N5 Maths: Similar Shapes

You may use a calculator. We recommend sketching a quick diagram for each question.

Section A: Linear Scale Factors

Q1 Two mathematically similar triangles have bases of length 5 cm and 10 cm, respectively. The vertical height of the smaller triangle is 3 cm. Find the vertical height of the larger triangle.

Q2 Two similar rectangles have lengths 8 cm and 20 cm, respectively. The breadth of the larger rectangle is 15 cm. Find the breadth of the smaller rectangle.

Q3 Rectangle A has length 16 cm and breadth 10 cm. Rectangle B has length 12 cm and breadth 7.5 cm. Are the two rectangles mathematically similar? Justify your answer.

Q4 Triangle A has base 8 cm and vertical height 6 cm. Triangle B has base 12 cm and vertical height 10 cm. Are the two triangles mathematically similar? Justify your answer.

Section B: Area Scale Factors

Q5 Shapes A and B are mathematically similar. The (linear) scale factor of the enlargement from A to B is 3. The area of shape A is 8 cm^2. Calculate the area of shape B.

Q6 Two flags are mathematically similar. The larger flag has diagonal 1.5 metres and the smaller flag has diagonal 1.2 metres. The area of the larger flag is 2.5 m^2. Find the area of the smaller flag.

Q7 Two wall plaques are mathematically similar. Their areas are 400 cm^2 and 1024 cm^2, respectively. Calculate the linear scale factor of the enlargement.

Q8 Two rectangles have lengths 30 cm and 40 cm. Their respective areas are 450 cm^2 and 750 cm^2. Are they mathematically similar? Justify your answer.

Section C: Volume Scale Factors

Q9 An ornament is manufactured in two mathematically similar sizes. The smaller is 10 cm high. The larger is 15 cm high. The volume of the smaller ornament is 1800 cm^3. Calculate the volume of the larger ornament.

Q10 Two containers are mathematically similar. The larger container has height 36 cm and volume 54 litres. The smaller container has height 24 cm. Calculate the volume of the smaller container.

Q11 Two bottles are mathematically similar. The smaller bottle has a base area of 8 cm^2 and holds 150 ml. The larger bottle has a base area of 32 cm^2. Calculate how much it holds.

Q12 Solid A has height 1.4 m and volume 3.6 m^3. Solid B has height 2.1 m and volume 12.15 m^3. Are the two solids mathematically similar? Justify your answer.

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