Class 11 Physics · Chapter 1: Units and Measurement

Worksheet · 20 marks · about 40 minutes · based on NCERT

Name _____ Class and section _____ Date _____

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1. A student adds the masses 18.62 g, 3.1 g and 0.457 g and reports the total as 22.18 g. Which statement about his result is correct? [1]

(a) It should be 22.177 g, since no digit of the sum may be dropped.
(b) It should be 22 g, since 3.1 g has only two significant figures.
(c) It should be 22.2 g, since 3.1 g has only one decimal place.
(d) It is correct, since two of the three masses have two or more decimal places.

2. Which one of the following readings has exactly three significant figures? [1]

(a) 0.00203 s
(b) 0.04050 kg
(c) 3.070 m
(d) 2.300×10^3 g

3. A rectangular plot is measured as 12.6 m long and 4.2 m wide. A student multiplies the two and reports the area as 52.92 m^2. How many of the digits he has written are not justified by the measurements? [1]

(a) 1
(b) 3
(c) 2
(d) none

4. The length of a road is written as 3600 m, without a decimal point and not in scientific notation. By NCERT's rules, the number of significant figures in it is [1]

(a) 4
(b) 3
(c) 1
(d) 2

5. By the convention for dropping a final digit 5, the number 6.375 rounded off to three significant figures is [1]

(a) 6.37
(b) 6.38
(c) 6.40
(d) 6.3

6. Using the method of dimensions, find how many dynes make one newton. [2]

7. In the revised SI, each base unit is defined by fixing the numerical value of a constant of nature. Name the constant used to define (a) the metre and (b) the kilogram, and give the unit in which each fixed value is expressed. [2]

8. Name the SI base units of (a) amount of substance and (b) luminous intensity, with their symbols. Why must the elementary entities be stated whenever the mole is used? [2]

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9. A surveyor measures a distance to the nearest metre and writes it as 7200 m. (a) Why is this way of writing it ambiguous? (b) Write it in scientific notation so that its precision is clear. (c) Write it in kilometres, keeping the same precision. [3]

10. Young's modulus of steel is 2.0×10^{11} N m^{-2}; it has the dimensions of stress. Asked to express it in dyne cm^{-2} using $n_2 = n_1[M_1/M_2]^a[L_1/L_2]^b[T_1/T_2]^c$, Arjun writes 2.0×10^{12} dyne cm^{-2} and Kabir writes 2.0×10^{16} dyne cm^{-2}. (a) Write the values of a, b and c. (b) Decide which answer is right, showing the working. (c) Identify the error that gives the other answer. [3]

11. Find the dimensional formula of (a) impulse (force × time), (b) torque (force × perpendicular distance) and (c) pressure (force/area). For each, name one other quantity with the same dimensions. [3]