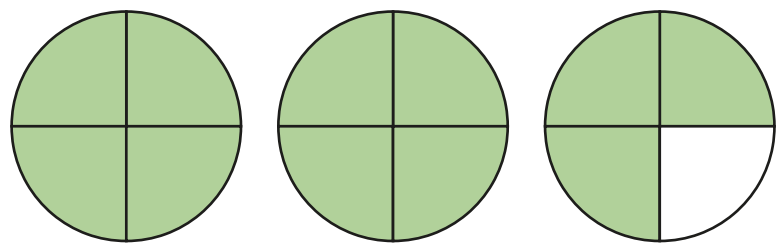


# Mixed numbers to improper fractions



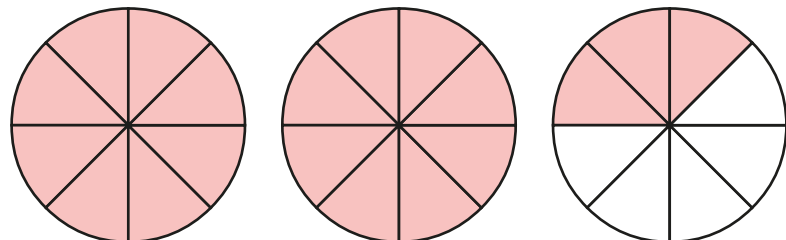
1 Convert the mixed numbers to improper fractions.

a)



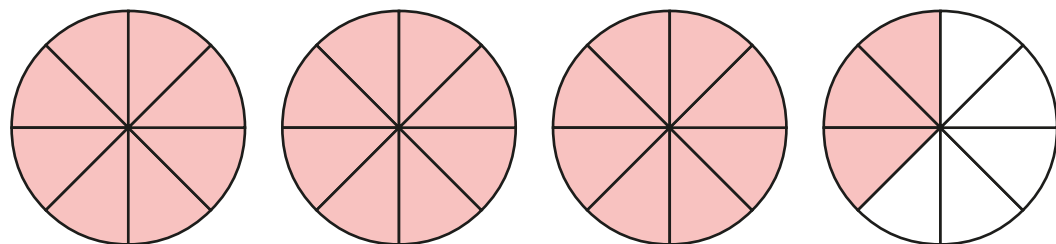
$$2\frac{3}{4} = \frac{\boxed{\phantom{000}}}{4}$$

b)



$$2\frac{3}{8} = \frac{\boxed{\phantom{000}}}{8}$$

c)

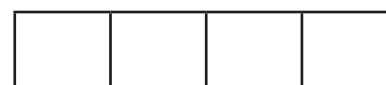


$$3\frac{3}{8} = \frac{\boxed{\phantom{000}}}{8}$$

2 Convert the mixed numbers to improper fractions.

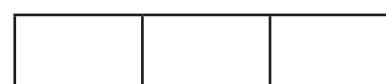
Colour the bar models to help you.

a)



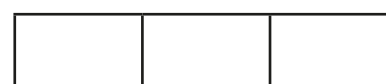
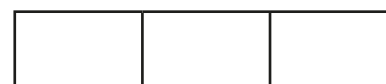
$$2\frac{1}{4} = \boxed{\phantom{000}}$$

b)



$$2\frac{1}{3} = \boxed{\phantom{000}}$$

c)

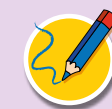


$$3\frac{1}{3} = \boxed{\phantom{000}}$$

d)



$$3\frac{2}{5} = \boxed{\phantom{000}}$$



3 Convert the mixed numbers to improper fractions.

Write the next conversion in each part.

a)  $2\frac{1}{7} = \frac{15}{7}$

$2\frac{2}{7} = \frac{16}{7}$

$2\frac{3}{7} = \frac{17}{7}$

$2\frac{4}{7} = \frac{18}{7}$

c)  $5\frac{1}{2} = \frac{11}{2}$

$5\frac{1}{4} = \frac{21}{4}$

$5\frac{1}{8} = \frac{41}{8}$

$5\frac{1}{16} = \frac{81}{16}$

b)  $3\frac{1}{5} = \frac{16}{5}$

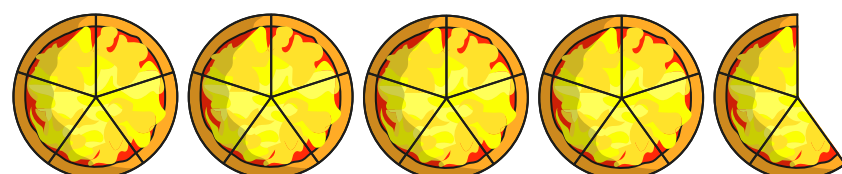
$4\frac{1}{5} = \frac{21}{5}$

$5\frac{1}{5} = \frac{26}{5}$

$6\frac{1}{5} = \frac{31}{5}$

Talk to a partner about any patterns you spot.

4 Here are 4 whole pizzas and  $\frac{3}{5}$  of a pizza.



How many children can have  $\frac{1}{5}$  of a pizza?

23

5 Whitney is converting mixed numbers to improper fractions.



$4\frac{1}{7} = \frac{28}{7}$

Do you agree with Whitney? No

Explain your answer.

She has converted 4 wholes to  $\frac{28}{7}$  but forgotten to add the extra seventh.

6

$\text{circle} \frac{3}{5} = \text{triangle} \frac{1}{5}$

The table shows some possible values of the circle.

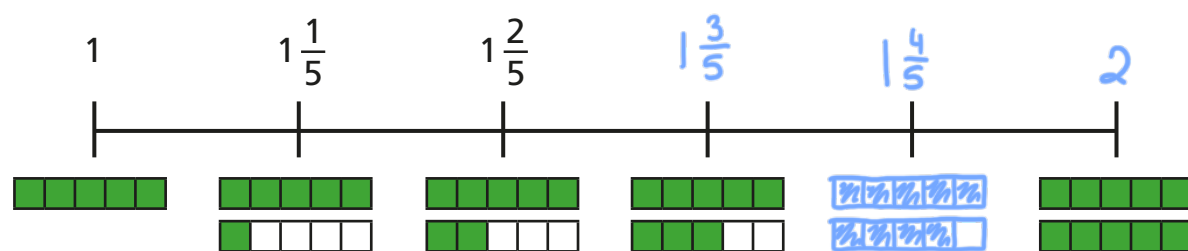
Use this to find the corresponding value of the triangle.

circle	triangle
1	8
2	13
4	23
8	43
16	83
17	88
160	803

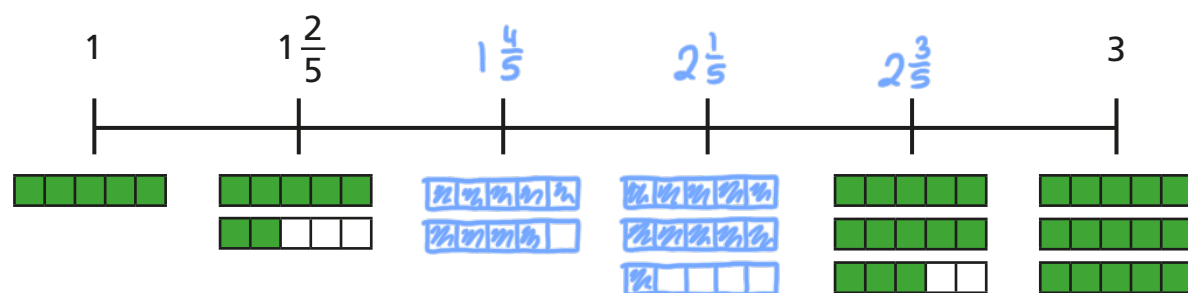
# Number sequences

**1** Complete the number lines.

**a)**

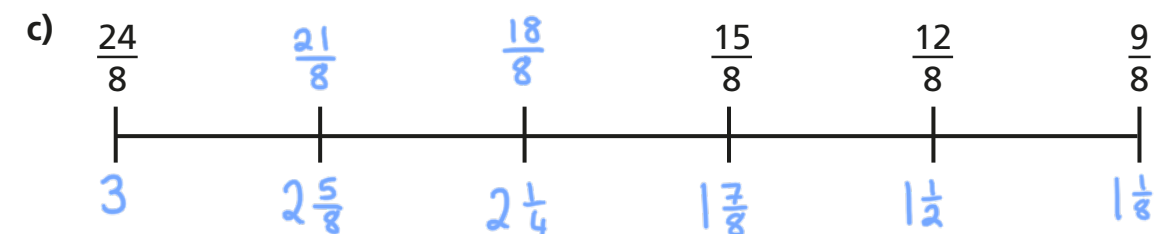
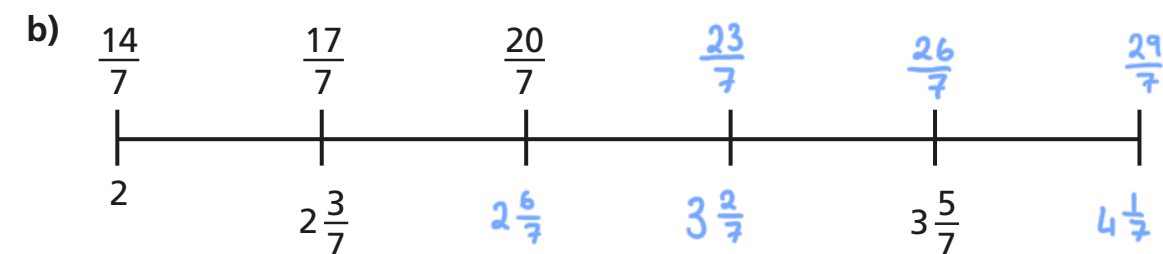
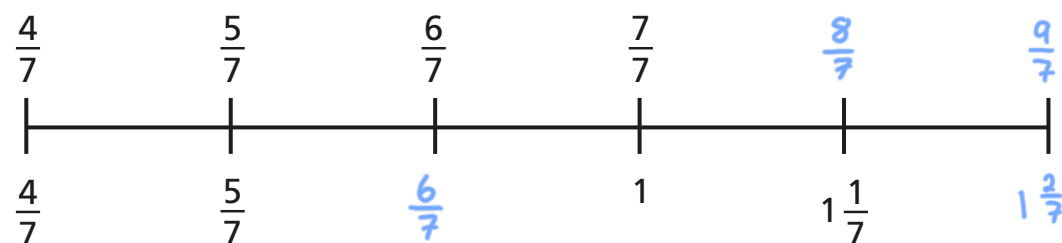


**b)**



**2** Complete the number lines.

a)



**3** Continue the sequences.

a)  $2\frac{7}{8}, 3\frac{1}{8}, 3\frac{3}{8}, 3\frac{5}{8}, 3\frac{7}{8}, 4\frac{1}{8}$

b)  $5\frac{6}{7}$ ,  $5\frac{3}{7}$ , 5,  $4\frac{4}{7}$ ,  $4\frac{1}{7}$ ,  $3\frac{5}{7}$

c)  $5\frac{6}{11}$ ,  $5\frac{3}{11}$ , 5,  $4\frac{8}{11}$ ,  $4\frac{5}{11}$ ,  $4\frac{2}{11}$

What is the same and what is different about the sequences in parts b) and c)?

Talk about it with a partner.

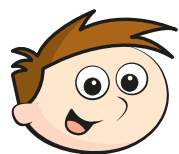
4 Match each sequence to its rule.

$2\frac{2}{3}, 3\frac{1}{3}, 4, 4\frac{2}{3}$	add three quarters
$2\frac{1}{2}, 3\frac{1}{4}, 4, 4\frac{3}{4}$	subtract two thirds
$4\frac{1}{3}, 3\frac{2}{3}, 3, 2\frac{1}{3}$	add two thirds
$4\frac{1}{4}, 3\frac{3}{4}, 3\frac{1}{4}, 2\frac{3}{4}$	subtract one half

5 Teddy and Rosie are finding the missing numbers in the sequence.

3,  ,  ,  ,  ,  ,  ,  , 4

a)



I think the missing fractions are sevenths because there are seven blank number cards.

Do you agree with Teddy? No

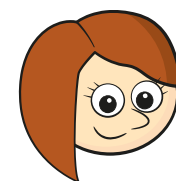
Explain your answer.

If they were sevenths there would only be 6 blank cards because  $3\frac{7}{7} = 4$

b) Complete the sequence.

3,  $3\frac{1}{8}$ ,  $3\frac{2}{8}$ ,  $3\frac{3}{8}$ ,  $3\frac{4}{8}$ ,  $3\frac{5}{8}$ ,  $3\frac{6}{8}$ ,  $3\frac{7}{8}$ , 4

c)



I think one of the missing fractions is equivalent to  $3\frac{1}{2}$

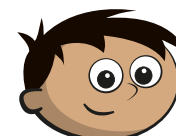
Is Rosie correct? Yes

Explain how you know.

$\frac{4}{8}$  is equivalent to  $\frac{1}{2}$  so  $3\frac{4}{8}$  is equivalent to  $3\frac{1}{2}$ .

d) Which other fractions in the sequence can you find equivalent fractions for?

6



I am thinking of a number sequence. The 1st and 4th terms are consecutive integers.

Write the rule for Amir's sequence.

Add one third. (Accept subtract one third)

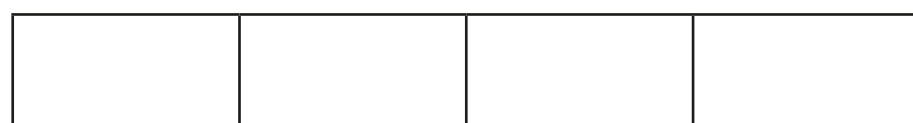
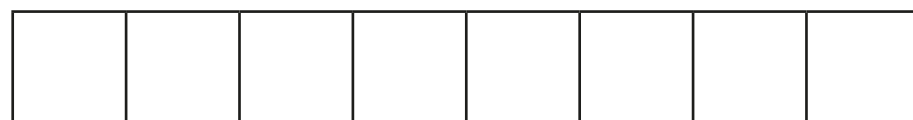


# Compare and order fractions less than 1

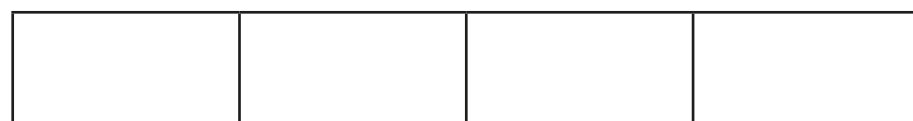
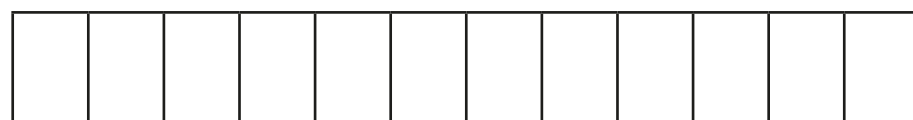


1 Write  $<$ ,  $>$  or  $=$  to compare the fractions.

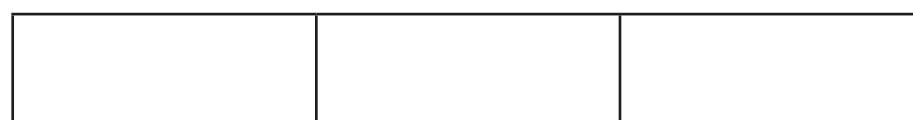
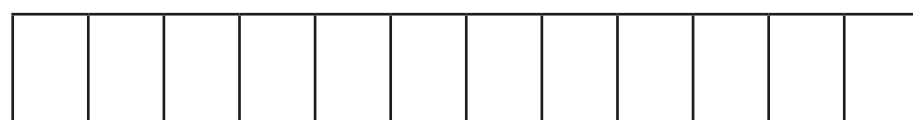
Use the bar models to help you.



$$\frac{7}{8} \bigcirc \frac{3}{4}$$



$$\frac{9}{12} \bigcirc \frac{3}{4}$$



$$\frac{7}{12} \bigcirc \frac{2}{3}$$

2 Write  $<$ ,  $>$  or  $=$  to compare the fractions.

$$\text{a) } \frac{1}{5} \bigcirc \frac{4}{15}$$

$$\text{g) } \frac{2}{9} \bigcirc \frac{1}{3}$$

$$\text{b) } \frac{2}{5} \bigcirc \frac{4}{15}$$

$$\text{h) } \frac{4}{9} \bigcirc \frac{1}{3}$$

$$\text{c) } \frac{2}{5} \bigcirc \frac{6}{15}$$

$$\text{i) } \frac{4}{12} \bigcirc \frac{1}{3}$$

$$\text{d) } \frac{2}{3} \bigcirc \frac{6}{15}$$

$$\text{j) } \frac{8}{12} \bigcirc \frac{2}{3}$$

$$\text{e) } \frac{2}{3} \bigcirc \frac{6}{12}$$

$$\text{k) } \frac{8}{12} \bigcirc \frac{3}{3}$$

$$\text{f) } \frac{2}{3} \bigcirc \frac{6}{9}$$

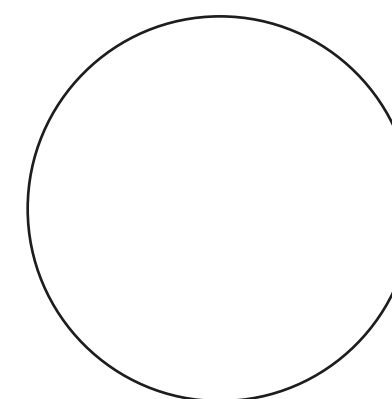
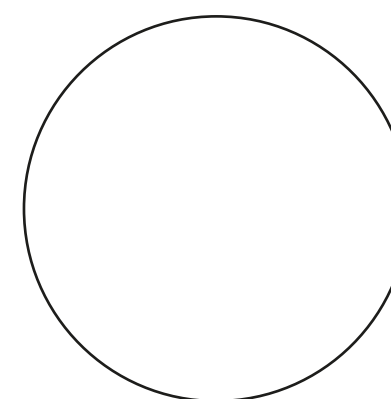
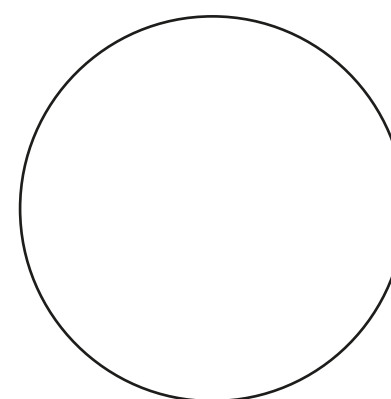
$$\text{l) } \frac{8}{12} \bigcirc \frac{3}{4}$$

3 Sort the fractions into the circles.

greater than  $\frac{1}{3}$

equal to  $\frac{1}{3}$

less than  $\frac{1}{3}$



- |               |               |               |               |               |                |                |                |                |
|---------------|---------------|---------------|---------------|---------------|----------------|----------------|----------------|----------------|
| $\frac{2}{3}$ | $\frac{1}{6}$ | $\frac{1}{2}$ | $\frac{2}{6}$ | $\frac{2}{9}$ | $\frac{5}{12}$ | $\frac{4}{12}$ | $\frac{4}{15}$ | $\frac{5}{15}$ |
|---------------|---------------|---------------|---------------|---------------|----------------|----------------|----------------|----------------|



4 What could the missing numerators and denominators be?

Write a number in each box to make the statements correct.

e.g.

a)  $\frac{\boxed{1}}{5} < \frac{5}{15}$

d)  $\frac{\boxed{1}}{3} < \frac{5}{6}$

g)  $\frac{6}{9} < \frac{5}{\boxed{6}}$

b)  $\frac{\boxed{2}}{6} < \frac{5}{12}$

e)  $\frac{3}{5} < \frac{5}{\boxed{5}}$

h)  $\frac{10}{12} < \frac{5}{\boxed{4}}$

c)  $\frac{\boxed{5}}{12} < \frac{5}{6}$

f)  $\frac{5}{6} < \frac{5}{\boxed{5}}$

i)  $\frac{23}{24} < \frac{5}{\boxed{5}}$

Compare answers with a partner.

5 Tommy and Eva are comparing fractions.

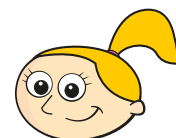
$\frac{2}{3}$   $\frac{8}{12}$   $\frac{4}{9}$



Tommy

I found a common denominator of 36 to compare the fractions.

I found a common numerator of 4 to compare the fractions.



Eva

Whose method is more efficient? Various

Talk about your answer with a partner.



6 Write the fractions in ascending order.

a)  $\frac{2}{5}, \frac{2}{7}, \frac{2}{3}, \frac{2}{4}, \frac{2}{10}$

$\frac{2}{10}$

$\frac{2}{7}$

$\frac{2}{5}$

$\frac{2}{4}$

$\frac{2}{3}$

b)  $\frac{2}{3}, \frac{5}{9}, \frac{1}{9}, \frac{5}{6}, \frac{2}{9}$

$\frac{1}{9}$

$\frac{2}{9}$

$\frac{5}{9}$

$\frac{2}{3}$

$\frac{5}{6}$

c)  $\frac{3}{5}, \frac{7}{10}, \frac{1}{2}, \frac{3}{10}, \frac{1}{5}$

$\frac{1}{5}$

$\frac{3}{10}$

$\frac{1}{2}$

$\frac{3}{5}$

$\frac{7}{10}$

d)  $\frac{3}{8}, \frac{6}{17}, \frac{12}{30}, \frac{2}{7}, \frac{1}{3}$

$\frac{2}{7}$

$\frac{1}{3}$

$\frac{6}{17}$

$\frac{3}{8}$

$\frac{12}{30}$

7 What could the missing numerator be?

$\frac{3}{5} < \frac{\boxed{\phantom{00}}}{15} < \frac{9}{10}$

Write all four possibilities.

$\frac{10}{15}$

$\frac{11}{15}$

$\frac{12}{15}$

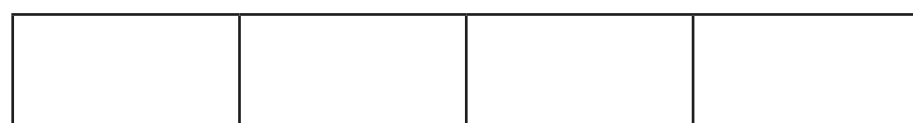
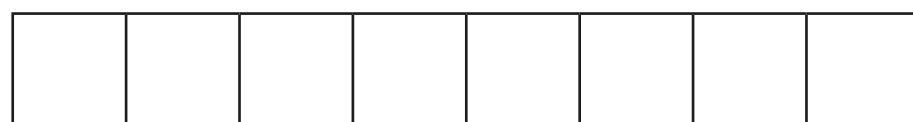
$\frac{13}{15}$

# Compare and order fractions less than 1

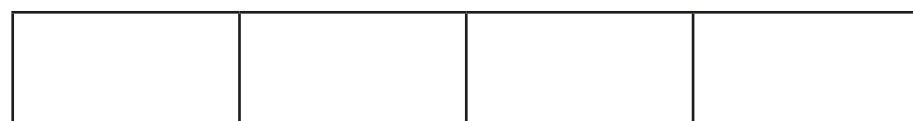
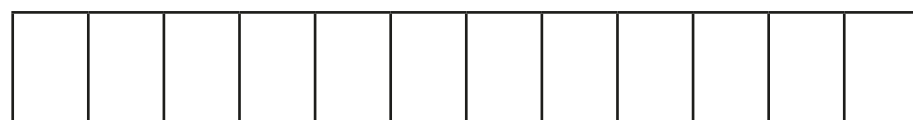


1 Write  $<$ ,  $>$  or  $=$  to compare the fractions.

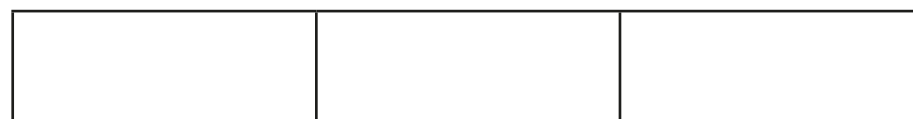
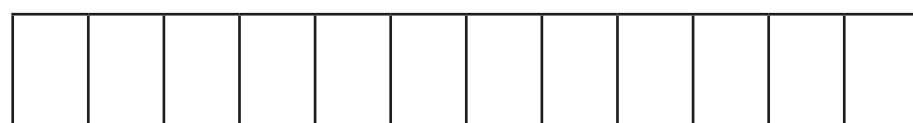
Use the bar models to help you.



$$\frac{7}{8} \bigcirc \frac{3}{4}$$



$$\frac{9}{12} \bigcirc \frac{3}{4}$$



$$\frac{7}{12} \bigcirc \frac{2}{3}$$

2 Write  $<$ ,  $>$  or  $=$  to compare the fractions.

$$\text{a) } \frac{1}{5} \bigcirc \frac{4}{15}$$

$$\text{g) } \frac{2}{9} \bigcirc \frac{1}{3}$$

$$\text{b) } \frac{2}{5} \bigcirc \frac{4}{15}$$

$$\text{h) } \frac{4}{9} \bigcirc \frac{1}{3}$$

$$\text{c) } \frac{2}{5} \bigcirc \frac{6}{15}$$

$$\text{i) } \frac{4}{12} \bigcirc \frac{1}{3}$$

$$\text{d) } \frac{2}{3} \bigcirc \frac{6}{15}$$

$$\text{j) } \frac{8}{12} \bigcirc \frac{2}{3}$$

$$\text{e) } \frac{2}{3} \bigcirc \frac{6}{12}$$

$$\text{k) } \frac{8}{12} \bigcirc \frac{3}{3}$$

$$\text{f) } \frac{2}{3} \bigcirc \frac{6}{9}$$

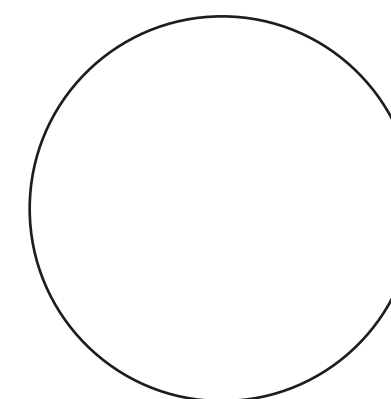
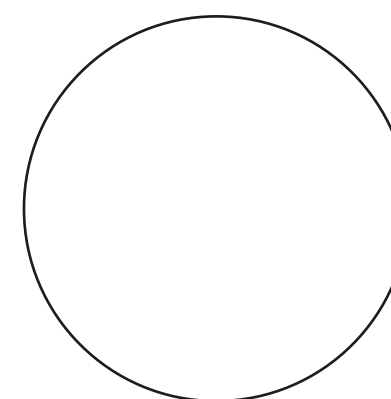
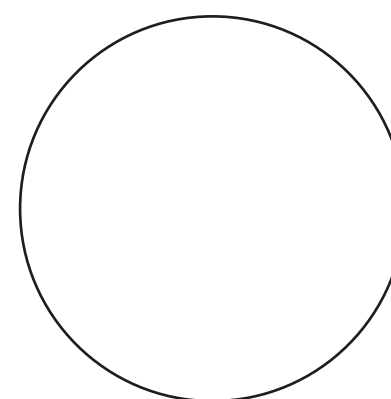
$$\text{l) } \frac{8}{12} \bigcirc \frac{3}{4}$$

3 Sort the fractions into the circles.

greater than  $\frac{1}{3}$

equal to  $\frac{1}{3}$

less than  $\frac{1}{3}$



$\frac{2}{3}$	$\frac{1}{6}$	$\frac{1}{2}$	$\frac{2}{6}$	$\frac{2}{9}$	$\frac{5}{12}$	$\frac{4}{12}$	$\frac{4}{15}$	$\frac{5}{15}$
---------------	---------------	---------------	---------------	---------------	----------------	----------------	----------------	----------------

- 4 What could the missing numerators and denominators be?

Write a number in each box to make the statements correct.

e.g.

a)  $\frac{\boxed{1}}{5} < \frac{5}{15}$

d)  $\frac{\boxed{1}}{3} < \frac{5}{6}$

g)  $\frac{6}{9} < \frac{5}{\boxed{6}}$

b)  $\frac{\boxed{2}}{6} < \frac{5}{12}$

e)  $\frac{3}{5} < \frac{5}{\boxed{5}}$

h)  $\frac{10}{12} < \frac{5}{\boxed{4}}$

c)  $\frac{\boxed{5}}{12} < \frac{5}{6}$

f)  $\frac{5}{6} < \frac{5}{\boxed{5}}$

i)  $\frac{23}{24} < \frac{5}{\boxed{5}}$

Compare answers with a partner.

- 5 Tommy and Eva are comparing fractions.

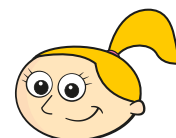
$\frac{2}{3}$   $\frac{8}{12}$   $\frac{4}{9}$



Tommy

I found a common denominator of 36 to compare the fractions.

I found a common numerator of 4 to compare the fractions.



Eva

Whose method is more efficient? Various

Talk about your answer with a partner.

- 6 Write the fractions in ascending order.

a)  $\frac{2}{5}, \frac{2}{7}, \frac{2}{3}, \frac{2}{4}, \frac{2}{10}$

$\frac{2}{10}$   $\frac{2}{7}$   $\frac{2}{5}$   $\frac{2}{4}$   $\frac{2}{3}$

b)  $\frac{2}{3}, \frac{5}{9}, \frac{1}{9}, \frac{5}{6}, \frac{2}{9}$

$\frac{1}{9}$   $\frac{2}{9}$   $\frac{5}{9}$   $\frac{2}{3}$   $\frac{5}{6}$

c)  $\frac{3}{5}, \frac{7}{10}, \frac{1}{2}, \frac{3}{10}, \frac{1}{5}$

$\frac{1}{5}$   $\frac{3}{10}$   $\frac{1}{2}$   $\frac{3}{5}$   $\frac{7}{10}$

d)  $\frac{3}{8}, \frac{6}{17}, \frac{12}{30}, \frac{2}{7}, \frac{1}{3}$

$\frac{2}{7}$   $\frac{1}{3}$   $\frac{6}{17}$   $\frac{3}{8}$   $\frac{12}{30}$

- 7 What could the missing numerator be?

$\frac{3}{5} < \frac{\boxed{\phantom{00}}}{15} < \frac{9}{10}$

Write all four possibilities.

$\frac{10}{15}$   $\frac{11}{15}$   $\frac{12}{15}$   $\frac{13}{15}$

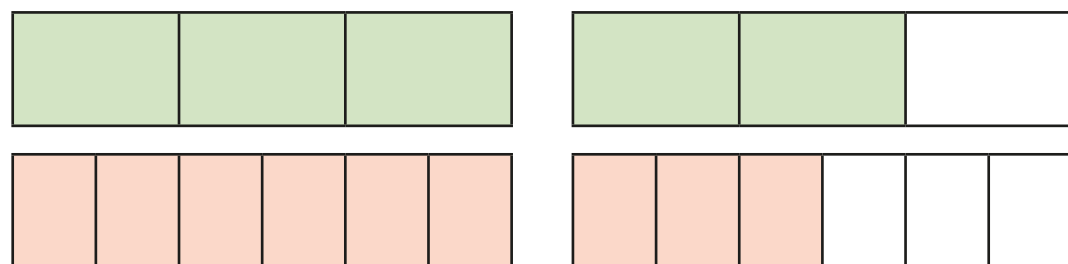
# Compare and order fractions greater than 1



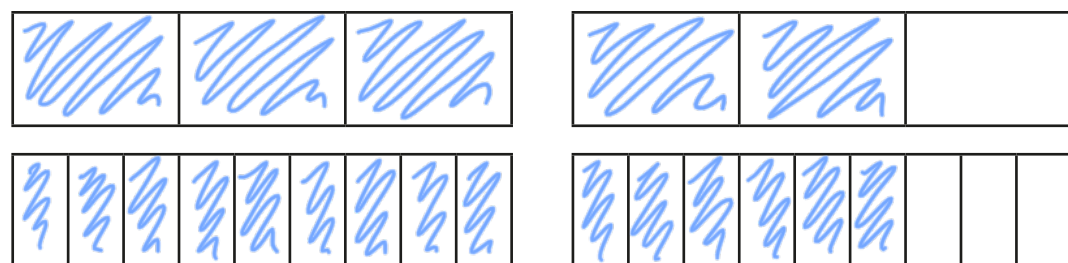
1 Write  $<$ ,  $>$  or  $=$  to compare the fractions.

Use the bar models to help you.

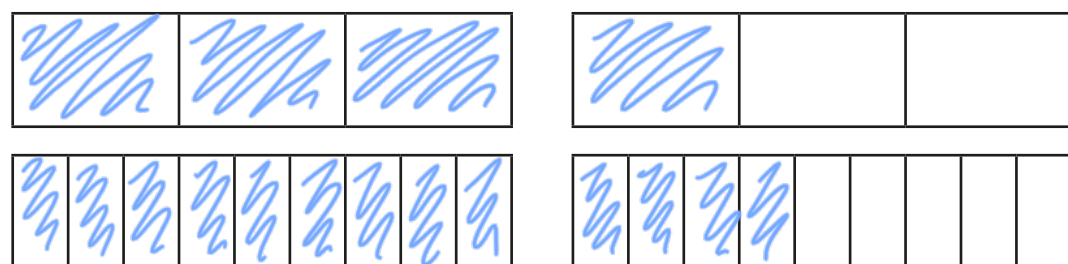
a)  $\frac{5}{3}$   $>$   $\frac{9}{6}$



b)  $\frac{5}{3}$   $=$   $\frac{15}{9}$



c)  $\frac{4}{3}$   $<$   $\frac{13}{9}$



2 Write  $<$ ,  $>$  or  $=$  to compare the fractions.

a)  $\frac{7}{4}$   $>$   $\frac{12}{8}$

d)  $\frac{10}{6}$   $=$   $\frac{5}{3}$

g)  $\frac{18}{8}$   $>$   $\frac{32}{16}$

b)  $\frac{7}{4}$   $<$   $\frac{22}{12}$

e)  $\frac{10}{6}$   $<$   $\frac{5}{2}$

h)  $\frac{18}{8}$   $=$   $\frac{9}{4}$

c)  $\frac{22}{12}$   $>$   $\frac{10}{6}$

f)  $\frac{5}{2}$   $>$   $\frac{18}{8}$

i)  $\frac{9}{4}$   $<$   $\frac{18}{2}$

3 Filip has  $3\frac{3}{16}$  bottles of juice.

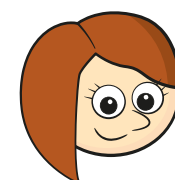
Scott has  $3\frac{1}{4}$  bottles of juice.

Who has more juice?

Scott has more juice.

4 Rosie's ribbon is  $\frac{7}{4}$  metres long.

Teddy's ribbon is  $\frac{7}{8}$  metres long.



Our ribbons are the same length.

Explain why Rosie is wrong.

The number of parts is the same but the size of their parts is different. Rosie's ribbon is longer.

5 Write the fractions in descending order.

a)  $\frac{8}{3}, \frac{4}{5}, \frac{8}{15}, \frac{8}{2}, \frac{16}{8}$

$\frac{8}{2}$   $\frac{8}{3}$   $\frac{16}{8}$   $\frac{4}{5}$   $\frac{8}{15}$

b)  $\frac{7}{3}, \frac{12}{9}, \frac{15}{9}, \frac{15}{6}, \frac{7}{9}$

$\frac{15}{6}$   $\frac{7}{3}$   $\frac{15}{9}$   $\frac{12}{9}$   $\frac{7}{9}$

c)  $\frac{14}{5}, \frac{17}{10}, \frac{27}{10}, \frac{3}{1}, \frac{42}{20}$

$\frac{3}{1}$   $\frac{14}{5}$   $\frac{27}{10}$   $\frac{42}{20}$   $\frac{17}{10}$

6 Find three possible ways to complete each statement.

a)  $\frac{1}{4} < \frac{2}{4} < \frac{9}{8}$

$\frac{1}{4} < \frac{3}{4} < \frac{9}{8}$

$\frac{1}{4} < \frac{4}{4} < \frac{9}{8}$

c)  $\frac{4}{5} < \frac{8}{8} < \frac{8}{4}$

$\frac{4}{5} < \frac{8}{7} < \frac{8}{4}$

$\frac{4}{5} < \frac{8}{6} < \frac{8}{4}$

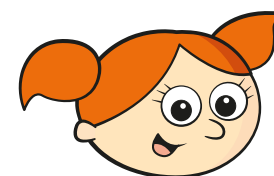
b)  $\frac{1}{4} < \frac{4}{15} < \frac{7}{15}$

$\frac{1}{4} < \frac{5}{15} < \frac{7}{15}$

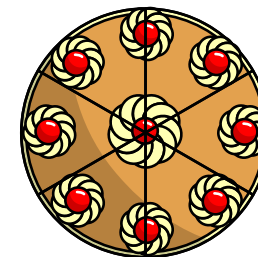
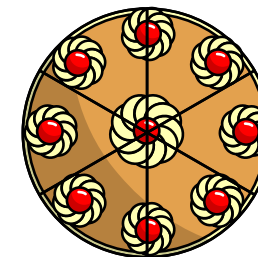
$\frac{1}{4} < \frac{6}{15} < \frac{7}{15}$

7 Alex and Dora each have two identical cakes.

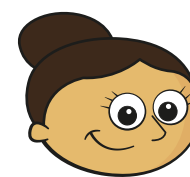
Alex cuts each of her cakes into 6 equal pieces and gives 10 of her friends a piece each.



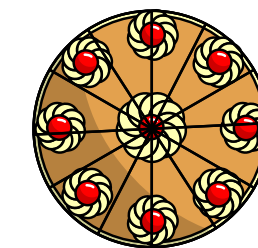
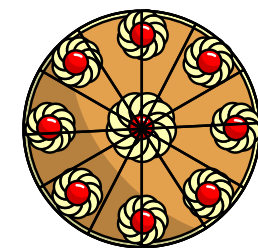
Alex



Dora cuts each of her cakes into 12 equal pieces and gives 18 of her friends a piece each.



Dora



Who has more cake left?

Dora has more cake left.

8 The greater the numerator, the greater the fraction.

Give at least three examples to show that the statement is not correct.

Various answers e.g.  $\frac{3}{17} < \frac{1}{2}$

