}{10}$.

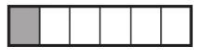
Add the wholes:

Find a common denominator: $\frac{3}{5} = \frac{\square}{\square}$

Add the parts: $\frac{3}{5} + \frac{9}{10}$

So, $3\frac{3}{5} + 2\frac{9}{10} =$ ☐

3 **a)** Work out $1\frac{1}{2} + \frac{1}{6}$.



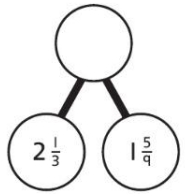
$1\frac{1}{2} + \frac{1}{6} =$ ☐

b) Work out $\frac{7}{12} + 3\frac{2}{3}$.

c) Explain why $2\frac{7}{12} + 1\frac{2}{3}$ is the same as the answer to part b).

4 Work out the missing value.

a)



b)

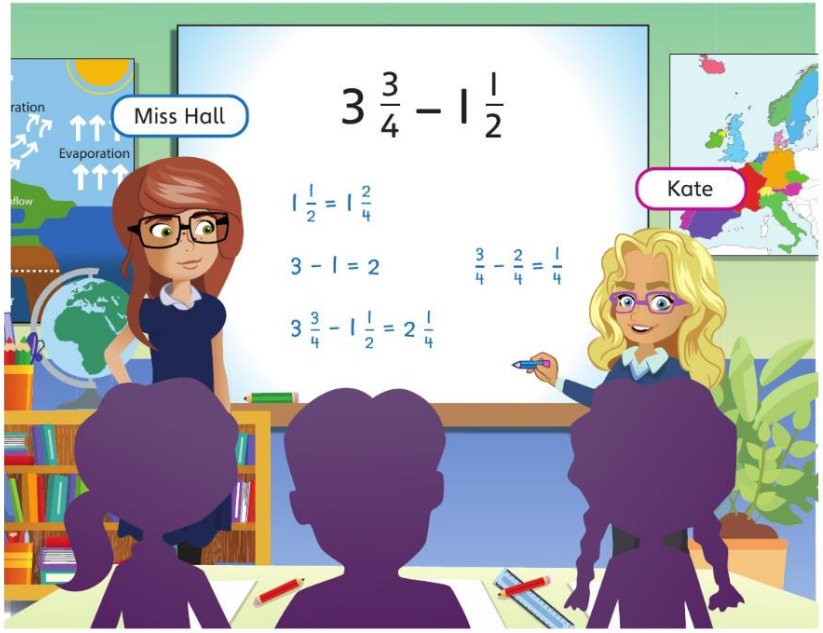
?	
$2\frac{1}{3}$	$4\frac{5}{9}$

What did you notice about the answer to part b)? Explain.

Lesson 4

Subtracting fractions

Discover



1 **a)** Is Kate's answer correct?

Explain Kate's method. Draw a diagram to explain.

b) Miss Hall now asks the children to work out $3\frac{1}{2} - 1\frac{3}{4}$.

Use a diagram to work out the answer.

Share

a) Kate starts with $3\frac{3}{4}$.

First Kate writes the fractions over the same denominator.

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

Kate subtracts the wholes first.

wholes: $3 - 1 = 2$

$3 - 1 = 2$

Kate then subtracts the parts.

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

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

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

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

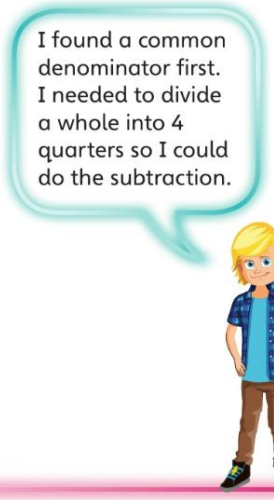
Kate's answer is correct.

b) Start with $3\frac{1}{2}$.

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

$= 2\frac{6}{4} - 1\frac{3}{4}$

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



Lesson 4

Subtracting fractions

1 Work out $3\frac{5}{6} - 1\frac{1}{3}$.

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

Subtract the wholes: $3 - 1 = \square$

Subtract the parts: $\frac{5}{6} - \frac{\square}{6} = \frac{\square}{6}$

$3\frac{5}{6} - 1\frac{1}{3} = \square\frac{\square}{6} = \square\frac{\square}{\square}$

2 Work out $4\frac{3}{4} - 2\frac{5}{8}$.

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

Subtract the wholes: $4 - 2 = \square$

Subtract the parts: $\frac{\square}{8} - \frac{5}{8} = \frac{\square}{8}$

$4\frac{3}{4} - 2\frac{5}{8} = \square\frac{\square}{8}$

3 Work out $4\frac{1}{2} - 2\frac{7}{8}$.

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

$4\frac{\square}{8} - 2\frac{7}{8} = 3\frac{\square}{8} - 2\frac{7}{8}$

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

So, $4\frac{1}{2} - 2\frac{7}{8} = \square\frac{\square}{8}$

4 Calculate the following:

a) $5\frac{3}{11} - 1\frac{7}{11}$

c) $5\frac{4}{5} - 3\frac{13}{15}$

b) $5\frac{5}{12} - \frac{7}{12}$

d) $2\frac{7}{18} - 1\frac{2}{3}$