



Solving geometrical problems

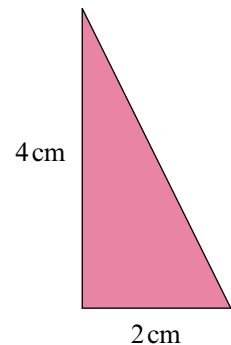
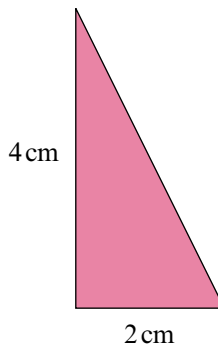
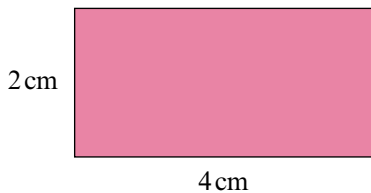
- Applying your knowledge to solve problems

Keywords

You should know

explanation 1

- 1** A rectangle and two right-angled triangles are shown below.

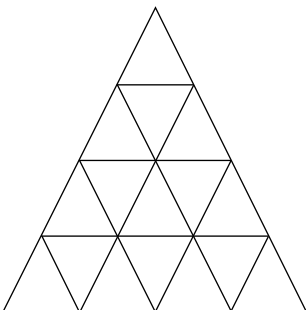


- a** Copy the diagrams onto centimetre square paper and cut them out.
b You can translate, rotate or reflect any of the shapes and combine them to build new shapes.

Draw a diagram to show how to use all three shapes to build:

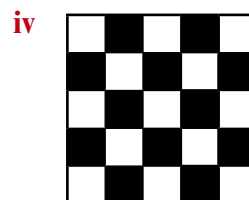
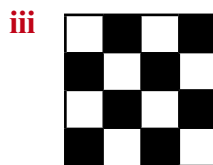
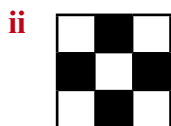
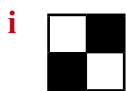
- | | |
|-------------------------------------|--|
| i a square | ii two different parallelograms |
| iii two different trapeziums | iv a pentagon |

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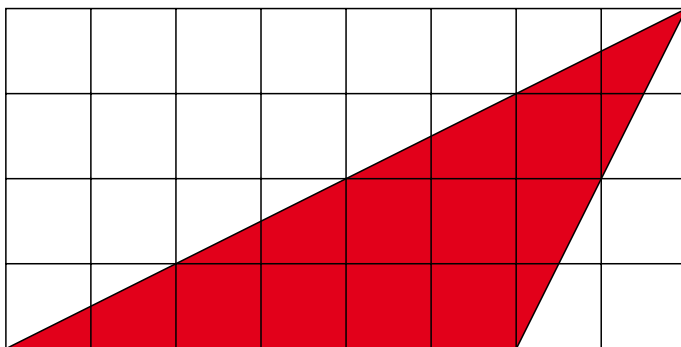
Explain why there are 27 triangles in this diagram.
Remember that there are triangles of different sizes.

- 3 a** Find the number of black squares, the number of white squares and the total number of squares on each of these grids.



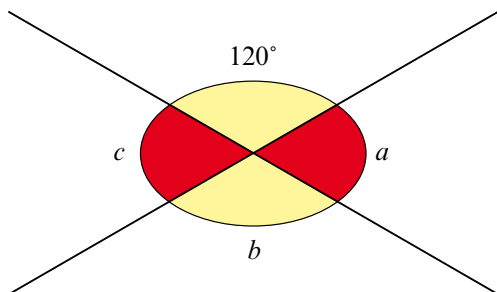
- b** What do you notice about the number of black squares compared to the number of white squares on the different grids? Explain your answer fully.
- c** Use your answer to part **b** to work out these questions without drawing the grids.
- i** How many squares would there be on a 8 by 8 grid?
How many squares would be black and how many would be white?
 - ii** How many squares would there be on a 11 by 11 grid?
How many squares would be black and how many would be white?
- d** What size square has 145 white squares?

- 4 a** Find the area of this triangle.



- b** Can you find a method to work out the area of the shape from its base and height?

- 5** The diagram shows two straight lines meeting at an angle of 120° .



Angle b and the 120° are vertically opposite.

Angle a and angle c are vertically opposite.

Use the fact about angles on a straight line to find the size of angles a , b and c .

Explain your method.

What is true about vertically opposite angles?

- 6 a** If angle a is 40° explain how to use this triangle to work out that angle b is 70° .
b If angle b is 70° , why must angle c be 110° ?
c If angle c was 100° , what would be the size of angle a ? Explain your answer.

