Name: _____

Class: _____ Date: _____

Calculated Design

An extension of "Tunnel for ships."

Read "Tunnel for ships" (page 10, *What's Up* April 2017). The Stad Ship Tunnel will be a great engineering feat that will allow ships to take a safer route to their destinations in that part of the world. Much of the design work for the tunnel involves mathematical calculations. Let's do some of our own maths to better understand the tunnel.

INSTRUCTIONS

1. The construction of the Stad Ship Tunnel will start in 2018 and take 12 years to finish. When will it be completed by? *Circle your answer*.

   a) 2030 b) 2040 c) 2050

2. If there were 46 shipwrecks near the windy Stad peninsula since 1945, how many shipwrecks were there on an average in a decade? *Circle your answer*.

   a) 3 b) 6 c) 9

For questions 3 to 4, assume that the tunnel between Moldefjorden and KjØdepollen is cuboid, and that it is 1.7km long, 49m high, and 36m wide.

3. Draw a cuboid on graph paper to represent the tunnel. Choose a convenient scale to represent 150m.

4. Once the tunnel is complete, the cofferdams will be removed and water will be allowed to enter and fill the lower 12m of the tunnel. How much of water will the tunnel hold?

   a) 347, 400 km^3 b) 734.4 km^3 c) 734, 400 m^3