2020 Sec 3 Physics Assignment 1

Physical Quantities & Measurements

Name: _____ ( ) Class: 3/ ___ Date: _____

1 State the numerical magnitude of the following quantities and describe how they can be measured using appropriate instruments and methods.

(a) mass of your school bag = __6.0 kg__

The mass of the school bag can be determined by placing it on an electronic

balance.

(b) average mid-day temperature in January = __31.0 ºC__

Use a temperature sensor (or thermometer) to measure every mid-day

temperature of January. The average mid-day temperature for January is

dividing the sum of all the mid-day temperatures taken (31 readings) by 31.

(c) time taken to run 100 m = _____

Start the stopwatch when the observer sees the flash from the start pistol.

Stop the stopwatch when the observer sees the runner run past the finish line.

2 A student wants to find out the "size of a basketball". Comment on this quantity "size" and how it can be determined.

Size is not a measurable physical quantity. In the context of the basketball, size

may refer to its mass, weight, volume, surface area, radius, diameter or

circumference. Therefore, one of these terms should be used instead of "size".

3 (a) 0.1 mm or 0.01 cm or 0.0001 m

   (b) Zero error = -0.07 cm

   (b) Observed reading = 0.60 cm

   (c) Thickness of metal sheet = 0.60 cm – (-0.07cm) = 0.60 cm + 0.07 cm = <u>0.67 cm</u>

4 (a) Zero error = +0.04 mm

   (b) Diameter = 4.33 mm – 0.04 mm = 4.29 mm = <u>4.29×10^{-3} m</u>

   (c) Cross-sectional area = $\pi\ r^2$ = π [½ x4.29×10^{-3}]^2 = <u>1.45×10^{-5} m^2</u>