

Question 9

What is the difference between a base unit and a derived unit? (b) What is the difference between a base quantity and a derived quantity? (c) What is the difference between a base quantity and a base unit?

Solution

The base quantities are fundamental physical characteristics, such as length, mass, and time; the base units are the units that the base quantities are expressed in (meter, kilogram, and second for the metric system). Derived quantities are properties that are written in terms of the base quantities and possibly other derived quantities. For example, speed is length divided by time, and force is mass times length divided by time². Derived units are the units of the derived quantities; these are written in terms of base units and possibly other derived units. The derived SI unit for force is Newton (N) because

$$1 \text{ N} = 1 \frac{\text{kg} \cdot \text{m}}{\text{s}^2}.$$