HANDOUT: Volume of Cylinders and Cones (2 pages)
Skill Builder: Volume, Rounding

IN THE WORKPLACE: Plumbers and other tradespersons frequently work with materials that are round or curved to allow for the easy flow or storage of fluids. Calculating volume is done in both metric and imperial systems of measurement.

Calculate answers to the following questions. Include the units in your answers. Show your calculations.

1. A cylindrical septic tank is 1.2 m in diameter and 1.8 m high. How many litres will it hold? Round to the nearest whole number. ($1 m^3$ = 1000 L)

2. A rainwater downpipe is 30" high and 4" wide. Calculate the volume of the pipe, in litres. Round to the nearest hundredth. (1 L = 61.023 $in.^3$)

3. Residential sewer pipe, connected to a toilet, must have a diameter that is a minimum of 3". Using that standard, if the pipe is 20' long, calculate the volume of the pipe in litres. Round to the nearest tenth. (1 L = 61.023 $in.^3$).

4. A storage tank is 13' in diameter and 3m high. How many gallons will it hold? There are 7.481 cubic feet in a US liquid gallon. Round to the nearest hundredth. (1 gal. (US) = 7.48 ft^3) and (1 m= 3.28 ft.)

5. A storm water pipe has an exterior dimension of 8" and the interior dimension is 1" smaller. Calculate the volume, of the pipe, in litres, per 50'. Round to the nearest hundredth. (1 L = 61.023 in.^{3})

6. Once it is welded, the bottom cone for a grain hopper will have a height of 2.04 metres and the radius will 1.57 metres. How much grain will the cone hold? Round to the nearest hundredth.

7. By looking at the amount of fill dropped off at a construction site, the foreperson estimates that it is not going to be enough for the area that needs to be filled. The fill is piled in a cone shape on the edge of the site. The amount ordered was 100 m^3. The pile of fill is 7.5 m high with a diameter of 7 m. Was enough fill delivered? Show your calculations. Round to the nearest tenth.

8. Engine cleaner needs to be diluted at 180 mL of liquid concentrate in 4 litres of water. Is the bucket below large enough to hold the mixture? Round to the nearest hundredth. (1 mL = 1000 m^3) and (1 L = 1000 mL)

h = 140 mm

d = 200 mm