Lesson 5 – Measurement: Perimeter and Area - Area of Rectangles

NC Objective: Calculate and compare the area of rectangles (including squares), and including using standard units, cm², m².	Resources needed: Differentiated Sheets Teaching Slides	Vocabulary: Area, formula, shapes, properties of shape

Children build on previous knowledge in Year 4 by counting squares to find the area. They then move on to using a formula to find the area of rectangles.
Is a square a rectangle? This would be a good discussion point when the children are finding different rectangles with a given area. For example, a rectangle with an area of 36 cm² could have four equal sides of 6 cm.

Key Questions:
What properties of these shapes do you need to know to help you work this out?
What can you tell me about the sides of a square/rectangle? How does this help you work out this question?
Will the formula 'Area = length × width' work for any shape, or only squares and rectangles?

★ Working Towards	★★ Working Within	★★★ Greater Depth
Children on this sheet investigate the area of shapes if each square is either 1 or 2cm squared.	Children on this sheet investigate the area of shapes. The given squared length is given in centimetres or millimetres. They will also use decimals.	Children on this sheet investigate the area of shapes. The given squared length is given in centimetres and millimetres. They will also use decimals.

Reasoning & Problem Solving

What is the area of this shape if:

- each square is 1 cm in length?   Area = _____ cm^2

- each square is 2 cm in length?   Area = _____ cm^2

What is the area of this shape if:
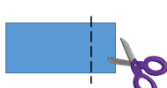
- each square is 1 cm in length?   Area = _____ cm^2

- each square is 2 cm in length?   Area = _____ cm^2

What is the area of this shape if:

- each square is 2 cm in length?   Area = _____ cm^2

- each square is 3 cm in length?   Area = _____ cm^2

Malachi buys a house with a small back garden, which has an area of 10 m^2.

His house lies in a row of terraces, all identical.

If there are 5 terraced houses altogether, what is the total area of the garden space?

What is the area of this shape if:

- each square is 1 cm in length? Area = ___4___ cm²

- each square is 2 cm in length? Area = ___16___ cm²

What is the area of this shape if:

- each square is 1 cm in length? Area = ___12___ cm²

- each square is 2 cm in length? Area = ___48___ cm²
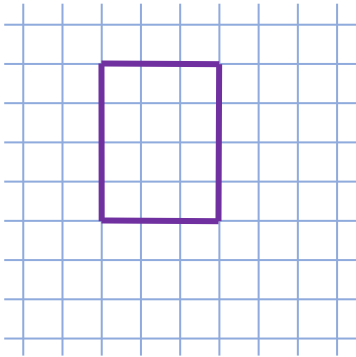
What is the area of this shape if:

- each square is 2 cm in length? Area = ___80___ cm²

- each square is 3 cm in length? Area = ___180___ cm²

Malachi buys a house with a small back garden, which has an area of 10 m².

His house lies in a row of terraces, all identical.

If there are 5 terraced houses altogether, what is the total area of the garden space?
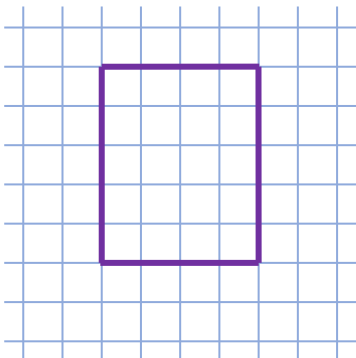
$$10 \times 5 = 50 \text{ m}^2$$

What is the area of this shape if:

- each square is 3 cm in length?   Area = _____ cm²

- each square is 25 mm in length?   Area = _____ cm²

What is the area of this shape if:

- each square is 1.2 cm in length?   Area = _____ cm²
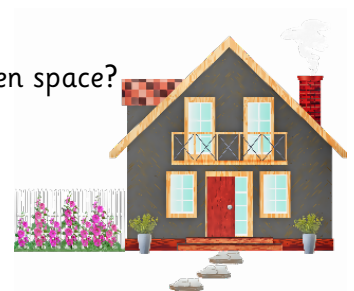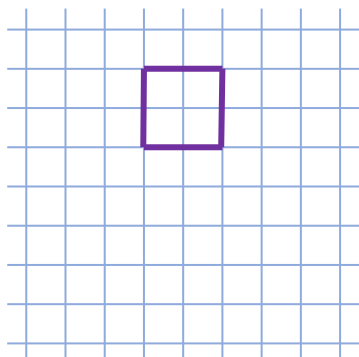
- each square is 14 mm in length?   Area = _____ cm²

What is the area of this shape if:

- each square is 2.5 cm in length?   Area = _____ cm²

- each square is 30 mm in length?   Area = _____ cm²

Malachi buys a house with a small back garden, which has an area of 15.5 m².

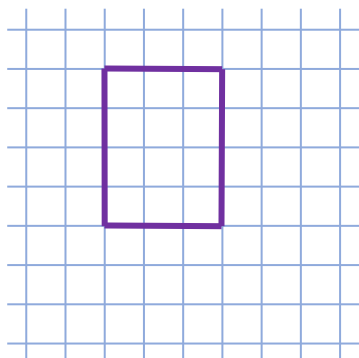His house lies in a row of terraces, all identical.

If there are 12 terraced houses altogether, what is the total area of the garden space?
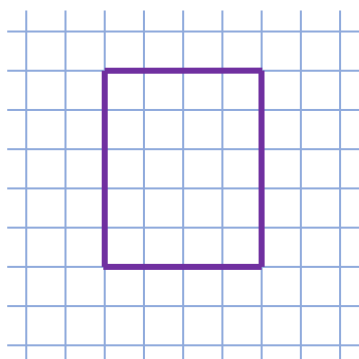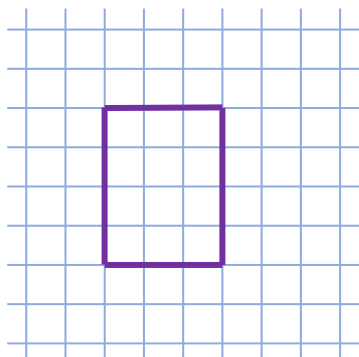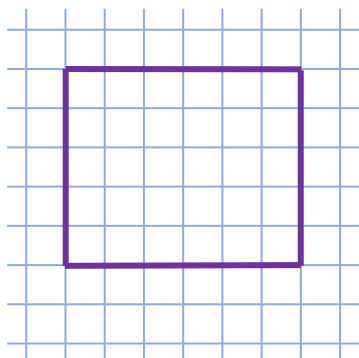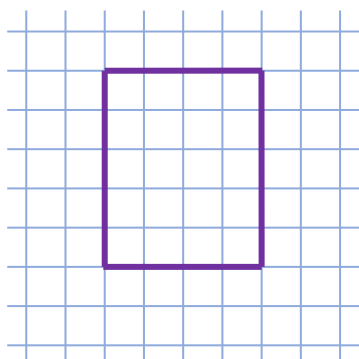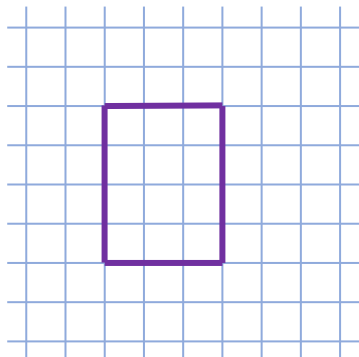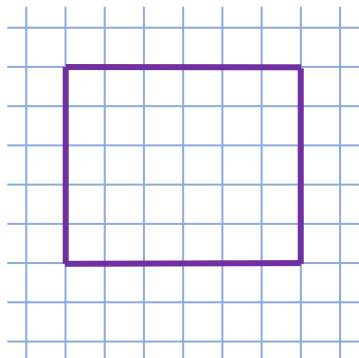
What is the area of this shape if:

- each square is 3 cm in length?   Area = ___108___ cm^2

- each square is 25 mm in length?   Area = ___75___ cm^2

What is the area of this shape if:

- each square is 1.2 cm in length?   Area = ___43.2___ cm^2

- each square is 14 mm in length?   Area = ___58.8___ cm^2

What is the area of this shape if:

- each square is 2.5 cm in length?   Area = ___125___ cm^2

- each square is 30 mm in length?   Area = ___180___ cm^2

Malachi buys a house with a small back garden, which has an area of 15.5 m^2.

His house lies in a row of terraces, all identical.

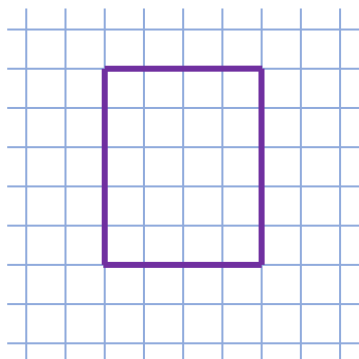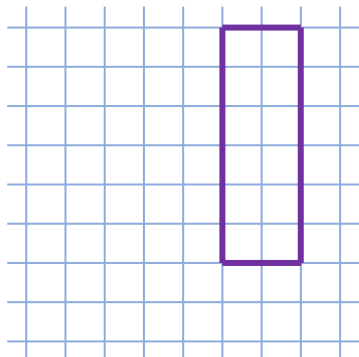If there are 12 terraced houses altogether, what is the total area of the garden space?
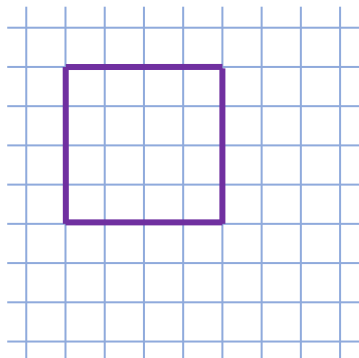
$$15.5 \times 12 = 186 \text{ m}^2$$

What is the area of this shape if:

- each square is 3 cm and 5 mm in length?   Area = _____ cm²

- each square is 2 cm and 25 mm in length?   Area = _____ cm²

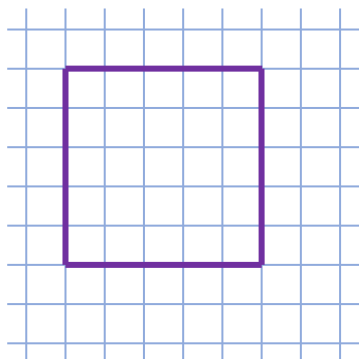What is the area of this shape if:

- each square is 1.3 cm and 12 mm in length?   Area = _____ cm²

- each square is 5 cm and 12 mm in length?   Area = _____ cm²

What is the area of this shape if:

- each square is 7 cm and 32 mm in length?   Area = _____ cm²
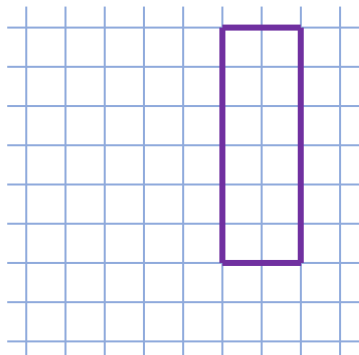
- each square is 3.3 cm and 11 mm in length?   Area = _____ cm²

Malachi buys a house with a small back garden, which has an area of 14 m² and a terrace, which has an area of 3 m².
His house lies in a row of terraces, all identical.

If there are 16 terraced houses altogether,
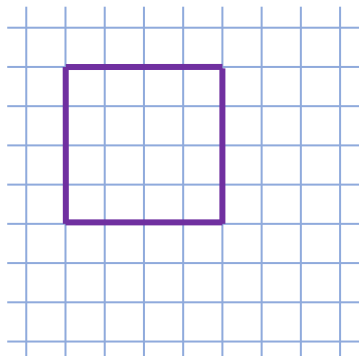what is the total area of the garden space and terraced space?

What is the area of this shape if:

- each square is 3 cm and 5 mm in length?   Area = __147__ cm^2
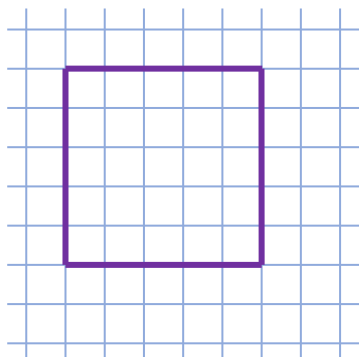
- each square is 2 cm and 25 mm in length?   Area = __243__ cm^2

What is the area of this shape if:

- each square is 1.3 cm and 12 mm in length?   Area = __100__ cm^2

- each square is 5 cm and 12 mm in length?   Area = __615.04__ cm^2

What is the area of this shape if:

- each square is 7 cm and 32 mm in length?   Area = __2,601__ cm^2

- each square is 3.3 cm and 11 mm in length?   Area = __484__ cm^2

Malachi buys a house with a small back garden, which has an area of 14 m^2 and a terrace, which has an area of 3 m^2.
His house lies in a row of terraces, all identical.

If there are 16 terraced houses altogether,
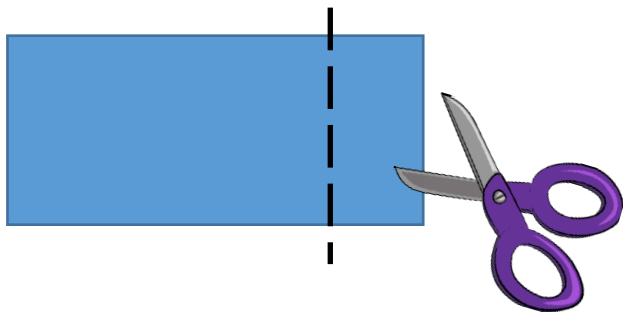what is the total area of the garden space and terraced space?
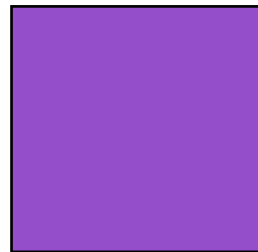
17 × 16 = 272 m^2

True or False?

If you cut off a piece from a shape, you reduce its perimeter.
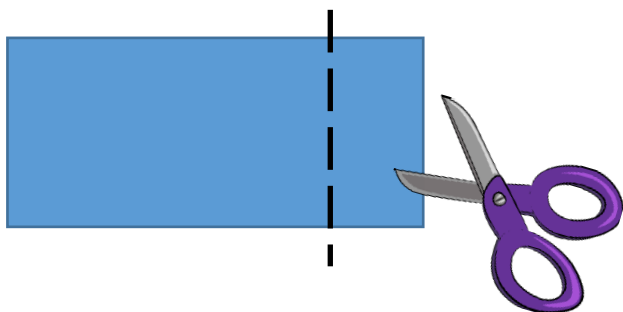
Investigate how many ways you can make different rectangles with the same area of 20 cm^2.

What strategy did you use?

True or False?

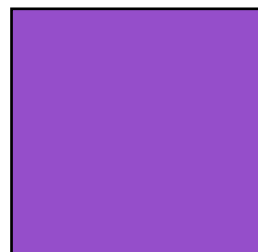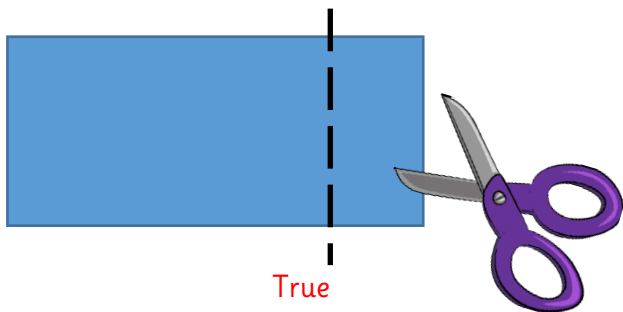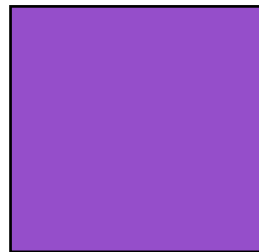If you cut off a piece from a shape, you reduce its perimeter.

Investigate how many ways you can make different rectangles with the same area of 20 cm^2.
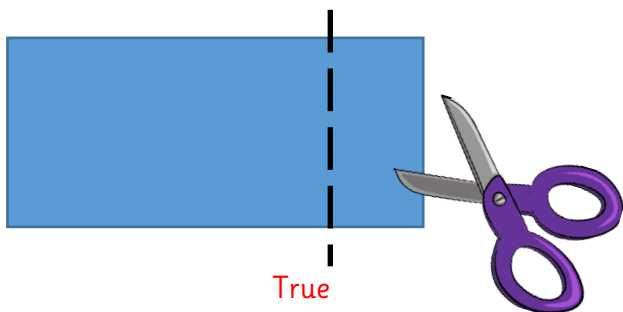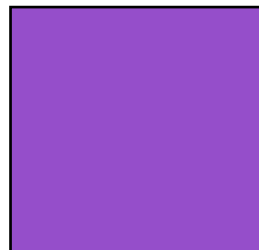
What strategy did you use?

True or False?

If you cut off a piece from a shape, you reduce its perimeter.

True

Investigate how many ways you can make different rectangles with the same area of 20 cm^2.
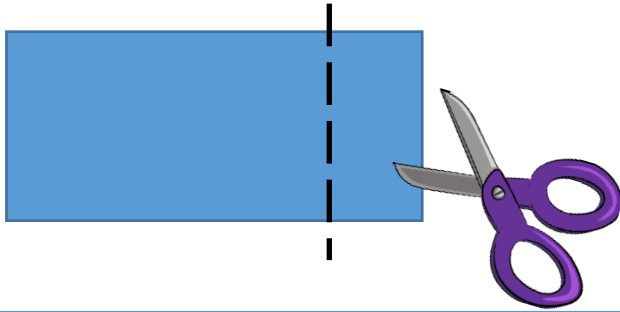
What strategy did you use?

Possible ways are 1 x 20
2 x 10
4 x 5

True or False?

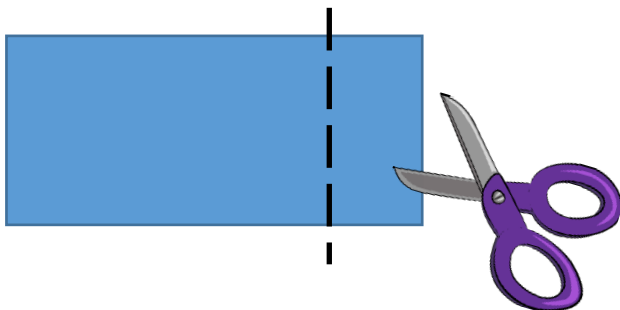If you cut off a piece from a shape, you reduce its area.

Investigate how many ways you can make different rectangles with the same area of 28 cm^2.
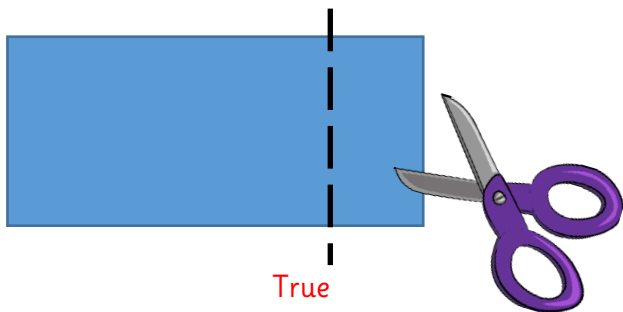
What strategy did you use?

True or False?

If you cut off a piece from a shape, you reduce its area.

Investigate how many ways you can make different rectangles with the same area of 28 cm^2.

What strategy did you use?

True or False?

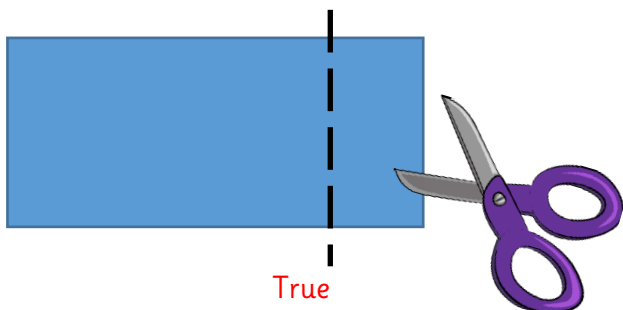If you cut off a piece from a shape, you reduce its area.

True

Investigate how many ways you can make different rectangles with the same area of 28 cm^2.

What strategy did you use?
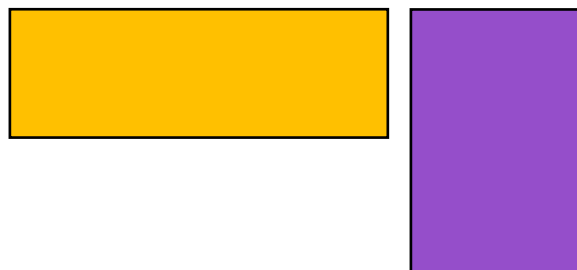
Possible ways are 1 x 28
2 x 14
4 x 7

True or False?

If you cut off a piece from a shape, you reduce its area.

True

Investigate how many ways you can make different rectangles with the same area of 28 cm^2.
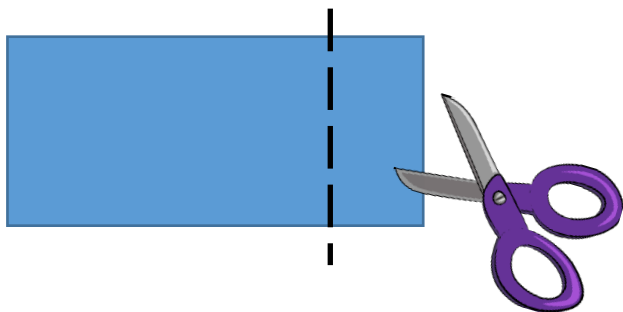
What strategy did you use?

Possible ways are 1 x 28
2 x 14
4 x 7

True or False?

If you cut off a piece from a shape, you reduce its area and perimeter.
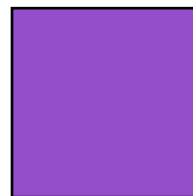Draw 2 examples to prove your thinking.

Investigate how many ways you can make different squares and rectangles with the same area of 64 cm².
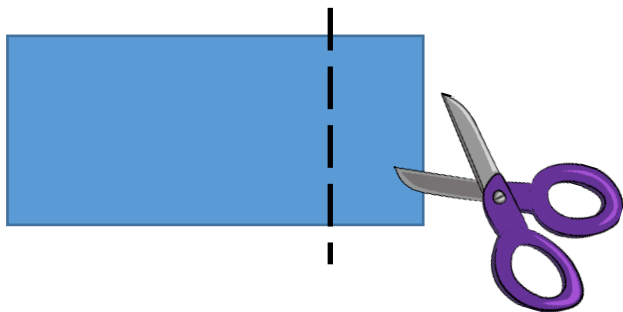
What strategy did you use?

True or False?

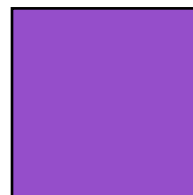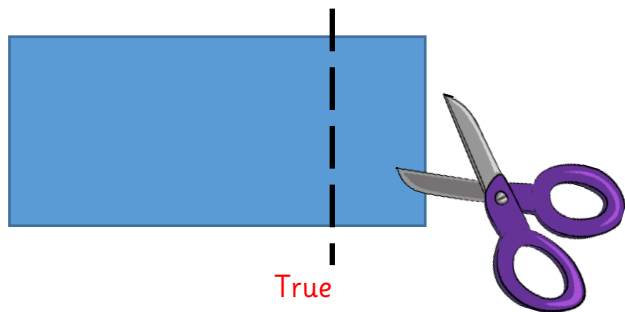If you cut off a piece from a shape, you reduce its area and perimeter.
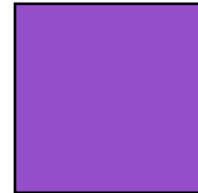Draw 2 examples to prove your thinking.

True

Investigate how many ways you can make different squares and rectangles with the same area of 64 cm².
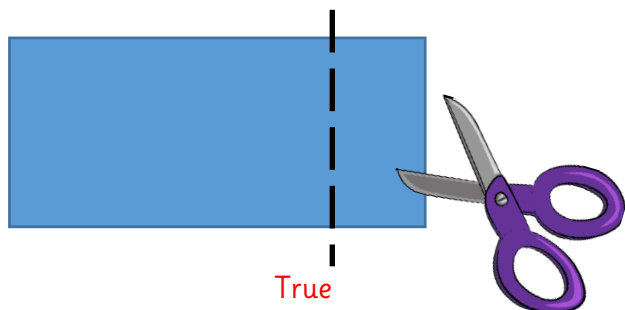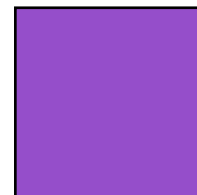
What strategy did you use?

Possible ways are 1 x 64
2 x 32
4 x 16