Test - Similarity and enlargement

Year: Year 9 · Duration: 45 minutes · /20

Name:	Date:	**Mark: /20**

Question	1	2	3	4	5	Total
marks	4	4	4	4	4	**20**
Mark						

Show your working.

Question 1 (4 marks)

Question 1 – Scale factors

Rectangle P is 6 cm by 4 cm. Rectangle Q is an enlargement of P.

a. Q is made with scale factor 2.5. Find the sides of Q. (2 marks)
b. Another rectangle R has a long side of 4.5 cm. Find the scale factor from P to R. (1 mark)
c. Find the short side of R. (1 mark)

Question 2 (4 marks)

Question 2 – Similar triangles

Triangle ABC has $AB = 6$ cm, $BC = 8$ cm and $AC = 7$ cm. Triangle DEF is similar to ABC with $DE = 9$ cm, D matching A and E matching B.

a. Find the scale factor. (1 mark)
b. Find EF and DF. (2 marks)
c. A triangle has sides 12 cm, 16 cm and 14 cm. Is it similar to ABC? Explain. (1 mark)

Question 3 (4 marks)

Question 3 – Enlargement on a grid

Triangle T has vertices $(1, 1)$, $(3, 1)$ and $(1, 2)$.

a. Enlarge T with scale factor 3 and centre $(0, 0)$. Write down the coordinates of the new vertices. (2 marks)
b. Describe fully the transformation that maps the new triangle back onto T. (2 marks)

Question 4 (4 marks)

Question 4 – Problem: the tree

A 1.2 m stick casts a shadow 1.8 m long. At the same time a tree casts a shadow of 13.5 m.

a. Find the height of the tree. (2 marks)
b. Later the stick's shadow is 3 m long. Find the length of the tree's shadow at that time. (2 marks)

Question 5 (4 marks)

Question 5 – Problem: the model building

A model of a building is made to scale 1 : 50.

a. The real building is 30 m tall. Find the height of the model in centimetres. (1 mark)
b. The model is 14 cm wide. Find the width of the real building in metres. (1 mark)
c. The floor area of the model is 120 cm^2. Find the real floor area in square metres. (2 marks)