MG-1a

Practice Assessment Q3 #3

1. Fish are being placed in an aquarium. Each fish of this particular species needs approximately 160 in^3 per fish in order to have enough room to breathe, feed, and live comfortably. If you want to place 4 of these fish in an aquarium, sketch out the dimensions of a suitable, reasonably sized aquarium with less than 1000 in^3 total volume.

2. Tennis balls are sold in cylindrical cans with the balls stacked on atop the other. A tennis ball has a diameter of 6.7cm. Find the approximate minimum volume, in cubic centimeters, of a can that can hold 4 such tennis balls.

3. Drinks are being sold. Five hemispherical punch bowls with diameters 10" contain the delicious beverage. The cups being used to distribute the drinks are cylinders 3" wide and 5" tall but are only partially filled, with 1/2" left empty to keep from spilling. $22 have already been spent on cups and supplies, and each drink is being sold for $0.75. If all the punch is sold, approximately how much profit will the seller make?

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4. A spherical rock with diameter 2.02cm is brought to your lab for identification. Its mass is measured on a scale to be 12.6g. Based on the table below, find the most likely category for the rock.

Type	Density (g/cm^3)
Shale	0.34
Graphite	2.23
Talc	2.92
Pyrite	5.02

5. Find the missing data values in the table. Round each to the nearest whole number.

Country	Total Population	Area (km^2)	Density ($people/km^2$)
Peru		1,285,000	23
Morocco	34,000,000	450,000	
Laos	6,800,000		27

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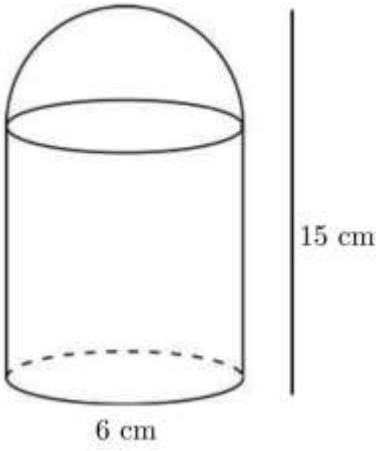
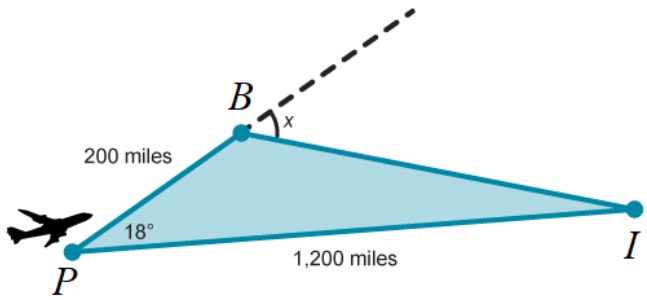
6. ~~Find the approximate diameter of a sphere which has the same volume as an 6-inch tall cone with base diameter 4in.~~ Find the exact surface area of the object in #7.

7. Find the volume of the object below, which consists of a cylinder capped by a hemisphere.



SRT-C8b

On a flight to Istanbul, a pilot hits severe weather and needs to make flight adjustments. The originally planned travel route was 1200 miles; however, the plane has veered off course by 18 degrees for 20 minutes while flying at a speed of 600 miles per hour as shown in the diagram below.



8. To the nearest mile, find the distance that the plane now has to travel to reach Istanbul.

9. Find the angle, x, that the plane must turn through to reach Istanbul.