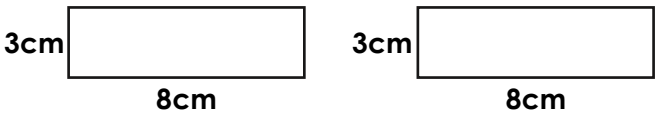
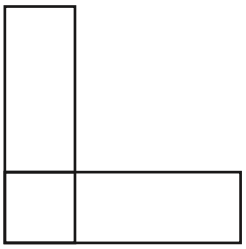
Area and Perimeter

1a. Eddie draws two equal rectangles.



He puts them together to make a new shape.

What is the area and perimeter of the new shape?



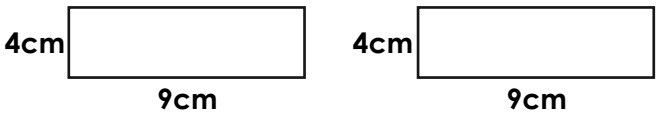
D

Not to scale

PS

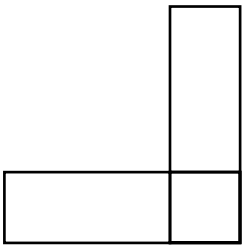
Area and Perimeter

1b. Sadie draws two equal rectangles.



She puts them together to make a new shape.

What is the area and perimeter of the new shape?



D

Not to scale

PS

2a. A shape has a perimeter of 18cm.

Perimeter = 18cm

What is the largest area the shape could have?

What is the smallest area the shape could have?

D

Not to scale

PS

2b. A shape has a perimeter of 24cm.

Perimeter = 24cm

What is the largest area the shape could have?

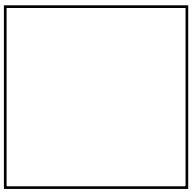
What is the smallest area the shape could have?

D

Not to scale

PS

3a. Rosa says,



Squares have the same area and perimeter because you multiply by 4.

Do you agree? Prove it.

D

R

3b. Jacob says,

Rectangles have the same area and perimeter because you just multiply the length by width.

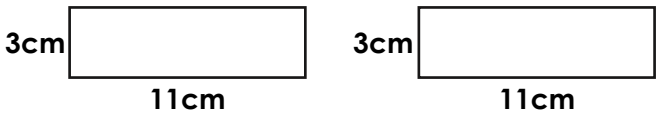
Do you agree? Prove it.

D

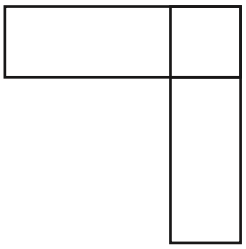
R

Area and Perimeter

4a. Freddy draws two equal rectangles.



He puts them together to make a new shape.



Using the correct formulae, find the area and perimeter of the new shape.

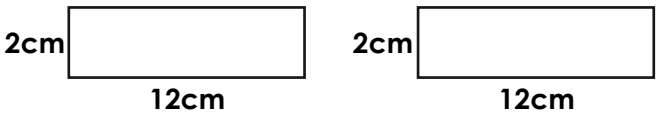
E

Not to scale

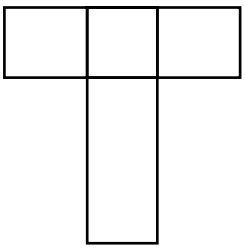
PS

Area and Perimeter

4b. Hayley draws two equal rectangles.



She puts them together to make a new shape.



Using the correct formulae, find the area and perimeter of the new shape.

E

Not to scale

PS

5a. A shape has a perimeter of 82cm.

Perimeter = 82cm

What is the largest area the shape could have?

What is the smallest area the shape could have?

E

Not to scale

PS

5b. A shape has a perimeter of 68cm.

Perimeter = 68cm

What is the largest area the shape could have?

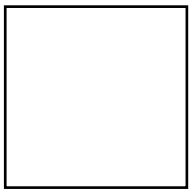
What is the smallest area the shape could have?

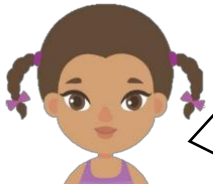
E

Not to scale

PS

6a. Cally says,





A square can have the same area and perimeter.

Do you agree? Prove it.

E

R

6b. Brendan says,

A rectangle will always have a different area and perimeter.

Do you agree? Prove it.

E

R

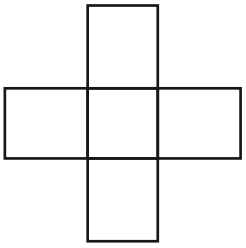
Area and Perimeter

7a. Hamza draws two equal rectangles.

3cm ☐ 130mm 3cm ☐ 130mm

He puts them together to make a new shape.

Using the correct formulae, find the area and perimeter of the new shape.



Not to scale

GD PS

8a. A shape has a perimeter of 80.5cm.

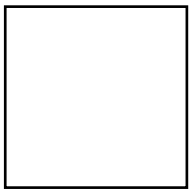
Perimeter = 80.5cm

What is the largest area the shape could have?

What is the smallest area the shape could have?

GD *Not to scale* PS

9a. Suzie says,



If a square has an area that is a decimal, then its perimeter will always be a decimal too.

Do you agree? Prove it.

GD R

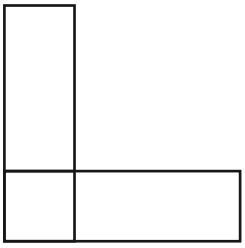
Area and Perimeter

7b. Joanna draws two equal rectangles.

3.5cm ☐ 140mm 3.5cm ☐ 140mm

She puts them together to make a new shape.

Using the correct formulae, find the area and perimeter of the new shape.



Not to scale

GD PS

8b. A shape has a perimeter of 75cm.

Perimeter = 75cm

What is the largest area the shape could have?

What is the smallest area the shape could have?

GD *Not to scale* PS

9b. Kevin says,

If a rectangle has a perimeter that is a decimal, then its area will always be a decimal too.

Do you agree? Prove it.

GD R

Reasoning and Problem Solving
Area and Perimeter

Developing

1a. Area = 39cm², Perimeter = 32cm

2a. Largest area = 4cm x 5cm = 20cm²
Smallest area = 8cm x 1cm = 8cm²

3a. Disagree; to find the area you multiply length by width, to find the perimeter, you add all the sides together. For example: in a square that measures 6cm x 6cm, the area is 36cm², but the perimeter is 24cm.

Expected

4a. Area = 57cm², Perimeter = 44cm

5a. Largest area = 20cm x 21cm = 420cm²
Smallest area = 40cm x 1cm = 40cm²

6a. Agree; some squares have an equal area and perimeter (for example, 4cm x 4cm), however, others do not (such as 5cm x 5cm).

Greater Depth

7a. Area = 69cm², Perimeter = 52cm

8a. Largest area = 20cm x 20.25cm = 405cm² (Accept this answer, however, if children wish to take this further, other decimals can produce larger areas such as 20.1cm x 20.15cm = 405.015. This may require a calculator).
Smallest area = 40cm x 0.25cm = 10cm²

9a. Disagree; if the area of a square is a decimal number, it does not mean that the perimeter will be a decimal as well. For example; Perimeter = 4.5cm + 4.5cm + 4.5cm + 4.5cm = 18cm.
Area = 4.5 x 4.5 = 20.25cm².

Reasoning and Problem Solving
Area and Perimeter

Developing

1b. Area = 56cm², Perimeter = 36cm

2b. Largest area = 6cm x 6cm = 36cm²
Smallest area = 11cm x 1cm = 11cm²

3b. Disagree; to find the area, you multiply length by width, to find the perimeter you add all the sides together. For example: in a rectangle that measures 3cm x 4cm, the area is 12cm², but the perimeter is 14cm.

Expected

4b. Area = 44cm², Perimeter = 48cm

5b. Largest area = 17cm x 17cm = 289cm²
Smallest area = 33cm x 1cm = 33cm²

6b. Disagree; some rectangles have an equal area and perimeter (for example, 3cm x 6cm), however others do not (such as 7cm x 5cm).

Greater Depth

7b. Area = 85.75cm², Perimeter = 56cm

8b. Largest area = 18.5cm x 19cm = 351.5cm²
Smallest area = 37cm x 0.5cm = 18.5cm²

9b. Disagree; although a rectangle may have a perimeter with a decimal number, it is still possible for the area to be a whole number. For example; Perimeter = 1.2cm + 5cm + 1.2cm + 5cm = 12.4cm.
Area = 1.2 x 5 = 6cm².