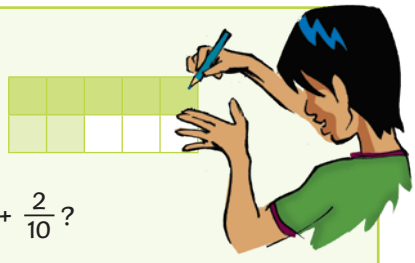
Adding and subtracting fractions

Practical

• tens frame

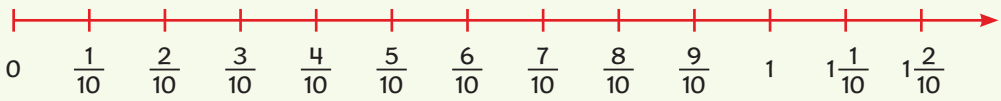


1 Max wants to add $\frac{5}{10} + \frac{2}{10}$.

He coloured 5 out of the 10 squares, then he coloured 2 out of the 10 squares.

How can he use this to find the answer to $\frac{5}{10} + \frac{2}{10}$?

2 How could you work out the answer using this time line?



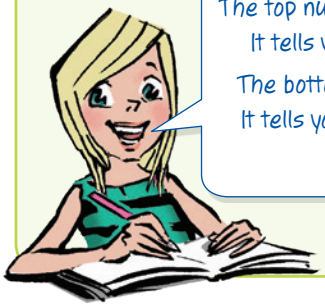
3 What other ways could you work out the answer to $\frac{5}{10} + \frac{2}{10}$?

4 Use your tens square and colour them to find the answers to these

a $\frac{1}{10} + \frac{4}{10}$ b $\frac{6}{10} + \frac{3}{10}$ c $\frac{5}{10} + \frac{2}{10}$ d $\frac{7}{10} + \frac{3}{10}$

Check your answers using the number line.

5 The denominator (10) stays the same. Explain why.



The top number of a fraction is a **numerator**. It tells you the number of parts chosen.

The bottom number is the **denonminator**. It tells you the number of parts the whole has been divided into.

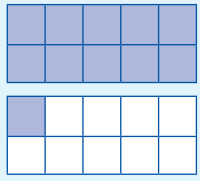
$\frac{3}{8}$

Example

$\frac{3}{10} + \frac{8}{10} = \frac{3+8}{10}$

$= \frac{11}{10}$

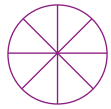
$= 1\frac{1}{10}$

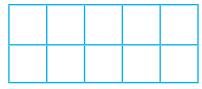


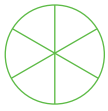
Activity 1

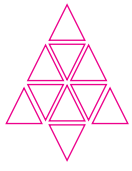
1 Use a copy of this. Colour parts of the diagrams to help you find the answers.

a $\frac{1}{5} + \frac{2}{5}$ 

b $\frac{3}{8} + \frac{2}{8}$ 

c $\frac{4}{10} + \frac{3}{10}$ 

d $\frac{2}{6} + \frac{3}{6}$ 

e $\frac{3}{10} + \frac{6}{10}$ 

2 Find the answers to these. You could use a number line to help.

a $\frac{1}{4} + \frac{2}{4}$ **b** $\frac{3}{5} + \frac{1}{5}$ **c** $\frac{1}{10} + \frac{2}{10}$ **d** $\frac{1}{6} + \frac{4}{6}$

e $\frac{1}{8} + \frac{2}{8}$ **f** $\frac{3}{4} + \frac{1}{4}$ **g** $\frac{5}{10} + \frac{4}{10}$ **h** $\frac{2}{5} + \frac{2}{5}$

i $\frac{5}{8} + \frac{2}{8}$ **j** $\frac{3}{6} + \frac{2}{6}$ **k** $\frac{6}{10} + \frac{1}{10}$

3 Write your answers as mixed numbers.

a $\frac{3}{10} + \frac{9}{10}$ **b** $\frac{4}{5} + \frac{3}{5}$ **c** $\frac{2}{3} + \frac{2}{3}$ **d** $\frac{3}{4} + \frac{3}{4}$

e $\frac{5}{8} + \frac{7}{8}$ **f** $\frac{5}{6} + \frac{5}{6}$ **g** $\frac{3}{7} + \frac{5}{7}$ **h** $\frac{11}{12} + \frac{7}{12}$

4 Tūī and Tai had lunch at the Station Tearooms.

a A pizza was cut into 8 pieces. Tūī ate $\frac{2}{8}$ of the pizza and Tai ate $\frac{3}{8}$.
What fraction of the pizza did they eat altogether?

b How many pieces of pizza did they eat?

5 A cake was cut into 10 pieces. Tūī ate $\frac{2}{10}$ of the cake and Tai ate $\frac{5}{10}$.

a What fraction of the cake did they eat altogether?

b How many pieces of cake did they eat?

6 Maddie and Temi bought a pizza each. Maddie ate $\frac{5}{8}$ of hers and Temi ate $\frac{7}{8}$ of his.
How much pizza did they eat altogether?

7 What numbers could go in the boxes?

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

Discussion

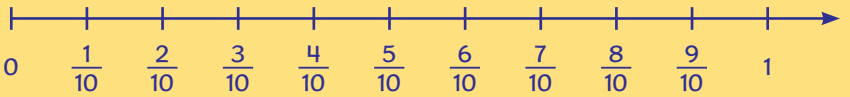
Jack wants to work this out.

$$\frac{8}{10} - \frac{3}{10}$$

He coloured 8 out of 10 squares then drew a cross on 3 of them.

How can he use this to find the answer to $\frac{8}{10} - \frac{3}{10}$?

How could you work out the answer using this number line?



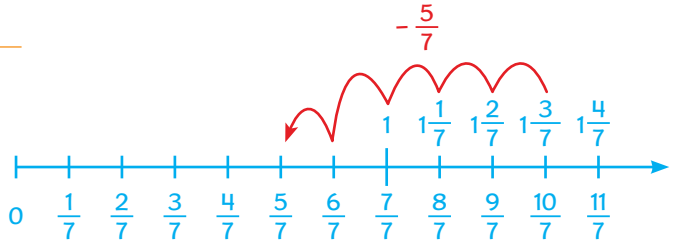
What other ways could you use to work out the answer?

Year 5 - add and subtract fractions with the same denominator including to more than one whole

Examples

$\frac{7}{8} - \frac{4}{8}$ = 7 eighths − 4 eighths
= 3 eighths
= $\frac{3}{8}$

$1\frac{3}{7} - \frac{5}{7} = \frac{10}{7} - \frac{5}{7}$
$= \frac{10 - 5}{7}$
$= \frac{5}{7}$



Activity 2

1 Use a copy of these grids to help you find the answers.

a $\frac{6}{8} - \frac{3}{8}$ 

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

c $\frac{5}{6} - \frac{6}{6}$ 

d $\frac{8}{8} - \frac{3}{8}$ 

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

f $1 - \frac{2}{5}$ 

2 Find the answers to these. You could use a number line to help.

a $\frac{9}{10} - \frac{2}{10}$ **b** $\frac{4}{5} - \frac{1}{5}$ **c** $\frac{5}{6} - \frac{4}{6}$ **d** $\frac{5}{8} - \frac{2}{8}$

e $\frac{3}{4} - \frac{2}{4}$ **f** $\frac{5}{5} - \frac{3}{5}$ **g** $1 - \frac{3}{8}$ **h** $1 - \frac{4}{5}$

i $1 - \frac{7}{10}$ **j** $1 - \frac{5}{6}$ **k** $1\frac{1}{5} - \frac{3}{5}$ **l** $1\frac{1}{3} - \frac{2}{3}$

m $1\frac{2}{9} - \frac{4}{9}$ **n** $1\frac{2}{7} - \frac{4}{7}$ **o** $1\frac{2}{5} - \frac{4}{5}$ **p** $2\frac{1}{3} - \frac{2}{3}$

3 **a** Wiremu had an apple. It was cut into 4 pieces.
Wiremu ate $\frac{1}{4}$. What fraction of the apple was left?

b Jack had a cake of chocolate. He broke it into 10 pieces.
Chen ate $\frac{3}{10}$. What fraction of it was left?

4 Ruby had $1\frac{1}{5}$ m of ribbon. She cut off $\frac{3}{5}$ m.
How much ribbon did she have left?

5 **Challenge** $\frac{\square}{9} - \frac{\bigcirc}{9} = \frac{\triangle}{9}$ What numbers could go in the shapes?

Mixed adding and subtracting

Examples

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

$= \frac{3}{8}$

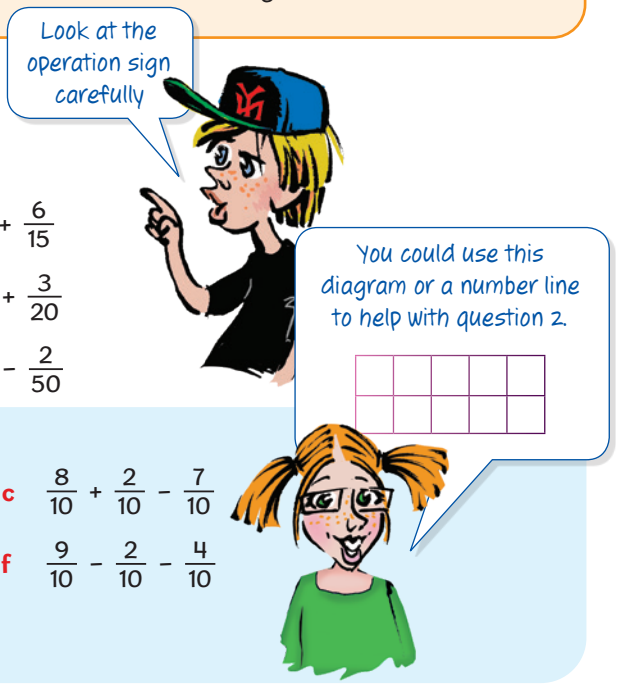
$\frac{3}{5} + 1\frac{1}{5} - \frac{2}{5} = \frac{3}{5} + \frac{6}{5} - \frac{2}{5}$

$= \frac{3+6-2}{5}$

$= \frac{7}{5}$

$= 1\frac{2}{5}$

Activity 3



1 Find the answers to these

a $\frac{1}{3} + \frac{1}{3}$ **b** $\frac{7}{12} - \frac{5}{12}$ **c** $\frac{8}{15} + \frac{6}{15}$

d $\frac{9}{20} + \frac{3}{20}$ **e** $\frac{11}{13} - \frac{5}{13}$ **f** $\frac{17}{20} + \frac{3}{20}$

g $\frac{18}{21} - \frac{5}{21}$ **h** $\frac{11}{14} - \frac{3}{14}$ **i** $\frac{7}{50} - \frac{2}{50}$

2 Find the answers to these

a $\frac{2}{10} + \frac{4}{10} + \frac{3}{10}$ **b** $\frac{1}{10} + \frac{3}{10} + \frac{3}{10}$ **c** $\frac{8}{10} + \frac{2}{10} - \frac{7}{10}$

d $\frac{6}{10} + \frac{3}{10} - \frac{2}{10}$ **e** $\frac{5}{10} + \frac{4}{10} - \frac{2}{10}$ **f** $\frac{9}{10} - \frac{2}{10} - \frac{4}{10}$

g $\frac{8}{10} + \frac{5}{10} - \frac{6}{10}$ **h** $\frac{9}{10} - \frac{3}{10} - \frac{5}{10}$

3 Find the answers to these

a $\frac{3}{8} + \frac{2}{8} + \frac{2}{8}$ **b** $\frac{2}{8} + \frac{1}{8} + \frac{4}{8} + \frac{3}{8}$ **c** $\frac{4}{5} + \frac{1}{5} - \frac{5}{5}$ **d** $\frac{5}{6} - \frac{1}{6} - \frac{3}{6}$

e $\frac{7}{8} - \frac{1}{8} - \frac{3}{8}$ **f** $\frac{9}{10} - \frac{3}{10} + \frac{1}{10}$ **g** $\frac{3}{8} - \frac{1}{8} + \frac{3}{8}$ **h** $\frac{3}{5} + \frac{2}{5} - \frac{1}{5}$

i $\frac{4}{6} - \frac{1}{6} + \frac{2}{6}$ **j** $\frac{5}{8} - \frac{1}{8} + \frac{3}{8}$ **k** $1 - \frac{2}{5} - \frac{1}{5}$ **l** $1 - \frac{3}{10} - \frac{4}{10}$

m $1 - \frac{7}{8} + \frac{2}{8}$ **n** $1 - \frac{5}{6} + \frac{4}{6}$ **o** $1\frac{1}{9} - \frac{3}{9} + \frac{4}{9}$ **p** $1\frac{3}{7} + \frac{4}{7} - \frac{2}{7}$

4 **a** A teacher ate $\frac{3}{8}$ of a pizza and a parent ate $\frac{2}{8}$ of it. What fraction of it was left?

b Three students shared a pizza. They ate $\frac{3}{10}$, $\frac{2}{10}$ and $\frac{4}{10}$ of it. What fraction was left?

c Two girls each ate $\frac{1}{5}$ of another pizza. What fraction of this pizza was left?

d After the class had gone, the station tearooms had $\frac{4}{8}$ of one pizza left and $\frac{3}{8}$ of another left. What fraction was left altogether?

Year 5 - add and subtract fractions with the same denominator including to more than one whole