Assessment

Physics: Lesson 1

Question 1

The mass of a cube of aluminium is measured three times. The results obtained are 312 g, 314 g and 313 g. The true mass of the cube is 340g. The measurements are:

A. accurate but not precise.

B. both precise and accurate.

C. neither precise nor accurate.

D. precise but not accurate.

Question 2

The length of piece of string is measured five times. The results obtained are 72.1 cm, 72.0 cm, 69.9 cm, 72.0 cm, 72,0 cm. The true length of the string is 72.03 cm. The measurements are:

A. accurate but not precise.

B. both precise and accurate.

C. neither precise nor accurate.

D. precise but not accurate.

Question 3

A cube of aluminium has sides measuring 50 mm ± 1 mm. State the percent uncertainty in this measurement.

A. 1%

B. 2%

C. 4%

D. 5%

Question 4

A height of a building is measured as 40 m ± 2 m. State the percent uncertainty in this measurement.

A. 10%

B. 2%

C. 4%

D. 5%

Question 5

The divisions on a ruler show centimeters and millimeters.
All measurements should be recorded to the nearest:

A. 1 mm

B. 1 cm

C. 0.5 mm

D. 0.5 cm

Question 6

The divisions on a ruler show centimeters and millimeters.
Using this ruler we measure a length as 21.2 cm. This can be written as:

A. 21.2 ± 0.1 cm

B. 21.2 ± 1 cm

C. 21.2 ± 1 mm

D. 21.2 ± 0.5 cm

Question
7

The reading from a set of digital scales gives the mass of a gold coin as 10.00 grams. The scale has an accuracy of ±0.05 grams. The percent uncertainty in the measurement is:

A. 1%

B. 2%

C. 0.5%

D. 0.05%

Question 8

A precise measurement must also be accurate.

A. True

B. False

Question
9

You weigh yourself on a set of scales six times. You get the same result each time. This tells you that the measurement is:

A. accurate

B. precise and accurate

C. precise

D. absolutely precise

Question 10

Usain Bolt's world record time for the 100 m was recorded as 9.572 s ± 0.005 s. The percent uncertainty in this measurement is:

A. 1%

B. 2%

C. 0.5%

D. 0.05%

Assessment

Physics: Lesson 2

Question 1

The number of significant figures in 1.003 is:

a. 1

b. 2

c. 3

d. 4

Question 2

The number of significant figures in 0.040 is:

A. 4

B. 3

C. 2

D. 1

Question 3

The number of significant figures in 5600 is:

A. 1

B. 2

C. 3

D. 4

Question 4

A rectangular sheet of paper measures 9.4 cm by 13.7 cm. Taking significant figures into account, what is the area of the paper?

A. 128.78 cm^2

B. 130 cm^2

C. 128 cm^2

D. 128.8 cm^2

Question 5

The decimal form of 7.23×10^5 is:

A. 7230

B. 72,300

C. 723,000

D. 723,105

Question 6

The number 5.90×10^{-1} is equivalent to:

A. 5.90

B. 0.59

C. 0.590

D. 0.0590

Question
7

In scientific notation, 0.0120 is written as:

A. 1.20×10^{-3}

B. 1.20×10^{-2}

C. 1.20×10^{-1}

D. 1.2×10^{-2}

Question 8

In scientific notation, 4000 is written as:

A. 4.00×10^3

B. 4.0×10^3

C. 4×10^3

D. 0.4×10^4

Question
9

Divide 3.2 mm by 5.31. Taking significant figures into account, what is the result in scientific notation?

A. 0.6

B. 6×10^{-1}

C. 6.0×10^{-1}

D. 6.03×10^{-1}

Question 10

A rectangular car park measures 22 m by 102 m. Taking significant figures into account, what is its area in scientific notation?

A. $2244\ m^2$

B. $2.244 \times 10^3\ m^2$

C. $2.24 \times 10^3\ m^2$

D. $2.2 \times 10^3\ m^2$

Assessment

Physics: Lesson 3

Question 1

The new definition of the SI unit of length is:

A. one ten millionth of the distance from the north pole to the equator

B. the distance that light travels in a vacuum in a precise time

C. the length of a platinum-iridium alloy bar kept in Paris

D. 3.280 feet.

Question 2

The SI base unit of time is:

A. second

B. minute

C. hour

D. day

Question 3

The SI abbreviation for 36 centimeters is:

A. 36 centim

B. 36 cmeter

C. 36 cm

D. 36 centimeters.

Question 4

State which of the following is the SI unit of volume.

A. Cubic cm (cm^3)

B. Millilitre (ml)

C. Cubic meter (m^3)

D. Cubic foot (ft^3)

Question 5

Which is the largest area?

A. $1\ ft^2$

B. $100\ cm^2$

C. $9\ ft^2$

D. $1\ m^2$

Question 6

Convert 0.75 cm^3 to mm^3.

A. 7500 mm^3

B. 7.5 mm^3

C. 75 mm^3

D. 750 mm^3

Question
7

The maximum capacity in liters of a 4 m^3 water tank is:

A. 40 L

B. 4000 L

C. 400 L

D. 4 L

Question
8

A runner completes a 10,000 meter race. How many miles has he run? (Use the conversion factor 1 m = 3.28 ft and 1 mile = 5280 ft.)

A. 6.21 miles

B. 18.63 miles

C. 3.05 miles

D. 3.28 miles

A mile is 5280 feet. What is 1 kilometer in miles to two significant figures? (Use the conversion factor 1 m = 3.28 ft.)

A. 1.6 miles

B. 0.62 miles

C. 0.062 miles

D. 0.621 miles

Question 10

Water has a density of 1 g/cm^3. What is this in kg/m^3?

A. 1 kg/m^3

B. 10 kg/m^3

C. 100 kg/m^3

D. 1000 kg/m^3

Assessment

Physics: Lesson 4

Question 1

An order of magnitude estimate is likely to be accurate within a factor of:

A. 100

B. 5

C. 10

D. 2

Question 2

When estimating the thickness of a page in a book you could :

A. compare it with something you know the thickness of

B. estimate the thickness of the book and divide by the number of pages

C. work it out from the volume of the book and the density of paper

D. use a ruler

Question
3

The thickness of a 200-page book is 1.0 cm. The thickness of one sheet of this book can be estimated as:

A. 0.001 mm

B. 0.01 mm

C. 0.1 mm

D. 1 mm

Question 4

Make an order of magnitude estimate of $3.14 \times 27{,}800$.

A. 9×10^4

B. 9×10^5

C. 6×10^4

D. 9×10^3

Question 5

Using the equation $F = ma$, estimate mass if $F = 5.86 \times 10^7$ N and $a = 2.3 \times 10^2$ m/s^2.

A. 1×10^9 kg

B. 3×10^4 kg

C. 3×10^5 kg

D. 3×10^{-6} kg

Estimate 7.7 feet in meters.
(Use the conversion factor 1 ft = 0.305 m.)

A. 25 m

B. 0.24 m

C. 2.4 m

D. 3 m

A swimming pool is 25 m long, 10 m wide and the depth varies from 1 m in the shallow end to 2 m at the deep end. Assuming the density of water is 1 g/cm^3, what is the best estimate of the mass of water in the pool?

A. 4×10^3 kg

B. 4×10^4 kg

C. 4×10^6 kg

D. 4×10^5 kg

Question 8

What are the dimensions of velocity?

A. [L/T]

B. [L/T^2]

C. [M]

D. [M/T]

Question 9

The dimensions of density are $[M/L^3]$. Which of these would **not** be a valid unit for measuring density?

A. g/cm^3

B. kg/m^2

C. kg/m^3

D. g/m^3

Question 10

Atmospheric pressure is 1.01×10^5 N/m^2 (newtons per meter squared). Newton is the SI unit of force. What are the dimensions of pressure?

A. $[M/LT^2]$

B. $[ML/T^2]$

C. $[M/LT]$

D. $[ML/T]$

Assessment

Physics: Lesson 5

Question 1

Which of the following is **not** a scalar quantity?

A. Mass

B. Volume

C. Velocity

D. Time

Question 2

Which of the following is **not** a vector quantity?

A. Area

B. Acceleration

C. Force

D. Displacement

Question 3

A vector quantity must have:

A. both units and no direction

B. units or direction or magnitude

C. either direction or magnitude

D. both magnitude and direction.

Question 4

Which statement about forces is true?

A. Forces only act horizontally or vertically.

B. Forces can be added using vector triangles.

C. Forces on a body always add up to zero.

D. If two forces act on the same body along the same line the resultant cannot be zero.

Question 5

Two forces act on a body: a horizontal force of 5 N and a vertical force of 5 N. What is the resultant force?

A. There is a resultant force of 10 N at 45° to the horizontal.

B. There is a resultant force of 5 N at 45° to the horizontal.

C. There is a resultant force of 7.1 N at 45° to the horizontal.

D. There is a resultant force of 7.1 N at 35° to the horizontal.

Question 6

Two forces act on a body. A horizontal force of 5 N and a vertical force of 12 N. What is the magnitude of the resultant force?

A. 17 N

B. 13 N

C. 12 N

D. 169 N

Question 7

When finding the resultant of two forces that act on an object you:

A. can use an accurately drawn vector triangle

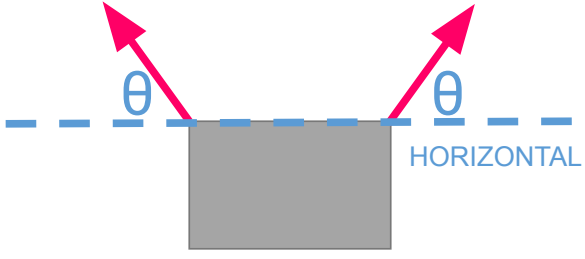
B. can use trigonometry to find the resultant

C. can use either method A or method B

D. must use both methods A and B.

Question 8

Two 100 N forces of the same size, acting at the same angle to the horizontal, are supporting a suspended crate, as shown in the diagram. Which of the following statements is correct?



A. You can work out the weight of the crate.

B. You can work out the weight of the crate if you are given a value for the angle θ.

C. The crate weighs more than 200 N.

D. You cannot work out the direction of the resultant force unless you know the value of angle θ.

If you use a vector diagram to calculate the resultant of two forces that act on a body at the same time you must:

A. make the length of each line proportional to the size of each force

B. show the direction of each force by the direction of the line with an arrow

C. include a scale and a reference direction in your diagram

D. do all of the above

Question
10

A plane is flying due north at 160 km/h relative to the surrounding air. There is a crosswind blowing due east. If the magnitude of the resultant velocity of the plane is 200 km/h, what is the speed of the crosswind?

A. 40 km/h

B. 120 km/h

C. 180 km/h

D. 100 km/h