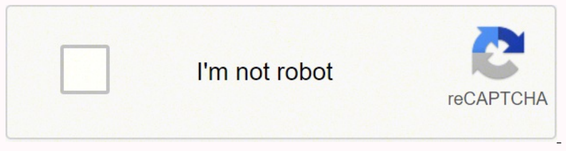

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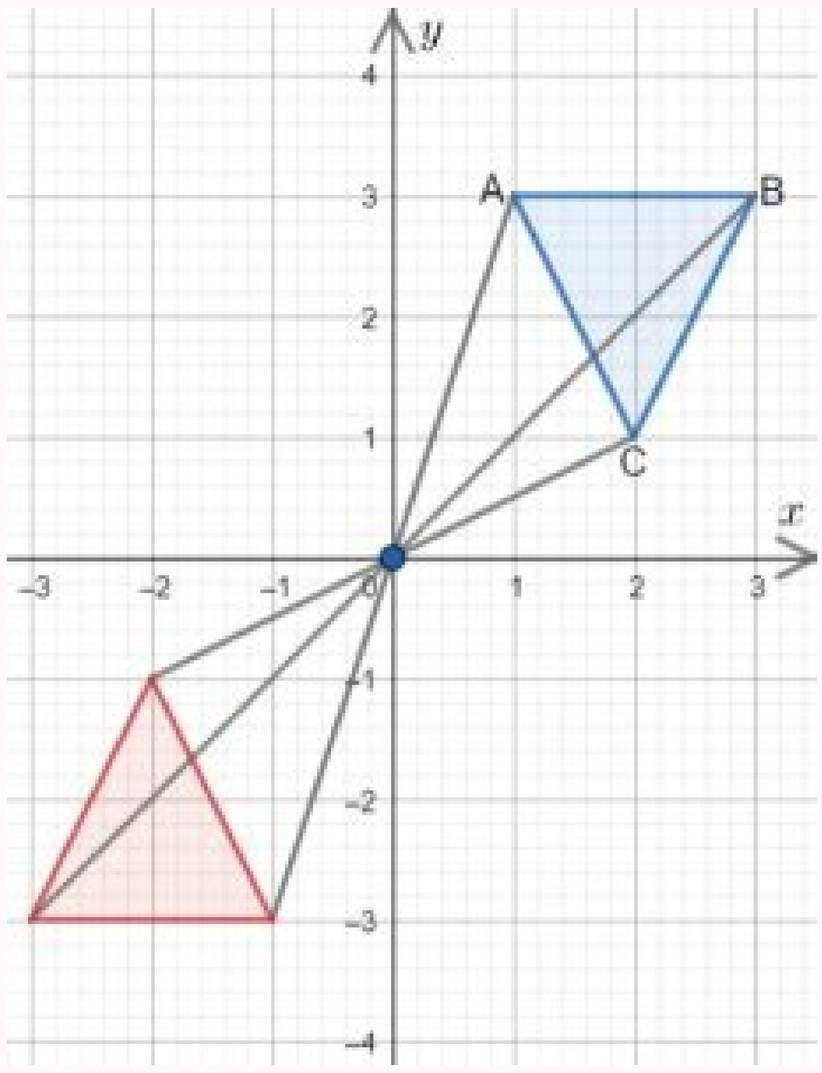
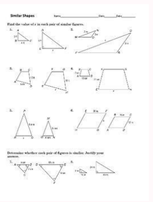
Similar shapes exam questions answers





Part 1

1) The length scale factor for two shapes is 2.
What are the area and volume scale factors?

LSF = n = 2
ASF = n^2 = 2^2 = 4
VSF = n^3 = 2^3 = 8

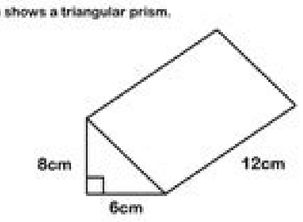
2) The area scale factor for two shape is 9.
What are the length and volume scale factors?

ASF = 9 = n^2
$\sqrt{}$ | = | $\sqrt{}$
3 = n

LSF = n = 3
ASF = n^2 = 9
VSF = n^3 = 3^3 = 27

PRACTICE IGCSE EXAM QUESTION: LENGTH, AREA AND VOLUME — GCSE HIGHER TIER 2

1. The diagram shows a triangular prism.



a. Work out the total surface area of the prism.

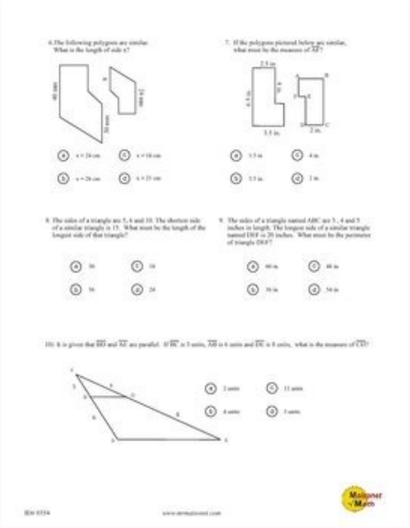
b. Work out the volume of the prism.

2. A semi-circular protractor has a diameter of 10cm. Calculate its perimeter. Give your answer in terms of π.

3. A solid cylinder has a radius of 6cm and a height of 20cm.

a. Calculate the volume of the cylinder. Give your answer correct to 3 significant figures.

b. The cylinder is made of a material that has a density of 1.5g/cm³. Calculate the mass of the cylinder. Give your answer correct to 3 significant figures.



Corbettmaths exam style questions similar shapes sides answers. Similar shapes area and volume exam questions answers. Corbettmaths exam style questions similar shapes area and volume answers.

Level 6-7 GCSE Shapes A and B are mathematically similar. Doing so, we get, SF=6\div3=2 b) Now we have the scale factor, we can apply it to the corresponding length to BE which is BC. You can use the following table to find the corresponding measure of a mathematically similar shape. (Surface area and volume can also be used, these are HIGHER ONLY) Example: A and B are mathematically similar shapes. [3 marks] Firstly, we will determine the scale factor that relates the side-lengths, dividing the larger by the smaller SF=22\div11=\textcolor{red}{2}. To do this we need to find two corresponding dimensions. So, we get x=2.5\times3=7.5\text{ cm} b) To find the scale factor for the areas, SF_A, we must square the known scale factor: SF_A=2.5^2=6.25 Now, to get the area of the bigger shape, we must multiply the area of the smaller one by this scale factor. Hence, we find that, \text{AC} =51\div3=17 \text{cm} a) To work out the scale factor, SF, we need to divide the given side-length on the bigger shape by the corresponding side of the smaller shape. The volume of shape A = 600\text{ cm}^3 Work out the volume of shape B. Now, if the scale factor for the side-lengths is \textcolor{red}{4}, then that means the scale factor for the volumes is: SF_V=\textcolor{red}{2}^3=\textcolor{blue}{8} We know the volume of shape A and the Volume scale factor = \textcolor{blue}{8}. Now, if the scale factor for the side-lengths is \textcolor{red}{4}, then that means that the scale factor for the areas is: SF_A=\textcolor{red}{4}^2=\textcolor{blue}{16} Therefore, to find the area of the smaller shape, we need to divide the area of the bigger shape by the area scale factor: 16. So we get \text{SA of larger sphere : SA of smaller sphere} = 9 : 1 To work out the scale factor, SF, we need to divide the given side-length on the bigger shape by the corresponding side of the smaller shape. GCSE 6 - 7GCSE 4 - 5KS3AQAEdexcelOCRWJEC Level 4-5 GCSE The first step for any similar shape question will often be to find the scale factor. [2 marks] Firstly, we must calculate the scale factor. For the example below we will use lengths. To calculate the scale factor we divide the larger by the smaller: 5 \div 2 = 2.5 Scale factor = 2.5 Note: Once the scale factor has been found it can be used to find missing lengths. So we need to multiply the volume of A by SF_V, Volume of B = 600 \times \textcolor{blue}{8} = 4800\text{ cm}^3 Level 6-7 GCSE a) To work out the scale factor, SF, we need to divide the given side-length on the bigger shape by the corresponding side of the smaller shape. [3 marks] Firstly, we will determine the scale factor that relates the side-lengths, dividing the larger by the smaller SF=28\div=\textcolor{red}{4}. However, in this case we are not given two corresponding sides. To do this we divide the base of shape B by the equivalent side length on shape A \textcolor{blue}{\text{Scale factor }}=15\div5=\textcolor{blue}{3} Now we have that the scale factor is \textcolor{blue}{3}, all we need to do to find x is multiply \textcolor{blue}{3} by the length of the corresponding side on the smaller shape. Find the scale factor from A to B. So we get x=\textcolor{blue}{3}\times3=9 x=9cm Level 4-5 GCSE A and B are mathematically similar shapes. Work out the area of shape A. Doing so, we get \text{Area of Q}=6\times6.25=37.5\text{ cm}^2 a) To work out the scale factor, SF, we need to divide the given side-length on the bigger shape by the corresponding side of the smaller shape. Hence, we find that, \text{AC} =4.4\times2=8.8 \text{cm} If the scale factor is 3 then the surface area is, 3^2=9 9 times bigger as shown by the calculation above. See the examples below. Doing so, we get SF=5\div2=2.5 Then, to find x, we must multiply this value by the corresponding side-length of the smaller shape. You multiply when finding the measure of a larger shape and divide for a smaller shape. Doing so, we get \text{Area of A }=320\div\textcolor{blue}{16}=20 \text{ cm}^2 Level 6-7 GCSE A and B are mathematically similar shapes. First we need to find two corresponding lengths. Instead we can set an unknown length BE, as x and form the equation, \dfrac{x}{5}=\dfrac{25}{x} Rearranging to find, x^2=125 x= \sqrt{125} Now we have two corresponding sides that we can use to find the scale factor, SF=\dfrac{25}{\sqrt{125}} Related Topics Worksheet and Example Questions Drill Questions Score: 0% Rank: Correct Answer: Start Quiz >> Doing so, we get SF=42\div14=3 b) Now we have the scale factor, we can apply it to the corresponding length to AC which is DF. Find the missing side-length marked x. We can see that the base of A=2 cm and B=5 cm. Level 4-5 GCSE Level 6-7 GCSE (HIGHER ONLY) We can extend the idea of similarity further to include areas and volumes.

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