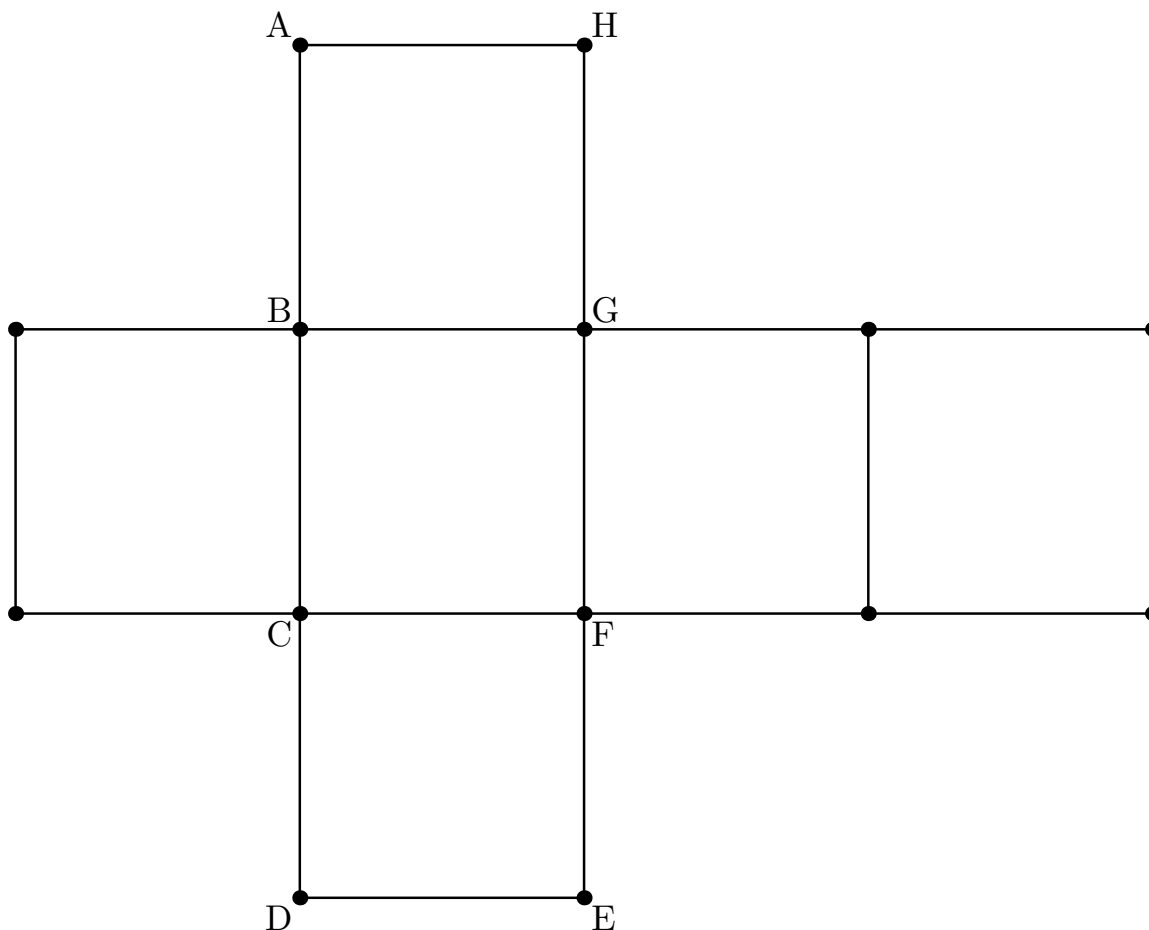1. The diagram is a *net* for a cube. (This two dimensional object could be folded into a three-dimensioanl object.) Eight points have been labeled. Use these labels to mark the other vertices on your diagram. Explain.


2. How many different nets for a unit cube can you sketch?

3. Sketch perspective drawings of the following polyhedra. Each part requires a separate drawing.

    (a) a cube.

    (b) a pyramid with a square base and an apex centered directly above the center of the base. Your pyramid must have the same height as the cube in part (a). Hint: start with a new cube.

    (c) a pyramid with a square base and an apex centered directly above one of the vertices of the base. Your pyramid must have the same height as the cube in part (a). Hint: start with a new cube.

4. On graph paper carefully (i.e. use the squares and a compass) draw a net for each pyramid:

    (a) The pyramid in question 1(b) with a base of 4x4 squares. Using your drawing, briefly explain (in writing) how you designed this net.

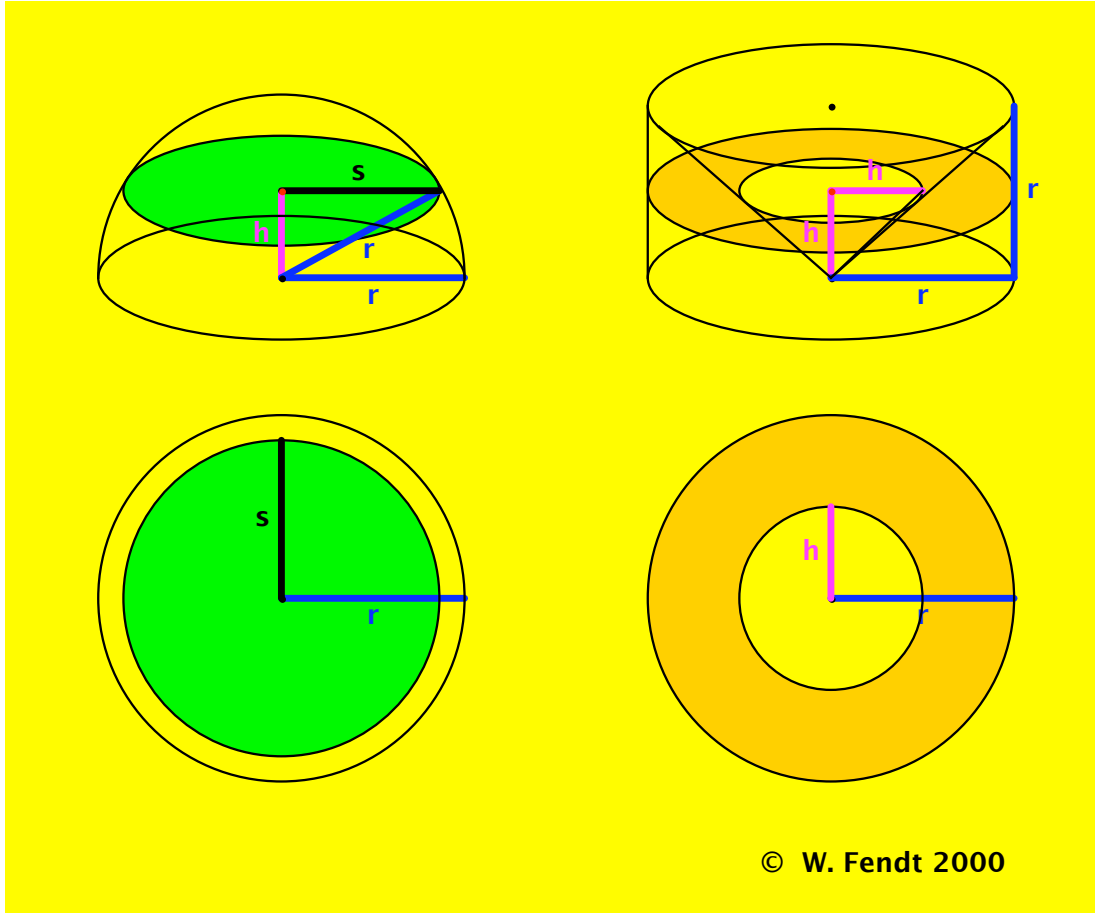   (b) The pyramid in question 1(c) with a base of 4x4 squares. Again, briefly explain.

Find the matching Cube

1.

a.   b.   c.

2.

a.   b.   c.

3.

a.   b.   c.
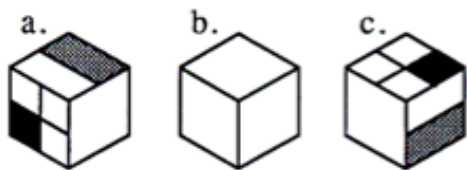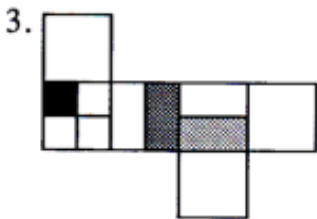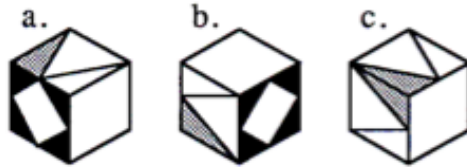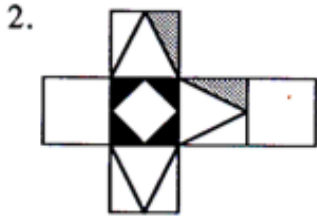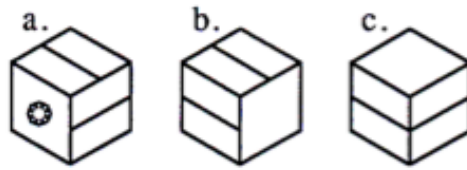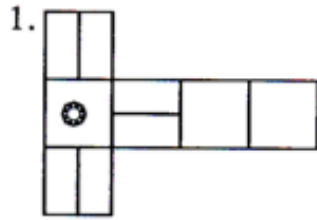
Find the matching Net

1.

a.   b.   c.   d.

2.

a.   b.   c.   d.

1
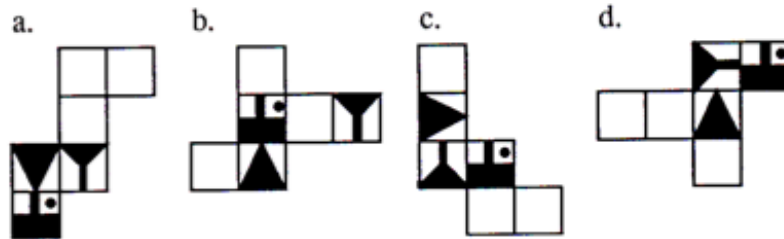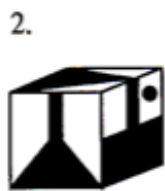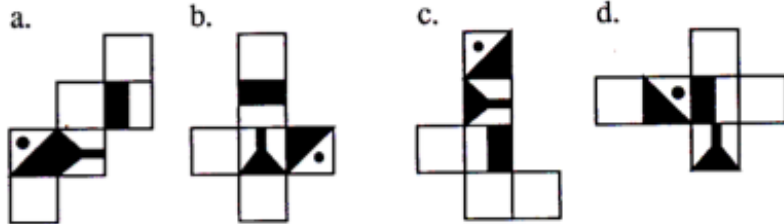
Getting the volume of a sphere

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(1) Show that the area of the circular cross-section on the left is equal to the area of the "washer" cross-section on the right.

(2) Explain how to use this to show that the volume of a sphere is indeed, $\dfrac{4}{3}\pi r^2$.