Assessing pupils' progress in mathematics at Key Stage 3

Year 8 assessment package
Shape, space and measures

Examples of pupils' work

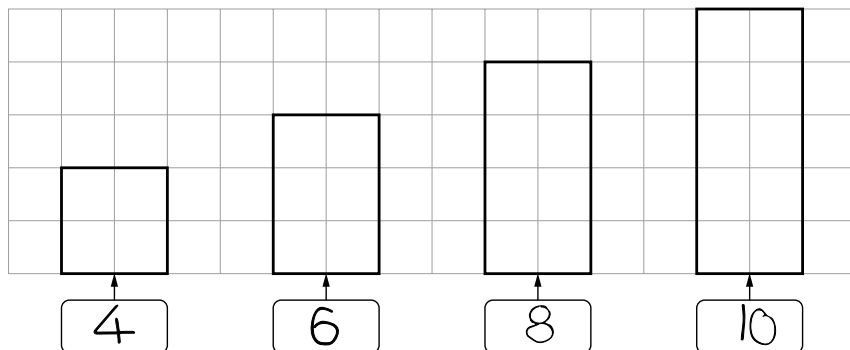# Year 8

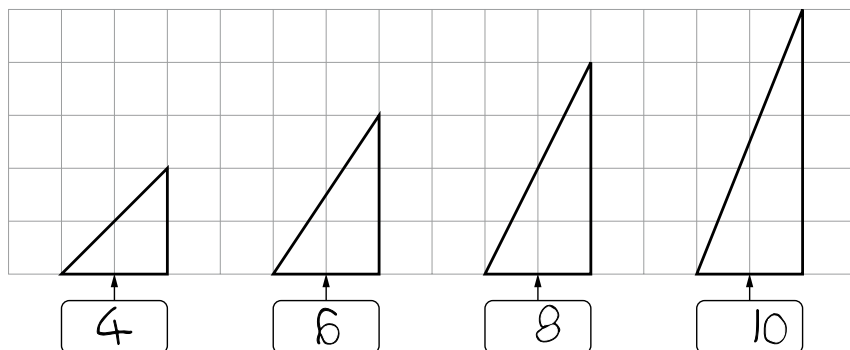# Shape, space and measures

LESSON 1: *How do you know? (area)*
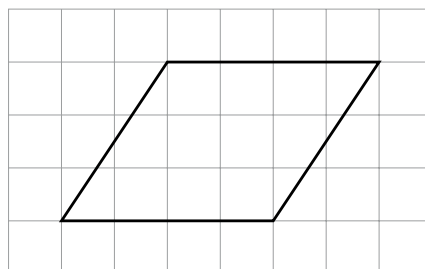
Growing, growing, grown
Level 3

What is the area of each rectangle?

| 4 | 6 | 8 | 10 |

What is the area of each rectangle?

| 4cm² | 6 cm² | 8cm² | 10cm² |

What is the area of each triangle?

| 4 | 6 | 8 | 10 |

What is the area of each triangle?

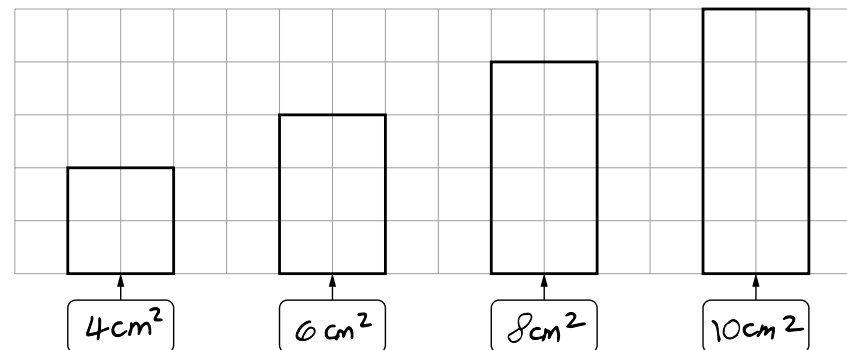
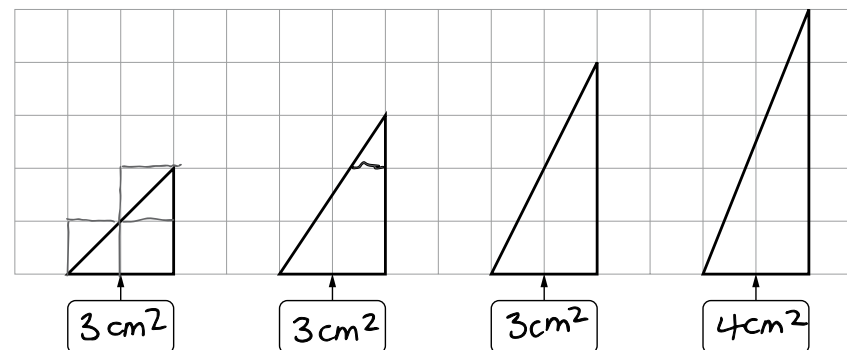| 3 cm² | 3 cm² | 3cm² | 4cm² |

What is the area of this parallelogram? Explain how you know.

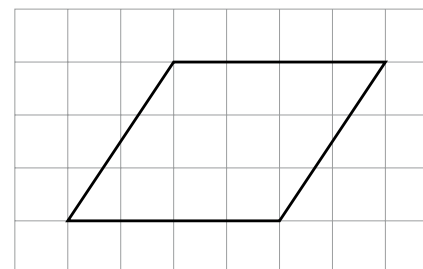The area is .....16..... because If you count the squas n the width and height then times it you get the anser

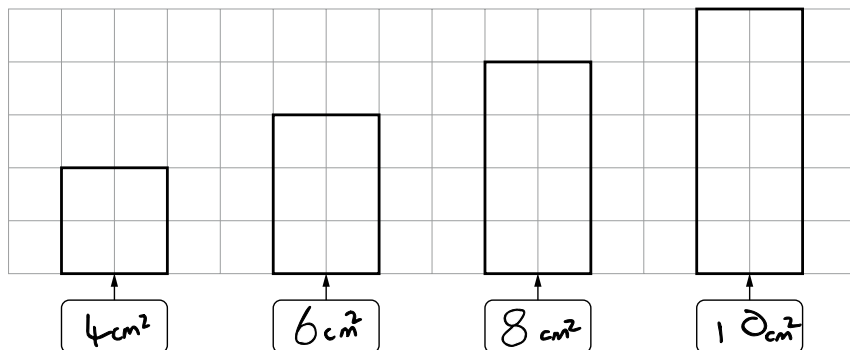What is the area of this parallelogram? Explain how you know.

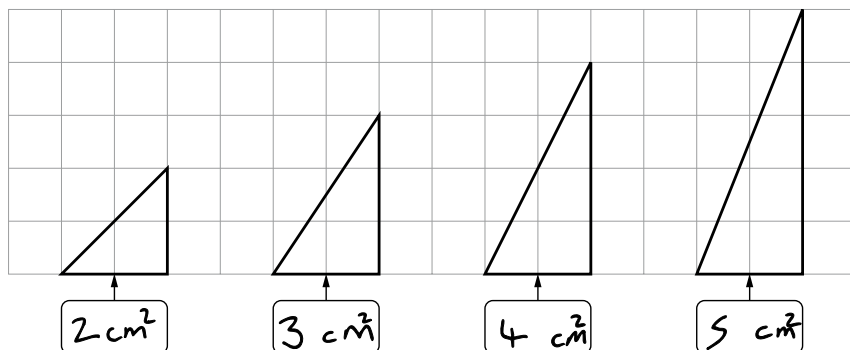The area is ..1.0cm².. because you Just cout all the squsres.
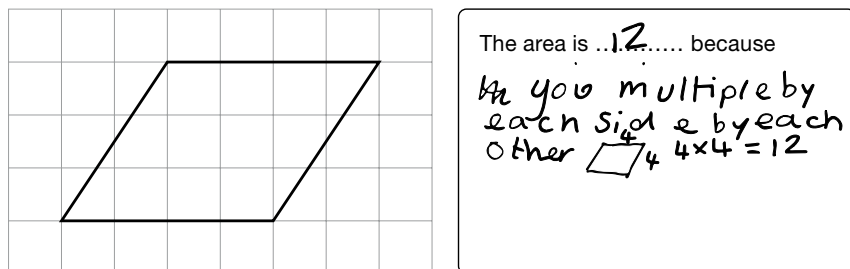
Growing, growing, grown
Level 4

What is the area of each rectangle?

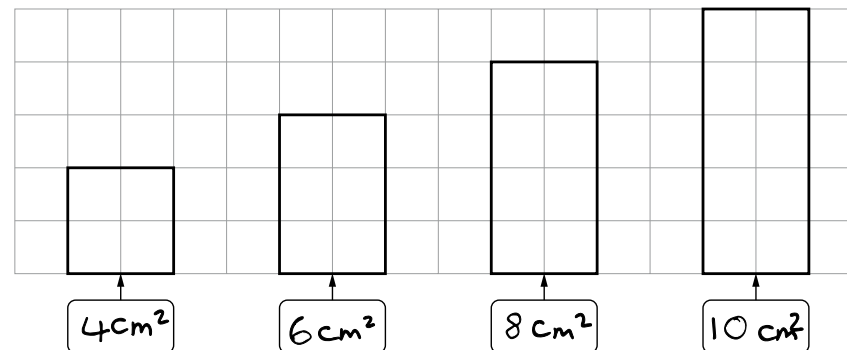What is the area of each rectangle?

4cm²   6cm²   8 cm²   10cm²

4cm²   6cm²   8 cm²   10 cm²

What is the area of each triangle?

What is the area of each triangle?

2 cm²   3 cm²   4 cm²   5 cm²

2cm²   3cm2   4cm²   5cm²

What is the area of this parallelogram? Explain how you know.

The area is ..12..... because you multiple by each side e by each other 4×4 = 12

What is the area of this parallelogram? Explain how you know.

The area is .12cm²...... because I took off that bit, and it fitted there.

4

Growing, growing, grown
Level 4

What is the area of each rectangle?

| $4 cm^2$ | $6 cm^2$ | $8 cm^2$ | $10 cm^2$ |

What is the area of each triangle?

| $2 cm$ | $3 cm^2$ | $4 cm^2$ | $5 cm^2$ |

What is the area of this parallelogram? Explain how you know.

The area is ....$12cm^2$... because Looking at My Dotted lines.
You can see that I have Made a rectangle then, I've Counted up the squares

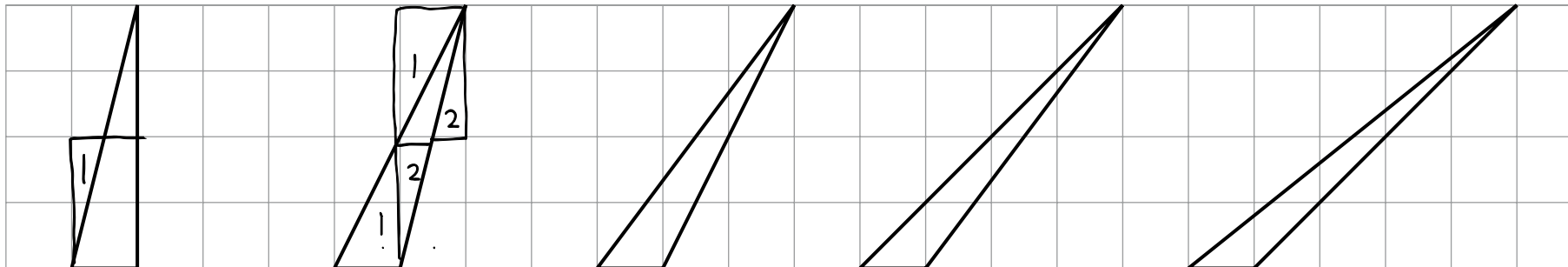## Toppling triangles
Level 4

Show that the area of each triangle is **2cm^2**

Toppling triangles
Level 4

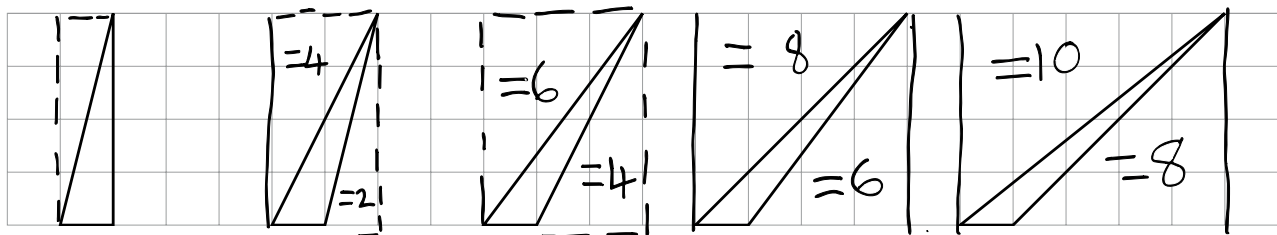Show that the area of each triangle is **2cm^2**
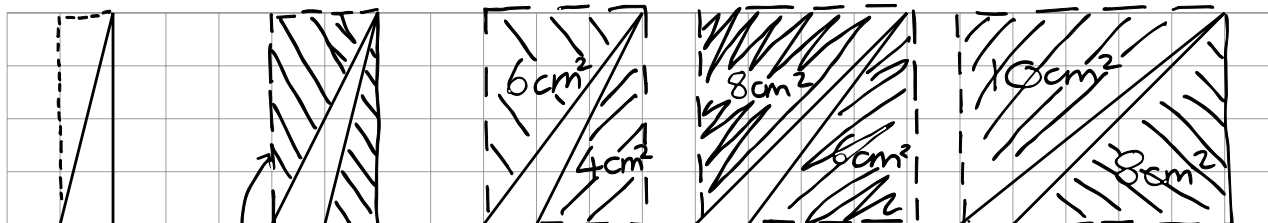

Show that the area of each triangle is **2cm^2**

move Pieces
around.

move Pieces
around.

Move Pieces
around

move Pieces
again.

6
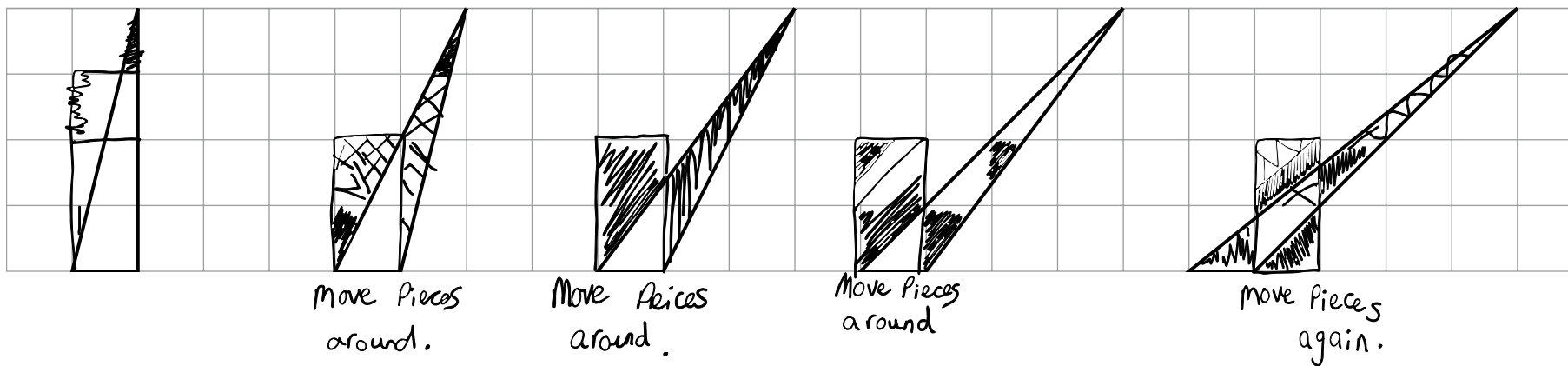
Toppling triangles
Level 5

Show that the area of each triangle is **2cm^2**

$=4$ $=6$ $= 8$ $=10$

$=2$ $=4$ $=6$ $=8$

$4-2$
$=2 cm^2$

$8-4-2$
$=2 cm^2$

$12-6-4$
$=2 cm^2$

$16-8-6$
$=2 cm^2$

$20-10$
$-8=2 cm^2$

Show that the area of each triangle is **2cm^2**

$6cm^2$ $8cm^2$ $10cm^2$

$4cm^2$ $6cm^2$ $8cm^2$

$12-6-4=2cm^2$ $16-8-6=2$ $20-10-8=2 cm^2$

the area
of this
triangle is
half a
rectangle
which would
be $4cm^2$

this is
$\frac{1}{2}$ of a
$8cm^2$
rectangle
this
is half
of a $4cm^2$
rectangle
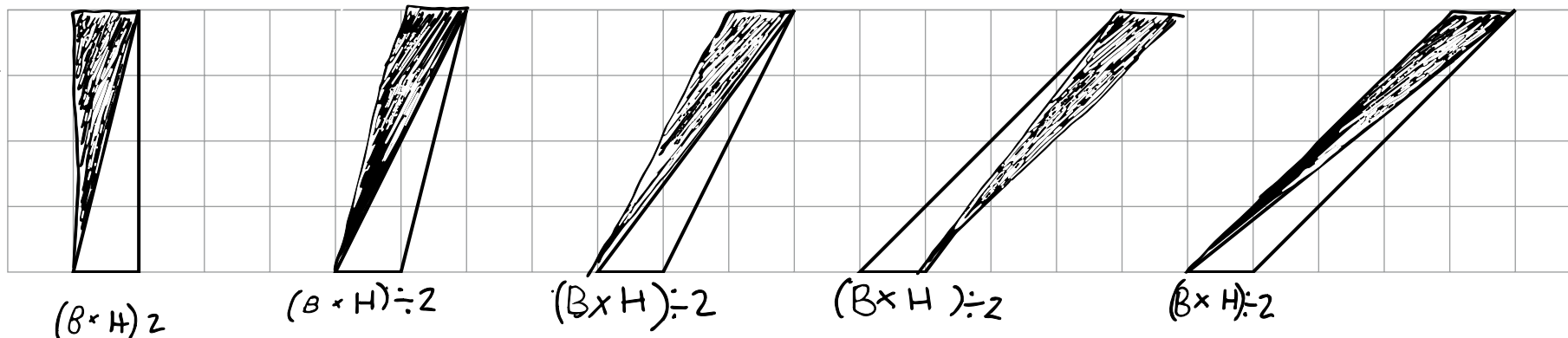so we are
left with
$2cm^2$

$8-4-2=2$

7

Toppling triangles
Level 5

Show that the area of each triangle is **2cm²**

rectangle
$= 4 \div 2 = 2cm^2$

$(B \times H) 2$ $(B \times H) \div 2$ $(B \times H) \div 2$ $(B \times H) \div 2$ $(B \times H) \div 2$

Show that the area of each triangle is **2cm²**

Area of
Triangle $= \frac{1}{2} g$
$4cm^2$ rectangle

Shaded
area $= \frac{1}{2} g$
$8cm^2$ rectangle $= 4cm^2$
triangle $=$
$\frac{1}{2} g$ that $= 2cm^2$

Shaded area $=$
$\frac{1}{2} g$ $12cm^2$ rectangle $= 6cm^2$
Triangle $= \frac{1}{3} g$ $6cm^2$
$= 2cm^2$

shaded area$=$
$\frac{1}{2} g$ $16cm^2$ rectangle $= 8cm^2$
Triangle $= \frac{1}{4} g$ $8cm^2$
$= 2cm^2$

Shaded area $=$
$\frac{1}{2} g$ $20cm^2 = 10cm^2$
Triangle $= \frac{1}{5} g$ $10cm^2$
$= 2cm^2$

Also $\frac{1}{2}$ base $\times$ height $= \frac{1}{2} \times 1 \times 4 = 2cm^2$
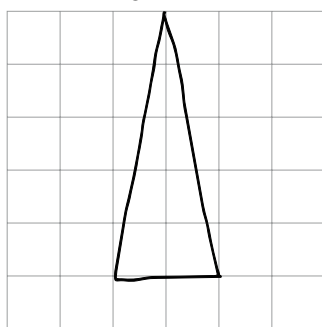for all of them
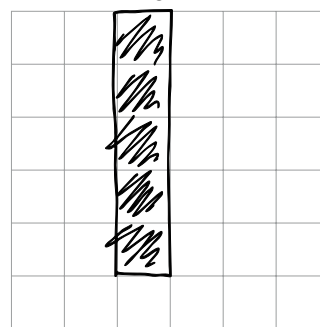
8
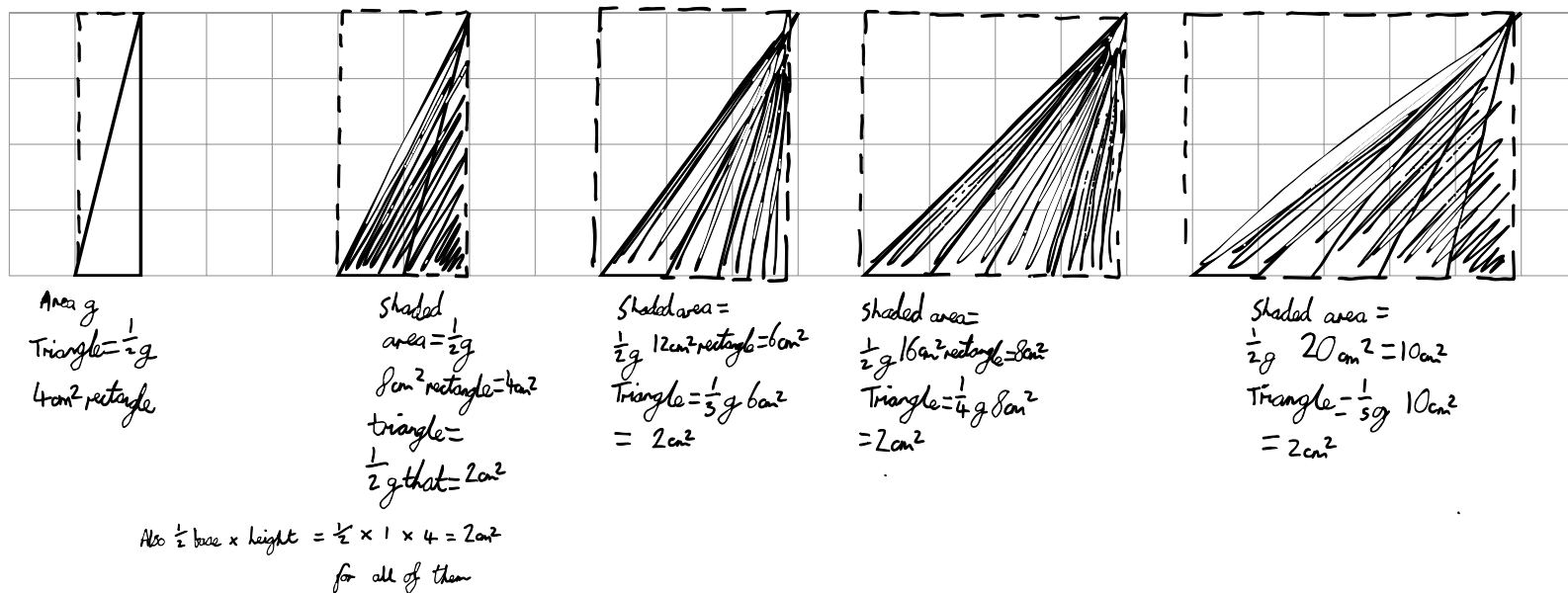
Fiveses
Level 6

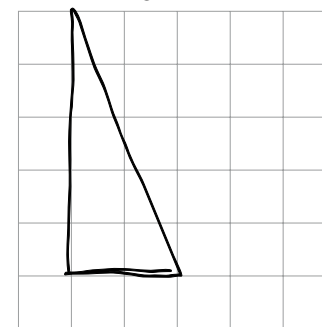Draw a **rectangle** with area 5cm^2
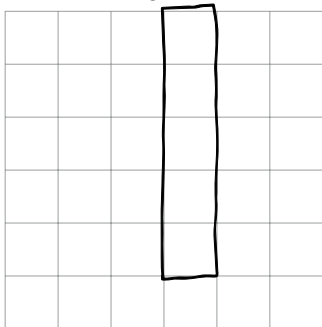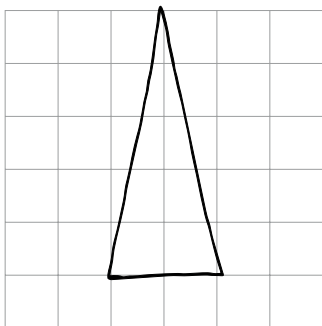
Draw a **triangle** with area 5cm^2

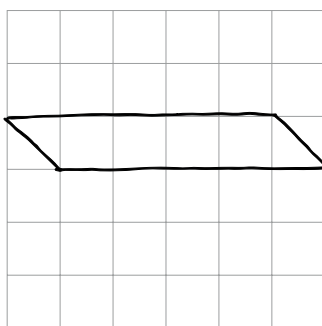Draw a **rectangle** with area 5cm^2

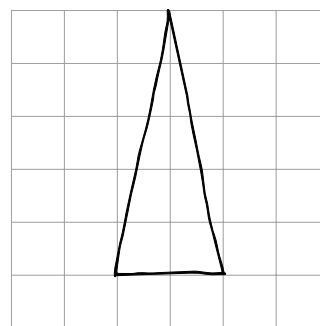Draw a **triangle** with area 5cm^2

Draw a **triangle** with area 5cm^2 and **no right angles**.

Draw a **parallelogram** with area 5cm^2 and **no right angles**.
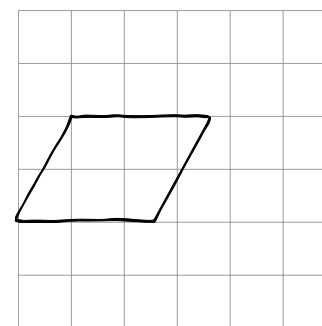
Draw a **triangle** with area 5cm^2 and **no right angles**.
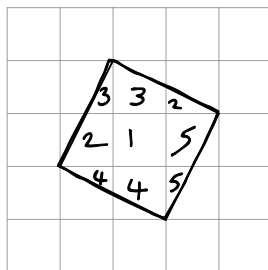
Draw a **parallelogram** with area 5cm^2 and **no right angles**.

Do you agree that this diagram shows a square that has area 5cm^2?
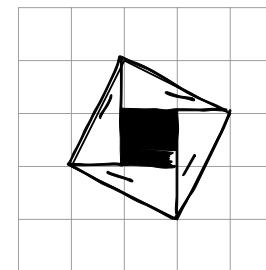
Explain your answer.

Yes

Do you agree that this diagram shows a square that has area 5cm^2?

Explain your answer.

Yes, 1 whole square of 1cm^2 and 8 ½'s
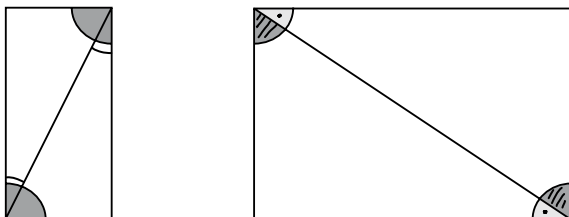
Year 8

Shape, space and measures

LESSON 2: *How do you know? (angles)*

Kites and Kites (continued)
Level 3

In the rectangles below, use different colours to shade **pairs of angles** that are **equal**.

The next worksheet shows the same rectangles joined together.

On that sheet, use different colours to shade **pairs of angles** that are **equal**. Then **cut out** the rectangle to make **four triangles**.

Stick the triangles below to show **how they make a kite**.

Note: at level 3, patterns have been added to angles to distinguish different colours used by pupils.

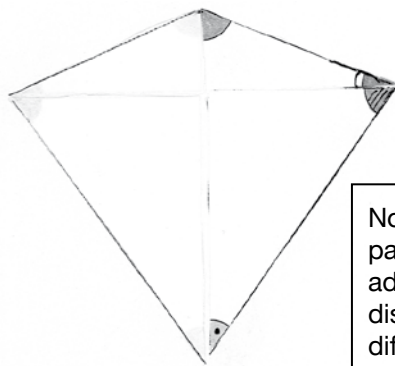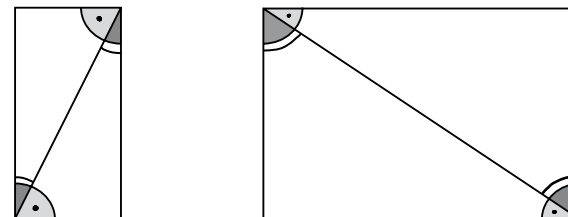What does that tell you about the angles in your kite?

In the rectangles below, use different colours to shade **pairs of angles** that are **equal**.

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On that sheet, use different colours to shade **pairs of angles** that are **equal**. Then **cut out** the rectangle to make **four triangles**.

Stick the triangles below to show **how they make a kite**.

What does that tell you about the angles in your kite?
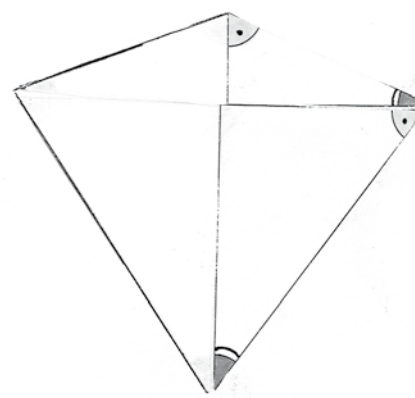
Kites and Kites (continued)
Level 4

In the rectangles below, use different colours to shade **pairs of angles** that are **equal**.

The next worksheet shows the same rectangles joined together.

On that sheet, use different colours to shade **pairs of angles** that are **equal**.
Then **cut out** the rectangle to make **four triangles**.

Stick the triangles below to show **how they make a kite**.

What does that tell you about the angles in your kite?

This tells you that the same angles go together

e.g.

← right angles

In the rectangles below, use different colours to shade **pairs of angles** that are **equal**.

The next worksheet shows the same rectangles joined together.

On that sheet, use different colours to shade **pairs of angles** that are **equal**.
Then **cut out** the rectangle to make **four triangles**.

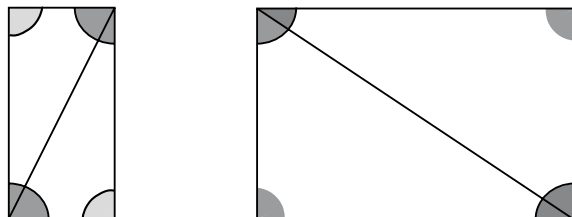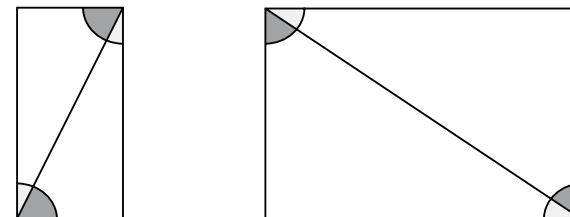Stick the triangles below to show **how they make a kite**.

What does that tell you about the angles in your kite?

They angles have to be opposite sides equal
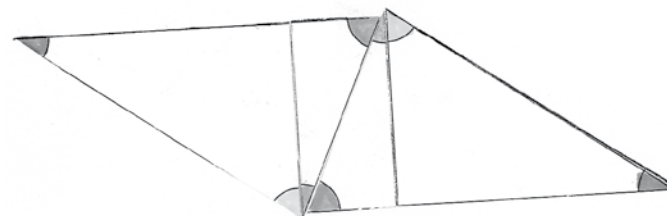
Kites and Kites (continued)
Level 4

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The next worksheet shows the same rectangles joined together.

On that sheet, use different colours to shade **pairs of angles** that are **equal**.
Then **cut out** the rectangle to make **four triangles**.

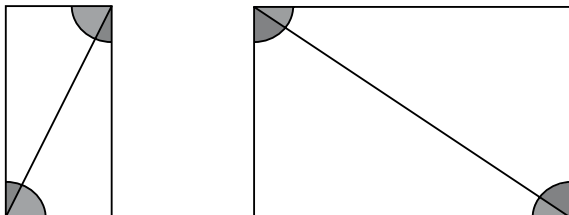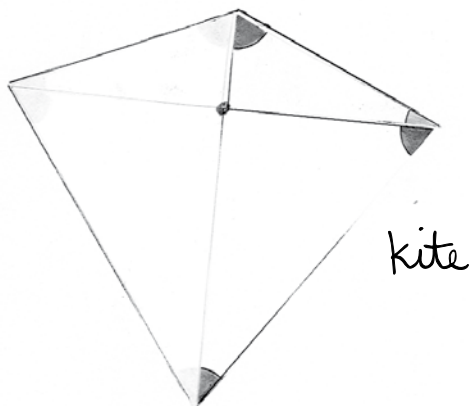Stick the triangles below to show **how they make a kite**.

kite

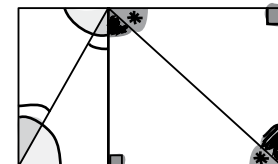What does that tell you about the angles in your kite?

It tells me that the angles on one side is just fliped over to the other side so both sideis in same place are the same.
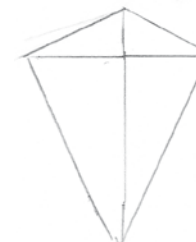
Kites and rhombuses
Level 5

Look at the rectangle.

Use different colours to shade **pairs of angles** that are **equal**.
Use angle facts to explain how you know.

Imagine you have cut out the rectangle to make four triangles.
Draw a diagram to show how to make a **kite** from the four triangles.
You can use tracing paper if you wish.

What does the diagram tell you about the angles in your kite?
Write down one angle fact.

They add up to 360°

On a separate sheet of paper, show how to make a **rhombus** from a rectangle.
What facts can you deduce about the angles in a rhombus?
What does that tell you about the angles in a rhombus?
Write down as many angle facts as you can.

Kites and rhombuses
Level 5

Look at the rectangle.

Use different colours to shade **pairs of angles** that are **equal**.
Use angle facts to explain how you know.

Opposit angles the green +
the blue = 90° the green +
purple + pink = 90° = 180°
c   d

Look at the rectangle.

Use different colours to shade **pairs of angles** that are **equal**.
Use angle facts to explain how you know.

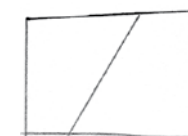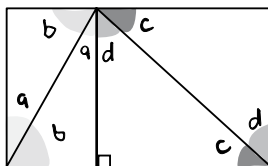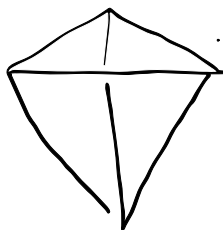there are 2 sets of the same
shape just turned upside

Imagine you have cut out the rectangle to make four triangles.
Draw a diagram to show how to make a **kite** from the four triangles.
You can use tracing paper if you wish.

Imagine you have cut out the rectangle to make four triangles.
Draw a diagram to show how to make a **kite** from the four triangles.
You can use tracing paper if you wish.

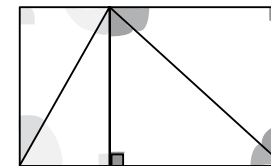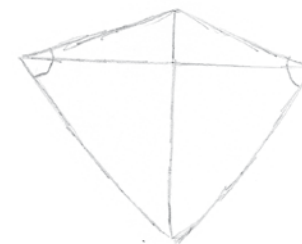What does the diagram tell you about the angles in your kite?
Write down one angle fact.

two are the same

What does the diagram tell you about the angles in your kite?
Write down one angle fact.

Opposite angles are equal,
the kite only has 1 pair of equal angles

On a separate sheet of paper, show how to make a **rhombus** from a rectangle.
What facts can you deduce about the angles in a rhombus?
What does that tell you about the angles in a rhombus?
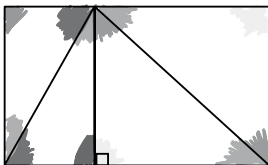Write down as many angle facts as you can.

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What does that tell you about the angles in a rhombus?
Write down as many angle facts as you can.
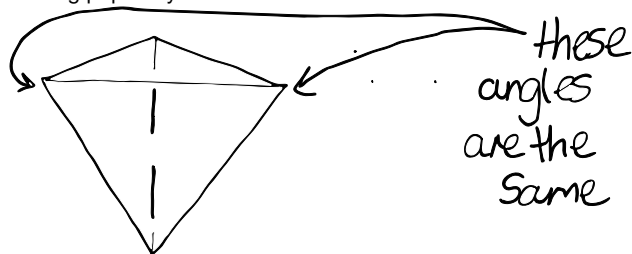
Kites and rhombuses
Level 5

Look at the rectangle.

Use different colours to shade **pairs of angles** that are **equal**.
Use angle facts to explain how you know.

Because there are 2 different types of triangle that are just turned around

Imagine you have cut out the rectangle to make four triangles.
Draw a diagram to show how to make a **kite** from the four triangles.
You can use tracing paper if you wish.

these angles are the same

What does the diagram tell you about the angles in your kite?
Write down one angle fact.

*there are no right angles
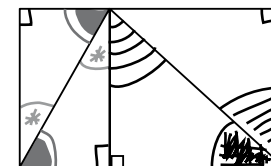All the angles add up to 360°*

On a separate sheet of paper, show how to make a **rhombus** from a rectangle.
What facts can you deduce about the angles in a rhombus?
What does that tell you about the angles in a rhombus?
Write down as many angle facts as you can.

Kites and rhombuses
Level 6

Look at the rectangle.

Use different colours to shade **pairs of angles** that are **equal**.
Use angle facts to explain how you know.

You use Z angles because a rectangle has parallel sides

Imagine you have cut out the rectangle to make four triangles.
Draw a diagram to show how to make a **kite** from the four triangles.
You can use tracing paper if you wish.
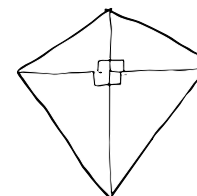
What does the diagram tell you about the angles in your kite?
Write down one angle fact.

*The top one is obtuse and the bottom one is acute.
The left and right ones are equal.
They all add up to 180x2 = 360°.*

On a separate sheet of paper, show how to make a **rhombus** from a rectangle.
What facts can you deduce about the angles in a rhombus?
What does that tell you about the angles in a rhombus?
Write down as many angle facts as you can.
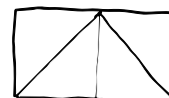
The sloping lines have to be equal.

All the angles are equal in a rhombus.