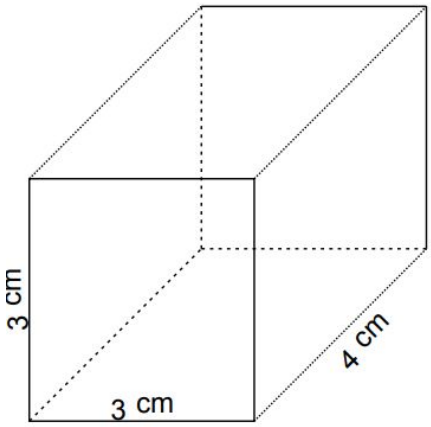
IM2 Problem Set 1.9 - Further Properties of Geometric Figures & Introduction to 3D Shapes

BIG PICTURE of this UNIT:	• mastery with linear algebraic skills to be used in our work with coordinate geometry (midpoint, length, slope) • understanding various geometric properties of quadrilaterals, triangles & circles • how do you really "prove" that something is "true"? • introduction to working with 3D shapes

Part 1 - Skills Review



1. Find the volume and surface area of the rectangular prism shown.

2. An isosceles triangle has sides of lengths 10 cm, 10 cm and 15 cm. Determine its area.

3. Find the intersection of the following 2 lines: $y = -2x + 5$ and $3x - 2y = 11$.

Part 2 – Skills & Concept REVIEW/EXPLORATION

1. A triangle has vertices at A(-3,-2), B(-5,-6), and C(5,0).

    a. Determine the equation of the median from vertex A.
    b. Determine the equation of the altitude from vertex A.
    c. Determine the equation of the perpendicular bisector of BC.
    d. What type of triangle is ΔABC? Explain how you know.

2. Points P(-9,2) and Q(9,-2) are endpoints of a diameter of a circle.

    a. Write the equation of the circle.
    b. Show that R(7,6) is also on the circle.
    c. Show that ∠PRQ is a right angle.

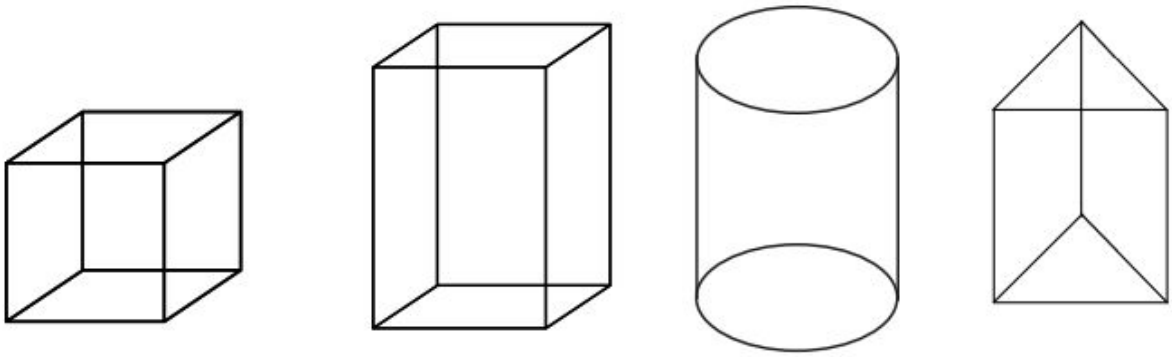
3. A trapezoid has vertices at A(1,2), B(-2,1), C(-4,-2) and D(2,0).

    a. Show that the line segment joining the midpoints of BC and AD is parallel to both AB and DC.
    b. Show that the length of this line segment is half the sum of the lengths of the parallel sides.

Part 3 – NEW Skills & PRACTICE

1. ***Prisms*** are 3D figures that have congruent parallelogram sides, and a solid base, which is either of two parallel ends on the figure.

Examples

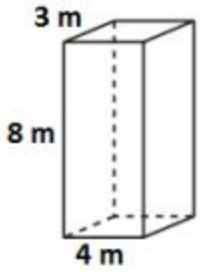
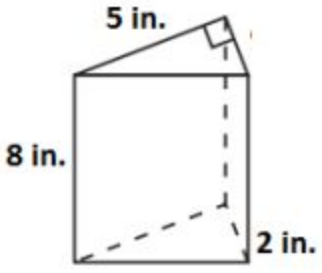


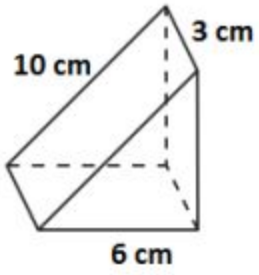
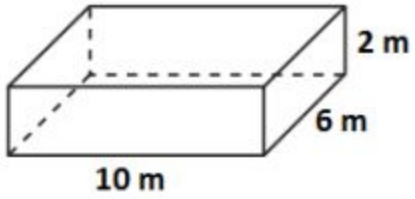
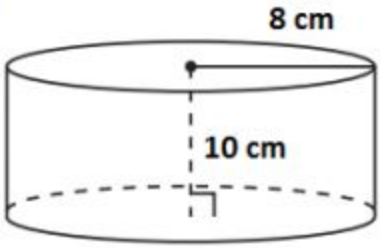
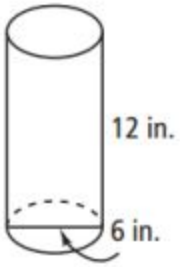
Each figure above is a kind of prism. The first is called a _____. The second is called a _____. The third is a _____ , and the fourth is a _____.

The formula to find the volume of a prism is: V = area of base × height

To find the surface area, we sum together the areas of all faces of the prism.

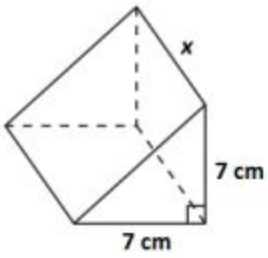
2. Find the volume and surface area of each of the following prisms:

1. 	**2.** 

3.  	**4.** 
1.  	**2.** 

3. Solve for the unknown in each of the following prisms:

1. Volume = 600 cm^3



2. Volume = 440 m^3