

Discussion Problems

Step 5: Area of a Triangle 3

National Curriculum Objectives:

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

Mathematics Year 6: (6M7c) [Recognise when it is possible to use formulae for the area of shapes](#)

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.

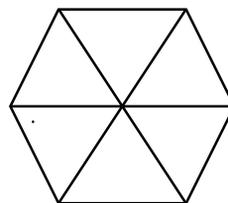
Area of a Triangle 3

1. Clunky the clown is trying to work out the amount of fabric needed in order to replace the top of a tent that was destroyed by Storm Menace.

He says,



The top of the tent was a composite shape made up of 6 triangles with the same area; each triangle had a base between 2m and 8m, and a height between 5m and 12m. I've bought 180m² of fabric but am not sure if I have enough...



not to scale



Explore whether Clunky the clown has enough fabric. Draw a diagram to help explain your reasoning.

DP

2. Vladimir the Vampire wants to design a new contemporary sculpture for his castle using the triangles below.

He says,



I want my new sculpture to be a composite shape, made up of at least 6 triangles. The total area of the sculpture must be at least 120cm², but not exceed 200cm².

Triangle	Base	Height
1	12cm	6cm
2	60mm	4cm
3	9cm	70mm
4	9cm	5cm
5	50mm	90mm
6	120mm	2cm
7	40mm	8cm
8	7cm	70mm

Investigate the different designs that could be created using the triangles above. You can use each triangle no more than twice.

DP

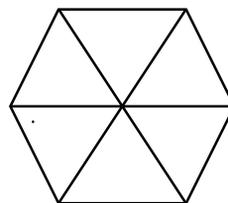
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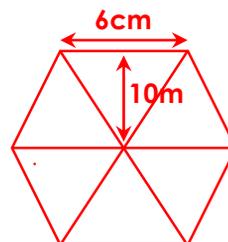
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Explore whether Clunky the clown has enough fabric. Draw a diagram to help explain your reasoning.

Various answers, for example:

Yes because if each triangle had the a base of 6m and a height of 10m (as shown), then the total area would be exactly 180m²; this can be proven using the following calculation: $6 \times 10 = 60 \times 6 = 180$. However, if the triangles were any larger, then he would not have enough.



not to scale

DP

2. Vladimir the Vampire wants to design a new contemporary sculpture for his castle using the triangles below.

He says,



I want my new sculpture to be a composite shape, made up of at least 6 triangles. The total area of the sculpture must be at least 120cm², but not exceed 200cm².

Triangle	Base	Height
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Various answers, for example:

1x Triangle 1 (36cm²), 2x Triangle 3 (63cm²), 1x Triangle 4 (22.5cm²), 1x Triangle 7 (16cm²), 2x Triangle 8 (49cm²) = 186.5cm².

DP