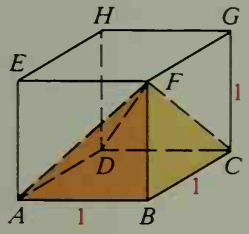
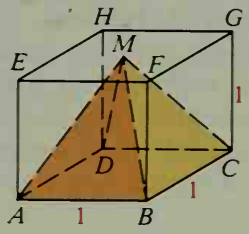
★ **32.** Different pyramids are inscribed in two identical cubes, as shown below.
a. Which pyramid has the greater volume?
b. Which pyramid has the greater total area?

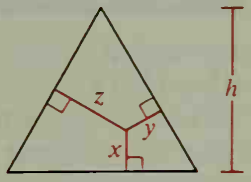


Pyramid *F-ABCD*



Pyramid *M-ABCD* has vertex *M* at the center of square *EFGH*.

Challenge



1. Accurately draw or construct a large equilateral triangle. Choose any point inside the triangle and carefully measure the distances x, y, z, and h. Then find $x + y + z$.
2. Now choose another point on or inside the triangle and find $x + y + z$. What do you notice? Why does this happen?
3. Use your answers in Exercises 1 and 2 to complete the following statement: From any point inside an equilateral triangle, the sum of the ___?___ equals the ___?___.
4. Generalize the statement in Exercise 3 from two dimensions to three dimensions.

Mixed Review Exercises

Copy and complete the table for circles.

	1.	2.	3.	4.	5.	6.	7.	8.
Radius	6	11	$\frac{1}{2}$	$3\sqrt{3}$	?	?	?	?
Circumference	?	?	?	?	10π	18π	?	?
Area	?	?	?	?	?	?	49π	15π

Draw a diagram for each exercise.

9. A circle is inscribed in a square with sides 24 mm. Find **(a)** the area of the circle and **(b)** the area of the square.
10. A square is inscribed in a circle with diameter $8\sqrt{2}$. Find **(a)** the perimeter of the square and **(b)** the circumference of the circle.