Equivalent Ratios
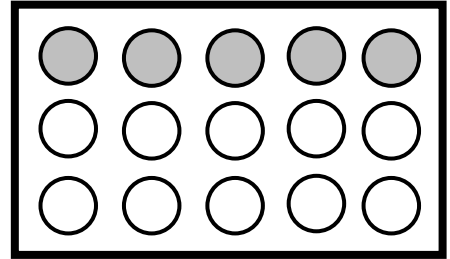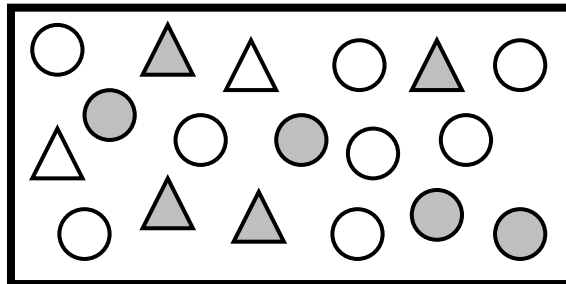
1 The diagram shows a box containing shaded and unshaded shapes.

Write down four ratios that the diagram could represent.

2 The diagram shows a box different shapes.

Write down, in its simplest form:

a the ratio of shaded shapes to unshaded shapes.

b the ratio of unshaded shapes to shaded shapes.

c the ratio of circles to triangles

d the ratio of triangles to circles

3 Here is a diagram consisting of shaded and unshaded circles. In the diagram one circle has been covered over, it is labelled with a ?.
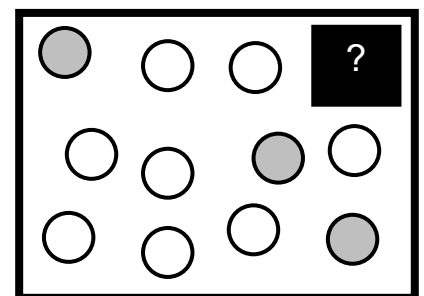
Four students Anna, Billy, Charile and Danny secretly look at the covered shape and give each other a clue about what the shape is.

Anna says: "The ratio of shaded to unshaded is now 4:8"

Billy says: "There are twice as many unshaded circles than shaded circles"

Charlie says: "The ratio of unshaded shapes to shaded shapes is 2:1"

Danny says: "For every 1 shaded shape, there are 2 unshaded"

a Are all four people's statements equivalent. Explain your answer.

b Is the covered shape shaded or unshaded?

4 Write each of the following ratios in their simplest form.

a 2 : 6

b 3 : 6

c 4 : 6

d 4 : 12

e 4 : 24

f 8 : 24

g 1 : 8 : 24

h 4 : 8 : 24

i 8 : 16 : 48

j 12 : 16 : 48

k 12 : 15 : 48

l 1.2 : 1.5 : 4.8

5 Four polygons are shown below.

Rectangle
Right-Angled Triangle
Parallelogram
Isosceles Trapezium

Rectangle: 2cm, 5cm

Right-Angled Triangle: 10cm, 8cm, 6cm

Parallelogram: 9cm, 11cm, 8cm

Isosceles Trapezium: 4cm, 5cm, 4cm, 10cm
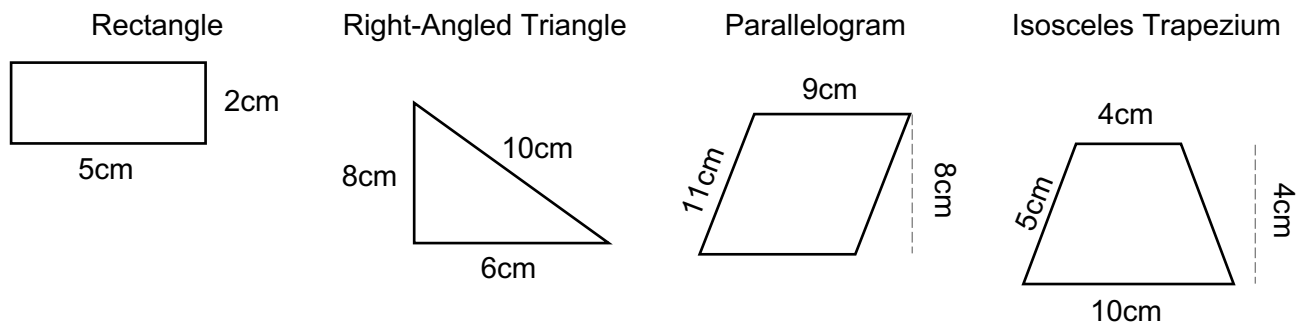
Work out the following ratios in their simplest form:

a Perimeter of Rectangle : Perimeter of Triangle

b Perimeter of Triangle : Perimeter of Parallelogram

c Perimeter of Parallelogram : Perimeter of Trapezium

d Area of Rectange : Area of Triangle

e Area of Triangle : Area of Parallelogram

f Area of Rectangle : Area of Parallelogram : Area of Trapezium

ANSWERS

Q1
5:10 = 1:2 (Shaded to unshaded)
10:5 = 2:1 (Unshaded to shaded)

Q2
a 8:10 = 4:5
b 10:8 = 5:4
c 12:6 = 2:1
d 6:12 = 1:2

Q3
a Yes.
   Shaded to unshaded 4:8 = 1:2. So for every 1 shaded there
   are 2 unshaded, meaning there are twice as many shaded.
   Unshaded to shaded = 2:1 by switching the ratio round.
b Shaded

Q4

a 2 : 6
   1 : 3

b 3 : 6
   1 : 2

c 4 : 6
   2 : 3

d 4 : 12
   1 : 3

e 4 : 24
   1 : 6

f 8 : 24
   1 : 3

g 1 : 8 : 24
   1 : 8 : 24

h 4 : 8 : 24
   1 : 4 : 12

i 8 : 16 : 48
   1 : 2 : 6

j 12 : 16 : 48
   3 : 4 : 12

k 12 : 15 : 48
   4 : 5 : 16

l 1.2 : 1.5 : 4.8
   4 : 5 : 16

Q5

	Perimeter	Area
Rectangle	14cm	10cm^2
Triangle	24cm	24cm^2
Parallelogram	40cm	72cm^2
Trapezium	24cm	28cm^2

a 14 : 24 = 7 : 12
b 24 : 40 = 3 : 5
c 40 : 24 = 5 : 3
d 10 : 24 = 5 : 12
e 24 : 72 = 1 : 3
f 10 : 72 : 28 = 5 : 36 : 14