Which of the following contains one fundamental and one derived unit?

A.	ampere	kilogram
B.	ampere	coulomb
C.	joule	newton
D.	joule	coulomb

A body accelerates from rest with a uniform acceleration a for a time t. The uncertainty in a is 8% and the uncertainty in t is 4%. The uncertainty in the speed is

A. 32%.

B. 12%.

C. 8%.

D. 2%.

What is the order of magnitude of the estimated age of the universe in seconds?

A. 10^{12}

B. 10^{15}

C. 10^{18}

D. 10^{21}

Which of the following lists **two** scalar quantities?

A. emf, momentum

B. emf, weight

C. impulse, kinetic energy

D. temperature, kinetic energy

A skydiver of mass 80 kg falls vertically with a constant speed of $50\,m\,s^{-1}$. The upward force acting on the skydiver is approximately

A. 0 N.

B. 80 N.

C. 800 N.

D. 4000 N.

Which of the following will reduce random errors in an experiment?

A. Using an instrument having a greater precision

B. Checking the calibration of the instrument used

C. Checking for zero error on the instrument used

D. Repeating readings

The resistive force F acting on a sphere of radius r travelling with speed v through a liquid is given by the equation

$$F = 6\pi\eta rv$$

where η is a constant. What are the SI units of η?

A. $\mathrm{kg\,m^{-1}\,s^{-2}}$

B. $\mathrm{kg\,m^{2}\,s^{-1}}$

C. $\mathrm{kg\,m^{-1}\,s^{-1}}$

D. $\mathrm{kg\,m^{-1}\,s^{-3}}$

$N = [m)\left(\frac{m}{s}\right] \cdot [\eta] = \frac{kg \cdot m}{s^2}$

$\eta = \frac{kg}{m \cdot s}$

What is the order of magnitude of the mass, in kg, of an apple?

A. 10^{-3}

B. 10^{-1}

C. 10^{+1}

D. 10^{+3}

$10^{-1}\,kg = 0.1 \times 10^{3}\,g = 100\,g$

Which of the following is a fundamental SI unit?

A. Ampere

B. Joule

C. Newton

D. Volt

The mass of an elephant is 10^4 kg. The mass of a mouse is 10^{-2} kg. What is the ratio

$$\frac{\text{mass of the elephant}}{\text{mass of the mouse}} ?$$

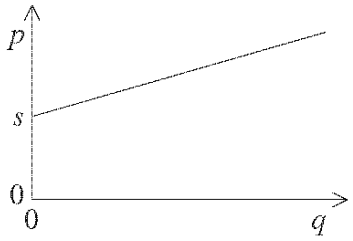
A. 10^{-8}

B. 10^{-6}

C. 10^6

D. 10^8

The graph shows the relationship between two quantities p and q. The gradient of the graph is r and the intercept on the p axis is s.



Which of the following is the correct relationship between p and q?

A. $p=sq+r$

B. $p=rq+s$

C. $p=rq-s$

D. $p=rs+q$

The acceleration of free fall g is determined by the relationship $g=\frac{4\pi^2 l}{t^2}$. The uncertainty in the value of l is 2% and the uncertainty in the value of t is 5%. What is the uncertainty in g?

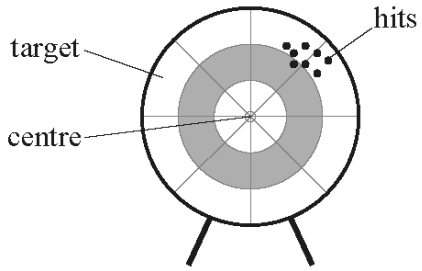
A. 3%

B. 7%

C. 8%

D. 12%

Aiming for the centre of a target, an archer fires arrows which produces a pattern of hits as shown below.



The pattern suggests the presence of

A. random and systematic uncertainties.

B. random uncertainties but no systematic uncertainties.

C. systematic uncertainties but no random uncertainties.

D. neither random nor systematic uncertainties.