ENLARGEMENT

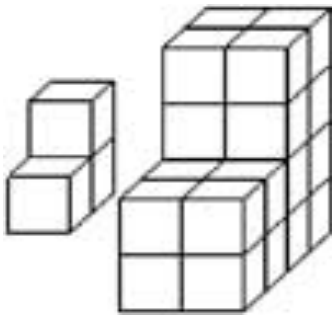
Make enlargements of the coloured shapes by fitting together four identical smaller shapes. Cut out the pieces to make the 3 puzzles.

How much longer are the edges (the linear scale factor of the enlargement)?

How much bigger is the area (the area scale factor of the enlargement)?

Call the small shapes Y_0, R_0, and B_0 and call the enlargements Y_1, R_1, and B_1.

Can you enlarge the shapes again by putting four of the Y_1, R_1, and B_1 pieces together to make Y_2, R_2, and B_2? What are the scale factors of the enlargements from Y_0, R_0, and B_0 to Y_2, R_2, and B_2?



Look at the illustration of the 3-dimensional (3D) solids. You could call these 3D versions of the yellow reptile above. The coloured shapes are called reptiles because the enlargements can be repeated again and again to tile a flat surface.

One of the 3D models shown in the diagram is an enlargement of the other. Make these models. if you have some cubes.

What is the linear scale factor of the enlargement?

How much bigger is the surface area (the area scale factor)?

How much bigger is the volume (the volume scale factor)?

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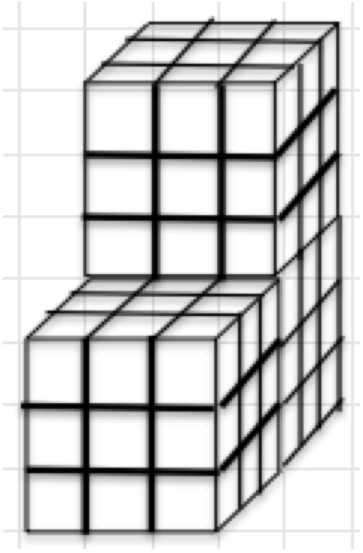
How much bigger is the volume (the volume scale factor)?



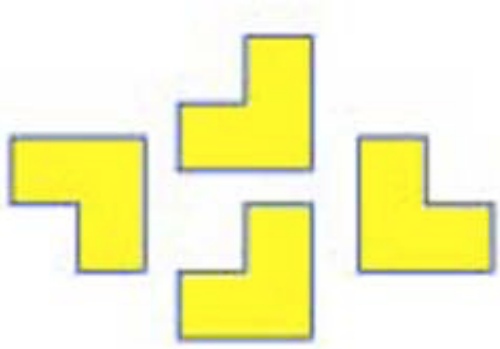
This diagram shows an enlargement of the 3D model with linear scale factor 3.

What are the area and volume scale factors?

HELP

Either draw 4 pieces of each shape on squared paper or print the shapes on page 3. Cut out the pieces to make the 3 puzzles.

NEXT



These 'trisquares' are made up of three squares and each has an area of 3 square units.

Can you fit them together to make an enlargement of the shape? What is its area?

Can you fit trisquares together to make enlargements of scale factors 3, 4 and 5? What are their areas?

Is it possible to make enlargements of all sizes by fitting trisquares together?

Squared paper would be useful for working on this challenge.

See the activity TRISQUARES https://aiminghigh.aimssec.ac.za/years-9-12-trisquares