Student's Worksheet

Lesson 1

Lesson Topic: Units and Measurements

Objective:

In this activity you'll learn the importance of making correct measurements and conversion of units.

Work:

Note down table dimensions discussed in the video:

- Length = _____
- Width = _____
- Height = _____
- Net height = _____

Using the conversion factor of 1 foot = 0.3048 m, rewrite table dimensions in m and cm

- Length = _____m = _____ cm
- Width = _____m = _____ cm
- Height = _____m = _____ cm
- Net height = _____m = _____ cm

Think of a way to measure the diameter of the ball. Using the method you have devised, find the diameter of the ball and record the results here:

- Diameter = _____ cm

By using the above value, calculate the volume of the ball:

$V = \frac{4}{3}\pi(\text{radius})^3 \approx (\text{diameter})^3 / 2$ =_____(write correct units of volume)

Calculate the surface of the ball:

$A = 4\pi(\text{radius})^2 = \pi(\text{diameter})^2 \approx 3(\text{diameter})^2$ =_____(write correct units of area)

General Discussion and Sources of Error:

1. Compare the values given for the standard Olympic table in cm with those you calculated by converting feet to m and cm. Are the values identical? If not, why not?

2. If you use a conversion factor of 1 foot = 0.30 m, how do your values compare to the Olympic values. Does this change the quality of your measurement? Why or why not?

3. When calculating table size, how did you decide the number of significant digits and the unit of measurement to use in this application? Why?

4. Compare the diameter of the ball you have just measured to the standard diameter given. Is your measured value larger, smaller, or just right? If your measurement is not exact, what might explain the difference?

5. Assuming the ball was made under room conditions, what do you expect to be the air pressure inside the ball? The same as atmospheric pressure, more or less?