

Proportion

Question Paper 1

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Topic	Equations, Formulae and Identities
Sub Topic	Proportion
Booklet	Question Paper 1

Time Allowed: 59 minutes

Score: /49

Percentage: /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	75%	70%	60%	55%	50%	<50%

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- 1 P is directly proportional to the cube of Q .
When $Q = 15$, $P = 1350$

(a) Find a formula for P in terms of Q .

$$P = \dots\dots\dots$$

(3)

(b) Calculate the value of P when $Q = 20$

$$P = \dots\dots\dots$$

(1)

(Total for Question 1 is 4 marks)

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- 2 Two small magnets attract each other with a force, F newtons.
 F is inversely proportional to the square of the distance, d cm, between them.

When $d = 2$, $F = 12$

- (a) Express F in terms of d .

.....
(3)

- (b) Calculate the value of F when $d = 5$

$F =$
(1)

- (c) Calculate the value of d when $F = 3$

$d =$
(2)

(Total for Question 2 is 6 marks)

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3 (a) Simplify $(3a^2b)^4$

.....
(2)

(b) Simplify $(9c^8)^{\frac{1}{2}}$

.....
(2)

(Total for Question 3 is 4 marks)

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- 4 When a photograph is taken, the exposure time, t , is directly proportional to the square of the size, f , of the opening in the camera lens.

$$t = 0.02 \text{ when } f = 8$$

- (a) Find a formula for t in terms of f .

.....
(3)

- (b) Calculate the value of f when $t = 0.0098$

$$f = \text{.....}$$

(2)

(Total for Question 4 is 5 marks)

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- 5 y is directly proportional to x^3
When $x = 10$, $y = 250$

(a) Find a formula for y in terms of x .

.....
(3)

(b) Calculate the value of x when $y = 54$

$x =$
(2)

(Total for Question 5 is 5 marks)

- 6 D is directly proportional to t^2
When $t = 4$, $D = 8$

(a) Find a formula for D in terms of t .

.....
(3)

(b) Find the positive value of t when $D = 50$

$t =$
(2)

(Total for Question 6 is 5 marks)

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- 7 A particle moves from rest.
The speed of the particle is v m/s when it has moved a distance of x metres.

v is proportional to \sqrt{x}

When $v = 8$, $x = 25$

- (a) Express v in terms of x .

.....
(3)

- (b) Find the speed of the object when it has moved a distance of 56.25 metres.

..... m/s
(2)

(Total for Question 7 is 5 marks)

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- 8 F is inversely proportional to the square of x .
 $F = 0.8$ when $x = 5$

(a) Find a formula for F in terms of x .

.....
(3)

(b) Work out the positive value of x when $F = 320$

$x =$
(2)

(Total for Question 8 is 5 marks)

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- 9 P is directly proportional to q^3
 $P = 270$ when $q = 7.5$

(a) Find a formula for P in terms of q

.....
(3)

(b) Work out the positive value of q when $P = q$

$q =$
(2)

(Total for Question 9 is 5 marks)

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10 R is **inversely** proportional to the square of c .

When $c = 4$, $R = 30$

(a) Find a formula for R in terms of c .

.....
(3)

(b) Calculate the positive value of c when $R = 1920$

$c =$
(2)

(Total for Question 10 is 5 marks)