

Working as a Physicist

Question Paper

Level	A Level
Subject	Physics
Exam Board	Edexcel
Topic	Working as a Physicist
Sub Topic	
Booklet	Question Paper
Paper Type	Multiple Choice 2

Time Allowed: 33 minutes

Score: /27

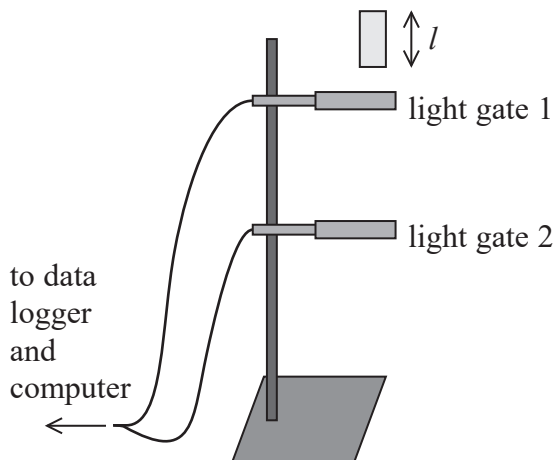
Percentage: /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	'77.5%	70%	62.5%	57.5%	45%	<45%

1 An experiment is carried out to find a value for g , the acceleration of free fall.

A weighted card of known length l is dropped through two light gates. The light gates are attached to a data logger and a computer. By inputting the length of the card into the computer two values of velocity and the time interval between them can be obtained. Using these values of velocity, a value of g can be determined.



Assuming that air resistance is negligible, which of the following would produce a more reliable value of g ?

- A Drop the card from a greater height.
- B Ensure that the card is dropped from rest.
- C Make the card shorter.
- D Move the light gates further apart.

(Total for Question = 1 mark)

2 Which pair of quantities does **not** contain a vector and a scalar?

- A acceleration and time
- B force and displacement
- C mass and acceleration
- D velocity and time

(Total for Question = 1 mark)

3 Which of these quantities is **not** measured in an SI base unit?

- A distance
- B force
- C mass
- D time

(Total for Question = 1 mark)

4 Which equation shows a scalar quantity as the product of two vector quantities?

- A $\text{energy} = \text{power} \times \text{time}$
- B $\text{force} = \text{stiffness} \times \text{extension}$
- C $\text{mass} = \text{density} \times \text{volume}$
- D $\text{work} = \text{force} \times \text{displacement}$

(Total for Question = 1 mark)

5 Which of the following is a scalar quantity?

- A acceleration
- B displacement
- C force
- D work

(Total for Question = 1 mark)

6 Which of the following units could be used for power?

- A kg m s^{-2}
- B $\text{kg m}^2 \text{s}^{-2}$
- C $\text{kg m}^2 \text{s}^{-3}$
- D $\text{kg}^2 \text{m}^2 \text{s}^{-3}$

(Total for Question = 1 mark)

7 Which set of quantities is all scalar?

- A acceleration, displacement, velocity
- B energy, mass, power
- C extension, force, gravitational potential energy
- D weight, kinetic energy, work

(Total for Question = 1 mark)

8 Physical quantities are either scalars or vectors.

Select the row of the table which correctly identifies a scalar quantity and a vector quantity.

	Scalar	Vector
<input type="checkbox"/> A	force	velocity
<input type="checkbox"/> B	mass	time
<input type="checkbox"/> C	time	force
<input type="checkbox"/> D	velocity	mass

(Total for Question = 1 mark)

- 9 A student takes measurements for a piece of copper wire.

Mass	0.00500 kg
Length	3.36 m
Diameter	0.00046 m

The student uses these values to calculate a value for the density of copper. The correctly calculated value of density is shown on the student's calculator as

8954.166841

The student should state the density as

- A $8954.166841 \text{ kg m}^{-3}$
- B 8950 kg m^{-3}
- C $8.95 \times 10^3 \text{ kg m}^{-3}$
- D $9.0 \times 10^3 \text{ kg m}^{-3}$

(Total for Question = 1 mark)

- 10 In which of the following is a vector fully described?

- A A car travels north.
- B A crane moves a load 20 m east.
- C A train travels at a rate of 35 m s^{-1} .
- D A lift moves upwards with a kinetic energy of 2.5 kJ.

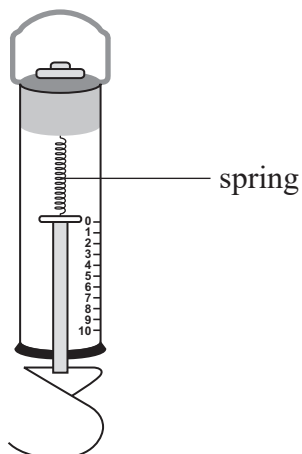
(Total for Question = 1 mark)

11 Which of the following is a correct statement?

- A Weight is a base quantity.
- B Velocity is a base quantity.
- C Mass is a derived quantity.
- D Force is a derived quantity.

(Total for Question = 1 mark)

12 The main component of a newton meter is a calibrated spring.



The newton meter is to be used over a greater range of forces. Which of the following should be increased to allow this?

- A ductility of the spring wire
- B precision of the scale
- C stiffness of the spring
- D ultimate tensile strength of the spring

(Total for Question = 1 mark)

13 Which statement about scalar and vector quantities is correct?

- A Scalars have direction only.
- B Scalars have distance only.
- C Vectors have magnitude and direction.
- D Vectors have magnitude and distance.

(Total for Question = 1 mark)

14 Which of the following is a unit equivalent to the pascal?

- A kg m s^{-1}
- B kg m s^{-2}
- C $\text{kg m}^{-1} \text{s}^{-2}$
- D $\text{kg m}^{-2} \text{s}^{-2}$

(Total for Question = 1 mark)

15 Which table is correct for scalar and vector quantities?

A

	has magnitude	has a direction
scalar	✓	✓
vector	X	✓

B

	has magnitude	has a direction
scalar	X	✓
vector	✓	✓

C

	has magnitude	has a direction
scalar	✓	X
vector	✓	✓

D

	has magnitude	has a direction
scalar	✓	✓
vector	✓	X

(Total for Question = 1 mark)

16 Which of the following is **not** a unit of energy?

A N s^{-1}

B kW h

C N m

D W s

(Total for Question = 1 mark)

17 Which of the following is a vector quantity?

- A distance
- B force
- C speed
- D work

(Total for Question = 1 mark)

18 Which of the following is a scalar quantity?

- A displacement
- B force
- C time
- D velocity

(Total for Question = 1 mark)

19 Which of the following is not a SI base quantity?

- A force
- B length
- C mass
- D time

(Total for Question = 1 mark)

20 The table shows some physical quantities. Which row correctly identifies scalar and vector quantities?

		Scalar	Vector
<input checked="" type="checkbox"/>	A	distance	acceleration
<input checked="" type="checkbox"/>	B	time	speed
<input checked="" type="checkbox"/>	C	velocity	force
<input checked="" type="checkbox"/>	D	work	power

(Total for Question = 1 mark)

21 Which of these units is the same as the newton?

- A** kg m s^{-1}
- B** kg m s^{-2}
- C** $\text{kg m}^2 \text{s}^{-2}$
- D** $\text{kg m}^2 \text{s}^{-3}$

(Total for Question = 1 mark)

22 Which pair of quantities does **not** contain a vector and a scalar?

- A** acceleration and time
- B** force and displacement
- c** mass and acceleration
- D** velocity and time

(Total for Question = 1 mark)

23 Which of the following is a derived SI quantity?

- A force
- B length
- C second
- D watt

(total for Question = 1 mark)

24 Which of the following is a possible unit for rate of change of momentum?

- A kg m s^{-2}
- B kg m s^{-1}
- C N s^{-1}
- D N s

(total for Question 5 = 1 mark)

25 A correct unit for radiant energy flux is

- A $\text{N m}^{-1} \text{s}^{-1}$
- B Nm^{-1}
- C W
- D W m^2

(Total for Question = 1 mark)

26 Which of the following is a possible unit for rate of change of momentum?

- A kg m s^{-1}
- B kg m s^{-2}
- C N s
- D N s^{-1}

(Total for Question = 1 mark)

27 A unit of electric field strength is

- A J C^{-2}
- B $\text{N m}^2 \text{C}^{-2}$
- C N m C^{-1}
- D N C^{-1}

(Total for Question 4 = 1 mark)