# Notes for Lesson 12-5: Similar Solids

Two solids are similar if and only if their bases are similar (congruent angles and proportional sides) and their corresponding heights are proportional to their sides.

Are the given solids similar?

1) Two regular square pyramids have heights 10 and 12. The bases are squares with sides 4 and 4.8 respectively.

2) One rectangular solid has length 7, width 5, and height 3. Another has length 14, width 10, and height 9.

If the scale factor of two similar solids is a:b, then
a) the ratio of the corresponding perimeters is a:b
b) the ratio of the base areas, lateral areas, and total areas is $a^2$: $b^2$
c) the ratio of the volumes is $a^3$: $b^3$

3) Two similar cones have volumes $27\pi$ and $64\pi$. Find the ratio of:
a) the radii b) the slant heights c) the lateral areas

4) Two foam spheres have a scale factor 2:3
a) if the smaller sphere has a radius 6cm, what is the radius of the larger sphere?

b) if the area of the larger sphere is $36\pi$ $cm^2$, what is the area of the smaller sphere?

c) if the larger sphere weighs 12g, about how much does the smaller sphere weigh? (hint: weight is related to volume)