Fractions and decimals

- Expressing one quantity as a fraction of another
- Using equivalent fractions
- Changing between improper fractions and mixed numbers
- Writing fractions as decimals

Keywords

You should know

explanation 1

1 Each of these shapes is divided into smaller parts of equal size.

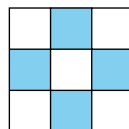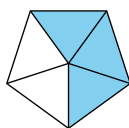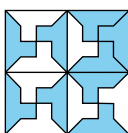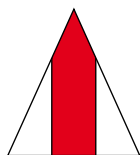**a** Write the fraction of each shape that is coloured blue.
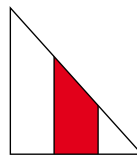
i
ii
iii

iv
v
vi

b Write the fraction of each shape that is not coloured blue.

2 Two shapes are shown below. Each one has one part out of three coloured red.
Does either shape have $\frac{1}{3}$ coloured red? Explain your answer.
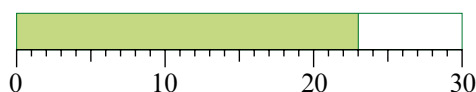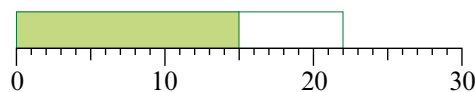
Shape A
Shape B

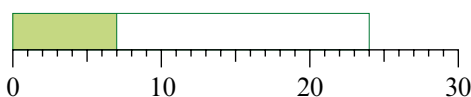**3** Use the numbered scales to find the fraction of each of these rectangles that is green.

a
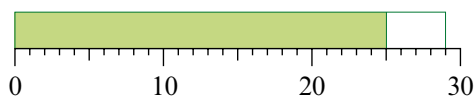b

c
d

4 Write the first number as a fraction of the second for each of these pairs.

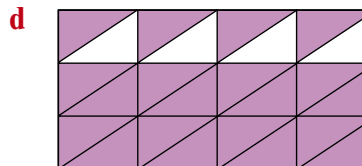   **a** 16, 25   **b** 9, 11   **c** 42, 53
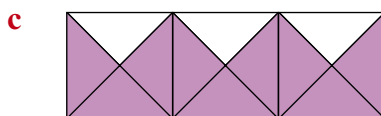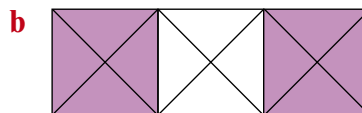
   d 73, 90   **e** 17, 30   **f** 3, 100

> explanation 2a   explanation 2b

5 For each diagram, find a pair of equivalent fractions that show how much of the diagram is coloured purple.

  a

  b

  c

  d
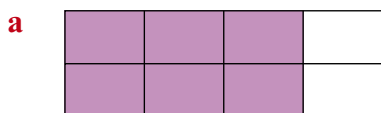
6 Copy and complete.

  a $\dfrac{2}{3} = \dfrac{10}{\square}$ **b** $\dfrac{4}{7} = \dfrac{\square}{21}$ **c** $\dfrac{3}{8} = \dfrac{12}{\square}$

  d $\dfrac{4}{5} = \dfrac{8}{\square} = \dfrac{\square}{25}$ **e** $\dfrac{3}{10} = \dfrac{\square}{30} = \dfrac{27}{\square}$ **f** $\dfrac{5}{6} = \dfrac{35}{\square} = \dfrac{\square}{54}$

7 Copy and complete.

  a $\dfrac{21}{28} = \dfrac{3}{\square}$ **b** $\dfrac{35}{45} = \dfrac{\square}{9}$ **c** $\dfrac{50}{75} = \dfrac{2}{\square}$

  d $\dfrac{44}{88} = \dfrac{22}{\square} = \dfrac{\square}{2}$ **e** $\dfrac{36}{48} = \dfrac{9}{\square} = \dfrac{\square}{4}$ **f** $\dfrac{60}{\square} = \dfrac{20}{30} = \dfrac{2}{\square}$

8 Write each of these fractions in their lowest terms.

  a $\dfrac{45}{90}$ **b** $\dfrac{55}{77}$ **c** $\dfrac{54}{72}$

  d $\dfrac{72}{240}$ **e** $\dfrac{225}{250}$ **f** $\dfrac{324}{396}$

9 Write $\dfrac{108}{144}$ in its simplest form.

10 You can use a fraction wall to compare fractions.

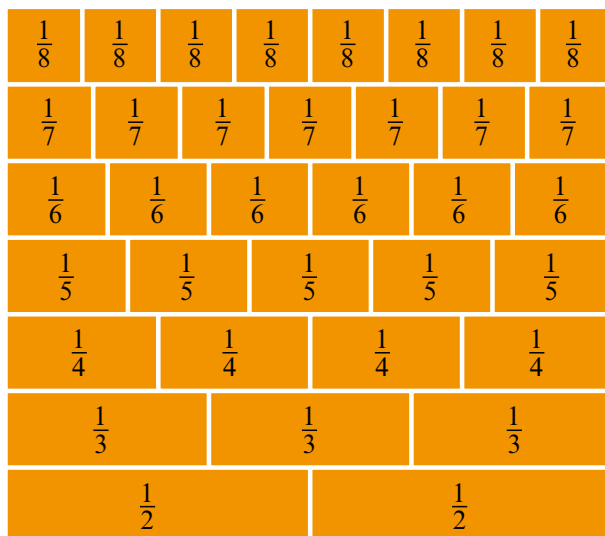Use the fraction wall to help you. Copy and complete each statement, using < or >.

a $\frac{2}{7} \square \frac{1}{3}$ b $\frac{3}{5} \square \frac{4}{7}$

c $\frac{2}{3} \square \frac{7}{8}$ d $\frac{3}{8} \square \frac{2}{5}$

e $\frac{4}{5} \square \frac{6}{7}$ f $\frac{5}{6} \square \frac{2}{3}$

| $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ | $\frac{1}{8}$ |

(fraction wall showing rows for eighths, sevenths, sixths, fifths, quarters, thirds and halves)

11 Write these groups of fractions in order of size, smallest first. Use the fraction wall.

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

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

12 Write each pair of fractions with a common denominator. State which is the smaller.

a $\frac{5}{12}, \frac{9}{20}$ b $\frac{7}{10}, \frac{11}{15}$ c $\frac{3}{8}, \frac{5}{12}$

d $\frac{9}{16}, \frac{13}{24}$ e $\frac{4}{25}, \frac{16}{75}$ f $\frac{25}{27}, \frac{17}{18}$

13 Write these improper fractions as mixed numbers.

a $\frac{7}{3}$ b $\frac{11}{4}$ c $\frac{24}{5}$ d $\frac{31}{8}$ e $\frac{45}{11}$ f $\frac{99}{10}$

14 Write these mixed numbers as improper fractions.

   a $4\frac{2}{3}$ **b** $2\frac{1}{5}$ **c** $6\frac{3}{4}$ **d** $9\frac{1}{2}$ **e** $7\frac{4}{5}$ **f** $5\frac{8}{9}$

15 Give your answers to these divisions as proper fractions in their lowest terms.

   a $4 \div 6$ **b** $9 \div 12$ **c** $14 \div 20$ **d** $15 \div 18$

   e $24 \div 30$ **f** $25 \div 75$ **g** $50 \div 75$ **h** $48 \div 60$

16 Give your answers to these divisions as mixed numbers in their simplest form.

   a $18 \div 5$ **b** $30 \div 4$ **c** $24 \div 10$ **d** $21 \div 14$

   e $50 \div 8$ **f** $11 \div 6$ **g** $40 \div 32$ **h** $250 \div 150$

> **explanation 5**

17 Write these decimals as fractions in their lowest terms.

   a 0.3   **b** 0.1   **c** 0.7   **d** 0.9

   e 0.5   **f** 0.25   **g** 0.75   **h** 0.8

   i 0.24   **j** 0.35   **k** 0.6   **l** 0.55

18 a Copy and complete.

   i $\frac{1}{5} = \frac{\square}{10}$ **ii** $\frac{2}{5} = \frac{\square}{10}$ **iii** $\frac{7}{20} = \frac{\square}{100}$ **iv** $\frac{11}{25} = \frac{\square}{100}$

   v $\frac{9}{20} = \frac{\square}{100}$ **vi** $\frac{3}{50} = \frac{\square}{100}$ **vii** $\frac{49}{50} = \frac{\square}{100}$ **viii** $\frac{18}{75} = \frac{\square}{25} = \frac{\square}{100}$

   b Write each fraction in part **a** as a decimal.

19 Write each fraction as a decimal.

   a $\frac{19}{20}$ **b** $\frac{7}{25}$ **c** $\frac{27}{60}$ **d** $\frac{126}{200}$

20 Write each set of numbers in order of size, smallest first.

   a $\frac{3}{4}$ 0.7 0.59 $\frac{1}{2}$ **b** $\frac{27}{50}$ 0.62 0.575 $\frac{3}{4}$ **c** 0.8 $\frac{7}{10}$ $\frac{15}{20}$ 0.72

21 Copy the number line. Show the output for this function machine on your number line.