13 May 2019 Name:

11.1 Do Now: Density & cost calculations

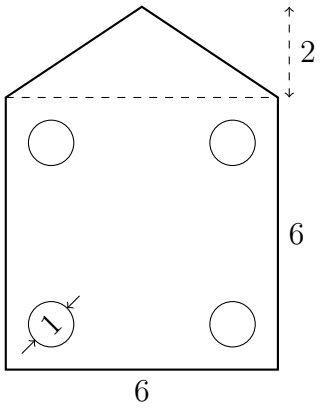
1. A marble block is a 3 inch square, 2 inches tall. Find the volume and weight of the block, to the *nearest tenth of a pound*. (assume the density of marble is 1.57 ounces per cubic inch)

2. Find the weight of a steel ball with a diameter of 1.2 inches, to the *nearest tenth of an ounce*. (The density of steel is 4.6 ounce per cubic inch)

3. A concrete marker in the shape of a pyramid is 30 inches tall with a square base. Its volume is 100 cubic inches. What are the dimensions of the marker's base?

4. A steel plate is shaped as a 6 inch square with a 2-inch tall triangle on one side, as shown. There are four circular holes in the plate, each having a 1 inch diameter. The plate is one quarter inch thick.

   (a) Determine and state the area taken up by the plate, subtracting the area of the holes, to the *nearest tenth of a square inch*.



   (b) Find the volume of the plate, to the *nearest tenth of a cubic inch*.

   (c) Find the weight of the plate, to the *nearest ounce*.

Density and Price Reference Table

Material	Density	Price
Steel	0.282 lb./in.^{3}	\$0.40/lb.
Brass	0.307 lb./in.^{3}	\$5.00/lb.
Aluminum	0.096 lb./in.^{3}	\$1.60/lb.
Titanium	0.163 lb./in.^{3}	\$26.00/lb.
Gold	0.694 lb./in.^{3}	\$1300/oz.
Plastic	0.032 lb./in.^{3}	\$0.70/oz.
Marble	0.098 lb./in.^{3}	\$3.00/oz.

13 May 2019 Name:

11.1 Homework: Cross sections and 3-dimensional rotations

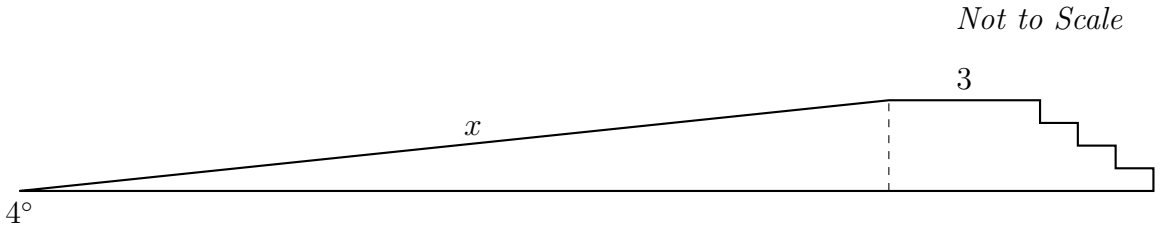
1. A cube has a volume of 670 cubic inches. What is the length of its side, to the *nearest hundredth of an inch*?

2. The Great Pyramid of Giza was constructed as a regular pyramid with a square base. It was built with an approximate volume of 2,592,276 cubic meters and a height of 1.46.5 meters. What was the length of one side of its base, to the *nearest meter*?

3. A bakery sells hollow chocolate spheres. The larger diameter of each sphere is 4 cm. The thickness of the chocolate of each sphere is 0.5 cm. Determine and state , to the nearest tenth of a cubic centimeter, the amount of chocolate in each hollow sphere.

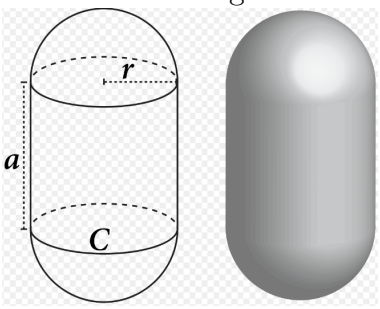
   The bakery packages 8 of them into a box. If the density of the chocolate is 1.308 g/cm^3, determine and state, to the nearest gram, the total mass of the chocolate in the box.

4. A concrete ramp with a 4° angle of elevation leads to a platform with a staircase stepping down from the opposite side, as shown below. The length of the platform is 3 feet, and each of the four steps has a rise of 7 inches and run of 10 inches. Find the length of the ramp x, to the *nearest inch*.



5. A prescription medicine comes in capsule form. The capsule is in the shape of a cylinder with hemispherical ends, as shown in the rendering below. The capsule is 15 millimeters long by 8 millimeters across.

   (a) Write down the radius r of the capsule and the length of the cylindical portion a, shown in the diagram.



   (b) Find the volume of the capsule to the *nearest cubic millimeter*.