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### U13 CW #4 *Volume of Cylinders, Cones, and Spheres*

*Task 1: Silos -* A silo is a storage bin that is a cylinder with a hemisphere on top. A farmer has a silo with a base radius of 30 feet and a storage height of 100 feet. The “storage height” is the part which can be filled with grain - it is just the cylinder.

1. Draw and label a picture of the silo. Find the volume.
2. A cubic foot of grain weighs 62 lbs. How many pounds of grain can the farmer store in the silo?
3. How high (including the hemispherical top) is the silo?
4. One thousand square feet of wheat produces 250 pounds of grain. The farmer’s wheat field is 3,500 feet by 20,000 feet. Is the silo large enough to hold the grain? By how much? Explain your answer.
5. If the farmer decides to fill the silo all the way to the top of the hemisphere how many cubic feet of grain can he store?

*Task 2: Snow Cones -* A snow cone consists of a cone filled with flavored shaved ice topped with hemisphere of flavored shaved ice. The cone is 4 inches long and the top has a diameter of 3 inches.

1. Draw and label a picture of the snowcone.
2. How much shaved ice, in cubic inches, is there altogether?
3. If 6 cubic inches of flavored ice is equal to 1 ounce, how many ounces of shaved ice is that?
4. If one ounce of flavored shaved ice is 50 calories, how many calories will you consume if you eat this snow cone?

*Task 3: Pipes -* Which will carry the most water? Explain your answer.

* Two pipes each 100 cm tall. One with a 3 cm radius and the other with a 4 cm radius
* One pipe that is also 100 cm tall with a 5 cm radius.

*Task 4: Fruit -* A cantaloupe a diameter of 23 centimeters and a Clementine orange has a diameter of 7 centimeters. Predict how many times bigger the cantaloupe is than the orange. Then calculate the volume of each fruit to determine how many times bigger the cantaloupe is than the orange.