SCIENCE FOUNDATIONS

SI units

Difficulty level: Intermediate

Science Foundations

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Overview of the concept

This is how scientists in different countries share measurements without confusion, by agreeing on the same base units, the starting units like the metre, the kilogram, and the second, that a recipe or a road sign can rely on. A researcher in Japan and one in Canada can compare results directly because both measured in the same units. A traveller reading a road sign in kilometres knows it means the same kilometre they use at home. Knowing SI units tells you why the world settled on one shared system, and how it stops a unit mix-up from turning into a costly error.



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Worked examples

EXAMPLE 1

Q A scientist measures a desk: length 1.2 m, mass 8 kg, and the time for a ball to roll off it, 0.5 s. Name the SI base unit for each quantity.

SOLUTION

This is a matching question, so take each quantity in turn and ask which base unit measures it.

Length is measured in metres, m. Mass is measured in kilograms, kg. Time is measured in seconds, s.

So the answers are: length, metre; mass, kilogram; time, second.

EXAMPLE 2

Q Convert 3,500 m to kilometres and 500 g to kilograms.

SOLUTION

This is a metric conversion question, so start with the one rule to remember: a kilometre is 1,000 metres, and a kilogram is 1,000 grams. You are going to a bigger unit, so you divide.

3,500 divided by 1,000 is 3.5, so 3,500 m is 3.5 km. 500 divided by 1,000 is 0.5, so 500 g is 0.5 kg.

So the answers are 3.5 km and 0.5 kg.

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Practice questions

1 What is the SI base unit for length?

- **A** Kilogram, kg
- **B** Metre, m
- **C** Second, s
- **D** Ampere, A

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2 Which SI base unit would you use for mass?

- **A** Metre, m
- **B** Kelvin, K
- **C** Kilogram, kg
- **D** Second, s

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3

Name the SI base unit for time.

A Metre, m

B Ampere, A

C Kelvin, K

D Second, s

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4

What is the SI base unit for temperature?

A Kelvin, K

B Celsius, C

C Second, s

D Metre, m

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What is the SI base unit for electric current?

A Volt, V

B Ampere, A

C Watt, W

D Joule, J

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6

What does SI stand for?

A Standard International Units

B Science Institute

C International System of Units

D System of Inches

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7 Convert 7.6 m to centimetres.

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8 Convert 9,000 mL to litres.

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9 Which is bigger: 775 cm or 77.5 dm?

A They are equal

B 775 cm is bigger

C 77.5 dm is bigger

D They cannot be compared

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Which unit would you use to measure the mass of an elephant?

A Gram

B Milligram

C Litre

D Kilogram

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ANSWER KEY

1. Metre, m

2. Kilogram, kg

3. Second, s

4. Kelvin, K

5. Ampere, A

6. International System of Units

7. 760

8. 9

9. They are equal

10. Kilogram

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