What do they mean……

Define

Say exactly and precisely what it is!

Example: Define specific heat capacity

Answer:

What do you understand by/ What is meant by

They want you to say what it is, AND a little more.

State

Be as brief as you can.

List

Like making a shopping list.

1. ……..

2. ……..

Be concise, and do not exceed the number of items required.

For example, 'List three things you can do to increase the speed of an electric motor.'

Explain

For example 'Explain why the inside of a vacuum flask is made shiny.'

In answering a 'why' type question, imagine you are talking to a year 9 (middle school) student. Use simple terms and structure your answer in a sequence so that the person who reads can clearly understand what you are saying.

Describe

Plainly say what you observed or did .

For example, 'Describe an experiment to determine the specific heat capacity of a metal'

'Describe what is observed in Brownian motion experiment using smoke particles'

Discuss

For example, 'Discuss the advantages and disadvantages of using wind as an alternative source of energy'

You need to consider the pros and cons

Outline

Without giving too much details, you have to give the important points, for example 'Outline an experiment to find the half-life of a beta emitting radioactive isotope'

Predict

Means 'Say what will happen.' . For example, 'Predict what would happen to ray 2 when it hits face AC of the prism.'

Deduce

For example, in Brownian motion experiment,
Observation: Smoke particles are seen to move erratically.
What can be deduced from this observation?
Your answer should, in this example, include a viable reason, taken from laws or principles of physics, for the behaviour of a smoke particle

Suggest

= Indicate

Example: 'Suggest an improvement you would make to reduce random error in this

Find

This can mean

(a) *calculate*

e.g. Find the angle of refraction inside the glass(n = 1.5) when light is incident at an angle of 30^0

(b) *measure e.g. Make a scaled drawing to* ***find*** *the resultant of two forces of magnitude 4N and 5N acting at 40^0*

(c) *determine e.g. Find the temperature rise when 5kJ of thermal energy is transferred to a 0.90 kg copper block. (s.h.c. of copper = …… J/(kgK)*

Calculate

Means find a numerical value using data given.

Example: Calculate the critical angle for quartz which has a refractive index of ……

Measure

(In a practical exam) Use the measuring instrument and take a reading from it. e.g. Measure the diameter d of the resistance wire.

(In a theory paper) For example , read a length for example using a ruler on a wave shape

Determine

Example: Determine the resistance of the lamp filament when it carries a current of 2A, and the p.d. across it is 12V.

Estimate

Means 'Use your everyday knowledge or common sense to make guesses about sizes first. Then use a model and physics/maths formulae to calculate a value then round the value down to a sensible number.'

Example 1 Estimate the volume of a 1 yuan (or 1 dollar or 1……) coin.

Guess: Diameter = 2 cm, thickness = 2mm = 0.2cm

Model: Cylinder

Calculation: $V = \pi r^2 h = \pi \times 1^2 \times 0.2 = 0.628\ cm^3$

Rounding down : $0.6\ cm^3$

Example 2 Estimate the mass of air in this room or hall.

Sketch

a) Sketch a graph

You need to draw a rough graph, label axes and quantities, giving details about the shape of the graph and the x- and y- intercepts

Example: Sketch a current-voltage graph for a semiconductor diode.

b) Sketch a diagram

You need to draw a free hand labelled diagram, giving necessary details

Example: Sketch a labelled diagram showing the set up for the determination of the spring constant of a spring.