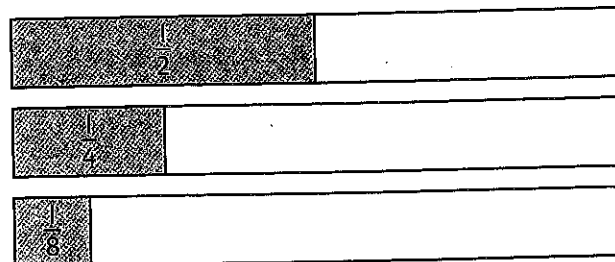


- 5 What is the total of the following fractions? Explain the steps in your working.



Working area for question 5.

- 6 Work out the missing fractions.

a)  $\frac{1}{3} + \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \frac{11}{12}$

b)  $\frac{1}{4} - \frac{1}{12} + \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \frac{9}{24}$

Working area for question 6a.

Working area for question 6b.

CHALLENGE

## Reflect

What mistake has been made here?

What is the correct answer?

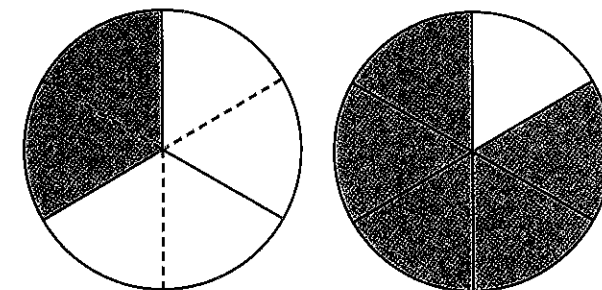
$$\frac{1}{3} + \frac{1}{9} = \frac{2}{12}$$

Reflection area with four horizontal lines.

## Adding fractions 1

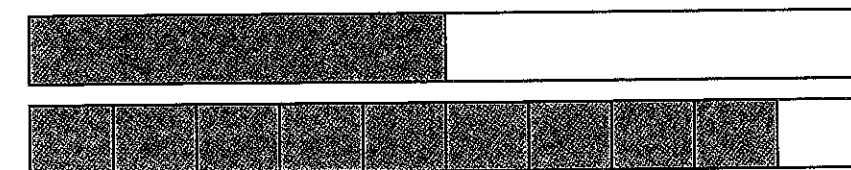
- 1 a) Work out  $\frac{5}{6} + \frac{1}{3}$ .

$$\begin{aligned} \frac{1}{3} &= \frac{\boxed{\phantom{00}}}{6} \\ \frac{5}{6} + \frac{1}{3} &= \frac{5}{6} + \frac{\boxed{\phantom{00}}}{6} \\ &= \frac{\boxed{\phantom{00}}}{6} = \boxed{\phantom{00}} \frac{\boxed{\phantom{00}}}{6} \end{aligned}$$



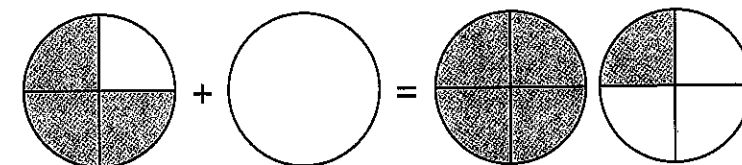
- b) Work out  $\frac{1}{2} + \frac{9}{10}$ .

$$\begin{aligned} \frac{1}{2} &= \frac{\boxed{\phantom{00}}}{10} \\ \frac{1}{2} + \frac{9}{10} &= \frac{\boxed{\phantom{00}}}{10} + \frac{9}{10} \\ &= \frac{\boxed{\phantom{00}}}{10} = \boxed{\phantom{00}} \frac{\boxed{\phantom{00}}}{5} \end{aligned}$$



- 2 Danny adds two fractions.

What is the missing fraction?



$$\frac{3}{4} + \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = 1 \frac{1}{4}$$

Working area for question 2.


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

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


$\frac{3}{4} = \frac{\boxed{\phantom{00}}}{8}$

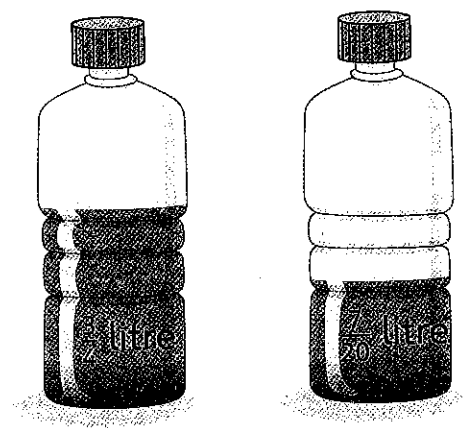
$\frac{3}{8} + \frac{3}{4} = \frac{3}{8} + \frac{\boxed{\phantom{00}}}{8} = \frac{\boxed{\phantom{00}}}{8} = \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}}$

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



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





5 Work out these fraction additions.

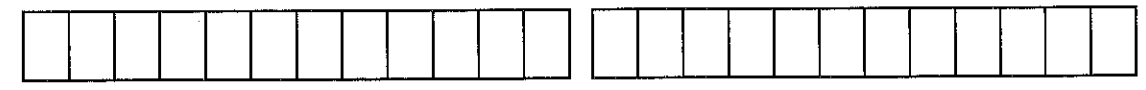
a)  $\frac{7}{10} + \frac{11}{20}$



b)  $\frac{11}{15} + \frac{4}{5}$



6 Work out the missing fractions.



a)  $\frac{1}{2} + \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \frac{17}{12}$

d)  $\frac{1}{2} + \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = 1\frac{1}{12}$

b)  $\frac{2}{3} + \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \frac{17}{12}$

e)  $\frac{2}{3} + \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = 1\frac{1}{12}$

c)  $\frac{5}{6} + \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = \frac{17}{12}$

f)  $\frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} + \frac{5}{6} = 1\frac{1}{12}$



### Reflect

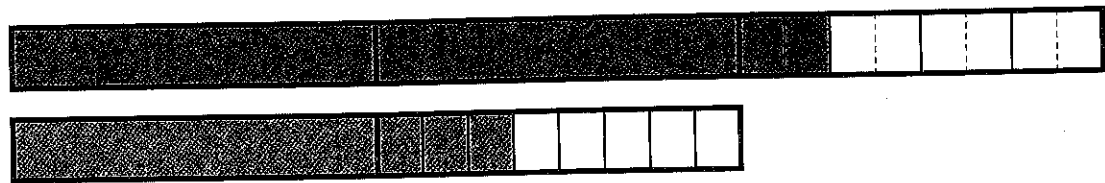
Max is working out  $\frac{2}{3} + \frac{7}{9}$ . He says the answer is  $\frac{9}{12}$ .

What mistake has Max made?

# 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?



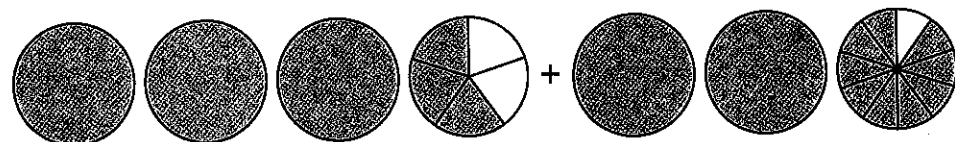
Add the wholes:  $2 + 1 = \boxed{\phantom{00}}$

Find a common denominator:  $\frac{1}{4} = \frac{\boxed{\phantom{00}}}{8}$

Add the parts:  $\frac{1}{4} + \frac{3}{8} = \frac{\boxed{\phantom{00}}}{8} + \frac{3}{8} = \frac{\boxed{\phantom{00}}}{8}$

Olivia walks  $\boxed{\phantom{00}}\frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}}$  km in total.

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



Add the wholes:



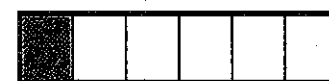
Find a common denominator:  $\frac{3}{5} = \frac{\boxed{\phantom{00}}}{10}$

Add the parts:  $\frac{3}{5} + \frac{9}{10} = \frac{\boxed{\phantom{00}}}{10}$



So,  $3\frac{3}{5} + 2\frac{9}{10} = \boxed{\phantom{00}}$

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



$$1\frac{1}{2} + \frac{1}{6} = \boxed{\phantom{00}}$$

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



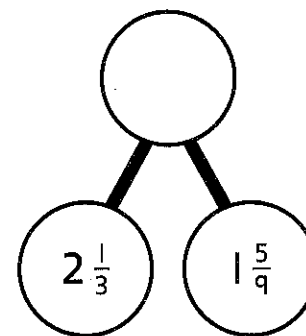
- c) Explain why  $2\frac{7}{12} + 1\frac{2}{3}$  is the same as the answer to part b).

\_\_\_\_\_

\_\_\_\_\_

- ④ Work out the missing value.

a)



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

\_\_\_\_\_

\_\_\_\_\_

b)

$\boxed{\phantom{00}}$	
$2\frac{1}{3}$	$4\frac{5}{9}$

- 5 Part of the workings for adding two fractions are shown.



What could the two fractions be? Complete the answer.

$$3 + 5 = 8$$

$$\frac{2}{3} + \frac{5}{6} = \frac{4}{6} + \frac{5}{6}$$

$$= \frac{9}{6}$$

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

$$\frac{\boxed{\phantom{0}}}{\boxed{\phantom{0}}} + \frac{\boxed{\phantom{0}}}{\boxed{\phantom{0}}} = \frac{\boxed{\phantom{0}}}{\boxed{\phantom{0}}}$$

- 6 What is the missing fraction?

$$2\frac{3}{4} + \frac{\boxed{\phantom{0}}}{\boxed{\phantom{0}}} = 3\frac{7}{12}$$



CHALLENGE

## Reflect

How can you use  $\frac{1}{2} + \frac{1}{8} = \frac{5}{8}$  to work out  $4\frac{1}{2} + 3\frac{1}{8}$ ?

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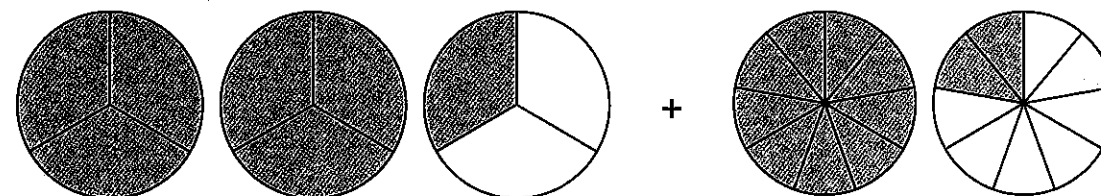
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## Adding fractions 3

- 1 Work out  $2\frac{1}{3} + 1\frac{2}{q}$ .



Change each number to an improper fraction first:

$$2\frac{1}{3} = \frac{\boxed{\phantom{0}}}{3}$$

$$1\frac{2}{q} = \frac{\boxed{\phantom{0}}}{q}$$

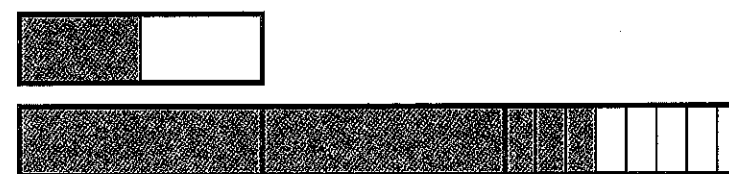
Find a common denominator:  $\frac{\boxed{\phantom{0}}}{3} = \frac{\boxed{\phantom{0}}}{q}$

Add the fractions:  $\frac{\boxed{\phantom{0}}}{q} + \frac{\boxed{\phantom{0}}}{q} = \frac{\boxed{\phantom{0}}}{q}$

$$= \boxed{\phantom{0}} \frac{\boxed{\phantom{0}}}{q}$$

$$\text{So, } 2\frac{1}{3} + 1\frac{2}{q} = \boxed{\phantom{0}} \frac{\boxed{\phantom{0}}}{\boxed{\phantom{0}}}$$

- 2 Convert  $2\frac{3}{8}$  to an improper fraction to work out  $\frac{1}{2} + 2\frac{3}{8}$ .



$$\frac{1}{2} + 2\frac{3}{8} = \boxed{\phantom{0}} \frac{\boxed{\phantom{0}}}{\boxed{\phantom{0}}}$$



3 Work out the following.

a)  $2\frac{1}{4} + \frac{5}{8}$

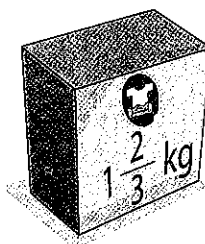
c)  $4\frac{2}{5} + 1\frac{3}{20}$

b)  $4\frac{7}{10} + 1\frac{1}{2}$

d)  $\frac{7}{16} + 4\frac{3}{4}$

4 Washing powder is sold in two sizes.

What is the total weight of the two boxes?



The total weight of the two boxes is  $\frac{\quad}{\quad}$  kg.

5 Kate is adding  $13\frac{2}{5}$  and  $4\frac{7}{50}$ .

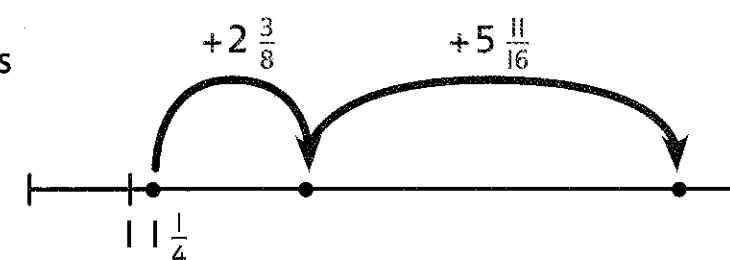
She says, 'I think I will add the wholes and the parts instead of converting to improper fractions.'

Do you agree with Kate? Explain your answer.

6 Find the missing fractions in the working out.

$$\begin{aligned} & \frac{\quad}{\quad} \frac{\quad}{6} + \frac{\quad}{\quad} \frac{\quad}{12} \\ &= \frac{\quad}{\quad} + \frac{\quad}{12} \\ &= \frac{22}{12} + \frac{19}{12} = \frac{\quad}{12} = 3 \frac{\quad}{12} \end{aligned}$$

7 Max is making jumps on a number line.



a) What number has Max finished on?

b) Max makes one more jump and lands on 12. How long was his jump?

## Reflect

Which method do you prefer when adding  $3\frac{9}{10}$  and  $1\frac{3}{20}$ ?

- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_

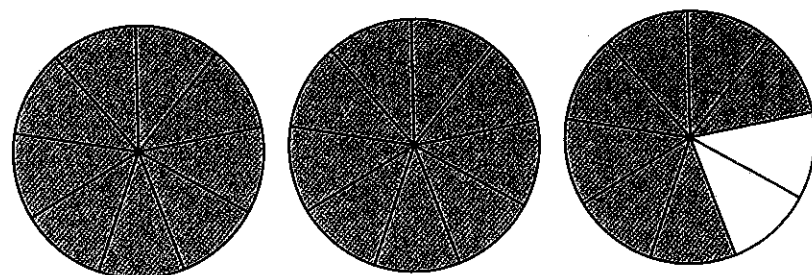


# Subtracting fractions 1

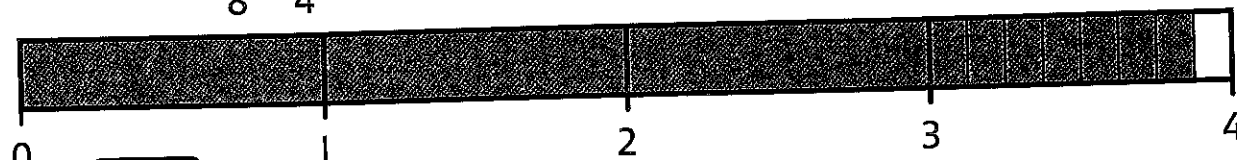
1 Work out  $2\frac{7}{9} - \frac{5}{9}$ .

$$\frac{7}{9} - \frac{5}{9} = \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}}$$

$$\text{So, } 2\frac{7}{9} - \frac{5}{9} = \boxed{\phantom{00}} \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}}$$



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



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

$$3\frac{7}{8} - \frac{1}{4} = 3\frac{7}{8} - \frac{\boxed{\phantom{00}}}{8}$$

$$= 3\frac{\boxed{\phantom{00}}}{8}$$

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

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

$$3\frac{7}{8} - \frac{1}{2} = 3\frac{7}{8} - \frac{\boxed{\phantom{00}}}{8}$$

$$= 3\frac{\boxed{\phantom{00}}}{8}$$

c) Work out:

$$3\frac{7}{8} - 1 = \boxed{\phantom{00}} \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}}$$

$$3\frac{7}{8} - \frac{7}{8} = \boxed{\phantom{00}}$$

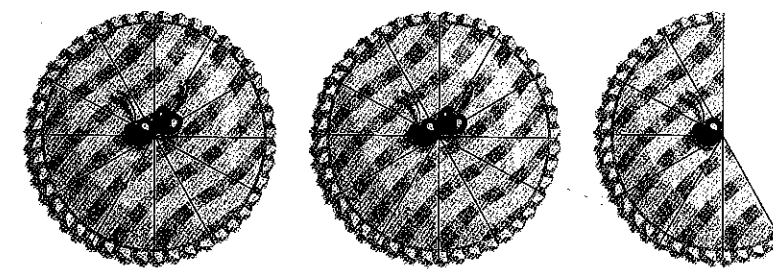
3 A bakery sells cherry pies.

Each pie is cut into 12 slices.

The bakery has  $2\frac{7}{12}$  pies left.

A customer buys  $\frac{1}{3}$  of a pie.

How many pies are left?



There are  $\boxed{\phantom{00}} \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}}$  pies left.

4 Work out the following questions. Draw a diagram if this will help.

a)  $2\frac{3}{4} - \frac{1}{2}$

c)  $2\frac{3}{4} - \frac{3}{8}$

b)  $1\frac{7}{10} - \frac{1}{2}$

d)  $1\frac{7}{10} - \frac{3}{5}$

- 5 Work out the missing fractions.

$$a) 4\frac{5}{8} - \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = 4\frac{1}{8}$$

$$b) \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} - \frac{2}{q} = 3\frac{5}{q}$$

$$c) \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} - \frac{2}{q} = 3\frac{7}{q}$$

$$d) 8\frac{7}{12} - \frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} = 8$$

- 6 Two TV shows last  $2\frac{7}{8}$  hours in total.  
 Adverts in the two shows last  $\frac{1}{4}$  of an hour in total.  
 The first show lasts  $\frac{1}{2}$  an hour.  
 How long does the second show last?



The second show lasts  $\frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}}$  hours.

## Reflect

How do you know that  $2\frac{3}{5} - \frac{3}{10}$  is greater than 2?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Subtracting fractions 2

- 1 a) Use the diagram to help you work out  $3\frac{2}{5} - \frac{4}{5}$ .



$$3\frac{2}{5} = 2\frac{\boxed{\phantom{00}}}{5}$$

$$2\frac{\boxed{\phantom{00}}}{5} - \frac{4}{5} = 2\frac{\boxed{\phantom{00}}}{5}$$

$$\text{So, } 3\frac{2}{5} - \frac{4}{5} = 2\frac{\boxed{\phantom{00}}}{5}$$

- b) Use the diagram to help you work out  $2\frac{3}{8} - \frac{7}{8}$ .



$$2\frac{3}{8} = 1\frac{\boxed{\phantom{00}}}{8}$$

$$1\frac{\boxed{\phantom{00}}}{8} - \frac{7}{8} = 1\frac{\boxed{\phantom{00}}}{8}$$

$$\text{So, } 2\frac{3}{8} - \frac{7}{8} = 1\frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}}$$

- 2 Work out the missing fractions.



$$a) 1\frac{2}{7} - \frac{\boxed{\phantom{00}}}{7} = \frac{6}{7}$$

$$c) 1\frac{2}{7} - \frac{\boxed{\phantom{00}}}{7} = \frac{2}{7}$$

$$b) 1\frac{2}{7} - \frac{\boxed{\phantom{00}}}{7} = \frac{4}{7}$$

$$d) 1\frac{2}{7} - \frac{\boxed{\phantom{00}}}{7} = \frac{8}{7}$$



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

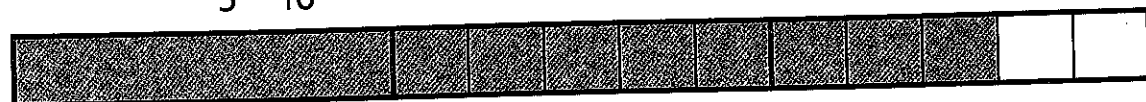


$$4\frac{1}{4} = 4\frac{\boxed{\phantom{00}}}{8} = 3\frac{\boxed{\phantom{00}}}{8}$$

$$3\frac{\boxed{\phantom{00}}}{8} - \frac{7}{8} = 3\frac{\boxed{\phantom{00}}}{8}$$

$$\text{So, } 4\frac{1}{4} - \frac{7}{8} = 3\frac{\boxed{\phantom{00}}}{8}$$

- b) Work out  $2\frac{3}{5} - \frac{9}{10}$ .



- 4 Calculate the following.

a)  $5\frac{1}{3} - \frac{7}{9}$

c)  $7\frac{2}{14} - \frac{3}{7}$

b)  $5\frac{1}{3} - \frac{11}{12}$

d)  $4\frac{5}{24} - \frac{2}{3}$



- 5 3 sandwiches are each cut into 8 pieces.

Lexi eats  $\frac{5}{8}$  of one of the sandwiches.

Danny eats one more piece than Lexi.

How many sandwiches are left?

There are  $\boxed{\phantom{00}}\frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}}$  sandwiches left.



- 6 Work out what numbers the symbols represent.

$$2\frac{1}{2} - \blacktriangle = 1\frac{11}{12}$$

$$3\frac{5}{6} - \blacktriangle = 4\frac{1}{3} - \bullet$$



$$\blacktriangle = \boxed{\phantom{00}}$$

$$\bullet = \boxed{\phantom{00}}$$

CHALLENGE

## Reflect

How do you know that  $2\frac{2}{5} - \frac{9}{20}$  is less than 2?

