2.8 Direct and Inverse Proportion: 10-minute Pack

AQA 8365 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 The energy, E joules, stored in a stretched spring is directly proportional to the square of its extension, x cm. When x = 3, E = 27.

(a) Find a formula connecting E and x. **(2)**

.....

(b) Find E when x = 5. **(1)**

.....

(c) Find the extension when E = 108. **(2)**

.....

(Total for Question 1 is 5 marks)

2 Which of the following equations shows y inversely proportional to x^2?

- ☐ A) $y = kx^2$
- ☐ B) $y = k/x^2$
- ☐ C) $y = kx$
- ☐ D) $y = k/x$

(Total for Question 2 is 1 mark)

© Revision Library | revisionlibrary.co.uk

3 A table shows corresponding values of x and y. It is given that y is proportional to x^2.

x: 2, 7, 8

y: 8, 98, p

Work out the value of p.

(Total for Question 3 is 3 marks)

© Revision Library | revisionlibrary.co.uk

Mark scheme · 2.8 Direct and Inverse Proportion: 10-minute Pack

Question 1

(a) finds k = 3 (from $27 = k(3)^2$, i.e. $27 = 9k$)	**M1**
(a) $E = 3x^2$ cao	**A1**
(a) Answer: $E = 3x^2$	
(b) E = 75 cao	**B1**
(b) Answer: E = 75	
(c) sets up $108 = 3x^2$ and solves $x^2 = 36$	**M1**
(c) x = 6 cm cao (rejects x = -6 since extension is positive)	**A1**
(c) Answer: x = 6 cm	

Question 2

B cao	**B1**
Answer: B) $y = k/x^2$	

Question 3

uses the given relationship with a constant k	**M1**
finds k = 2	**M1**
p = 128 cao	**A1**
Answer: p = 128	

© Revision Library | revisionlibrary.co.uk