

# Discussion Problems

## Step 3: Area of a Triangle 1

### National Curriculum Objectives:

Mathematics Year 6: (6M7b) [Calculate the area of parallelograms and triangles](#)

### About this resource:

This resource has been designed for pupils who understand the concepts within [this step](#). It provides pupils with more opportunities to enhance their reasoning and problem solving skills through more challenging problems. Pupils can work in pairs or small groups to discuss with each other about how best to tackle the problem, as there is often more than one answer or more than one way to work through the problem.

There may be various answers for each problem. Where this is the case, we have provided one example answer to guide discussion.

We recommend self or peer marking using the answer page provided to promote discussion and self-correction.

More [Year 6 Perimeter, Area and Volume](#) resources.

Did you like this resource? Don't forget to [review](#) it on our website.

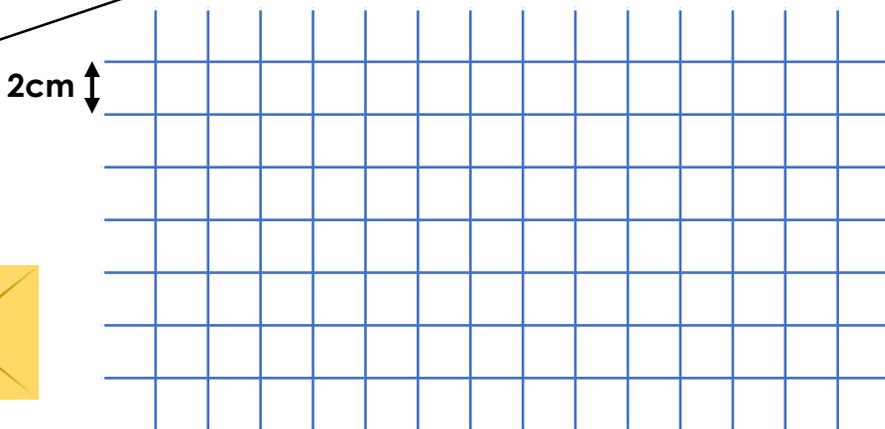
# Area of a Triangle 1

1. Daria has drawn a triangle on squared paper and concealed it in an envelope. She gives the following three clues to her friends to see if they can draw a matching triangle.

First clue: It has an estimated area between  $30\text{cm}^2$  and  $50\text{cm}^2$ .

Second clue: One of the side lengths is between  $2\text{cm}$  and  $10\text{cm}$ .

Third and final clue: Each square has an area of  $2\text{cm}^2$ .



Draw triangles that could be a possible match.

DP

2. Dylan has written the length and width of some right-angled triangles. In the first table, there is  $1\text{cm}$  difference between the length and width; the second table has a difference of  $2\text{cm}$ ; the third table has a difference of  $3\text{cm}$ .

Table 1

Length	Width	Area
3cm	2cm	
4cm	3cm	
5cm	4cm	
6cm	5cm	
7cm	6cm	

Table 2

Length	Width	Area
4cm	2cm	
6cm	4cm	
8cm	6cm	
10cm	8cm	
12cm	10cm	

Table 3

Length	Width	Area
5cm	2cm	
8cm	5cm	
11cm	8cm	
14cm	11cm	
17cm	14cm	

Draw these triangles onto squared paper and count the squares to find the areas. Do you notice a pattern in the areas? Can you predict the area of the next three triangles in each sequence?

DP

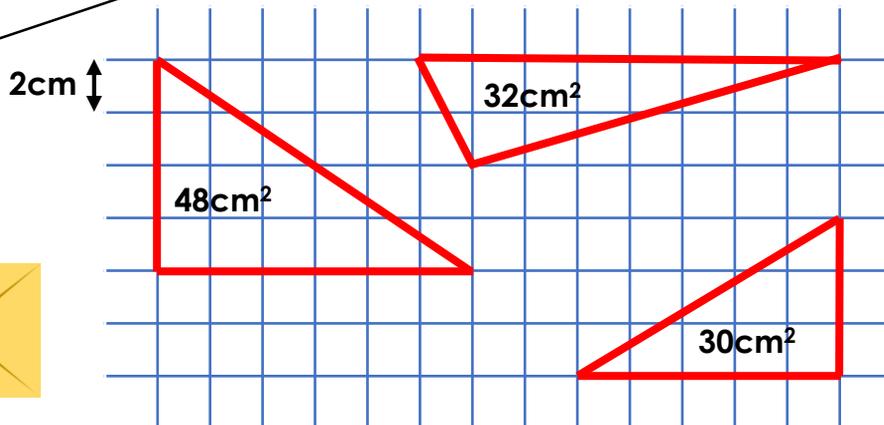
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Third and final clue: Each square has an area of  $2\text{cm}^2$ .



Draw triangles that could be a possible match.

DP

2. Dylan has written the length and width of some right-angled triangles. In the first table, there is 1cm difference between the length and width; the second table has a difference of 2cm; the third table has a difference of 3cm.

Table 1

Length	Width	Area
3cm	2cm	$3\text{cm}^2$
4cm	3cm	$6\text{cm}^2$
5cm	4cm	$10\text{cm}^2$
6cm	5cm	$15\text{cm}^2$
7cm	6cm	$21\text{cm}^2$

Table 2

Length	Width	Area
4cm	2cm	$4\text{cm}^2$
6cm	4cm	$12\text{cm}^2$
8cm	6cm	$24\text{cm}^2$
10cm	8cm	$40\text{cm}^2$
12cm	10cm	$60\text{cm}^2$

Table 3

Length	Width	Area
5cm	2cm	$5\text{cm}^2$
8cm	5cm	$20\text{cm}^2$
11cm	8cm	$44\text{cm}^2$
14cm	11cm	$77\text{cm}^2$
17cm	14cm	$119\text{cm}^2$

Draw these triangles onto squared paper and count the squares to find the areas. Do you notice a pattern in the areas? Can you predict the area of the next three triangles in each sequence?

**Table 1:** The area increases by 3, 4, 5 then  $6\text{cm}^2$ . Next 3:  $28\text{cm}^2$ ,  $36\text{cm}^2$ ,  $45\text{cm}^2$ .

**Table 2:** The area increases by 8, 12, 16 and  $20\text{cm}^2$ . Next 3:  $84\text{cm}^2$ ,  $112\text{cm}^2$ ,  $144\text{cm}^2$ .

**Table 3:** The area increases by 15, 24, 33 and  $42\text{cm}^2$ . Next 3:  $170\text{cm}^2$ ,  $230\text{cm}^2$ ,  $299\text{cm}^2$ .

DP