

Direct and Inverse Proportion (Higher)

Please write clearly in block capitals

Forename:

Surname:

Materials

For this paper you must have:

- mathematical instruments



You **can** use a calculator.

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer all questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- You may ask for graph paper, tracing paper and more answer paper. These must be tagged securely to this answer book.

Advice

- In all calculations, show clearly how you work out your answer.

1 y is directly proportional to x . (Level 6)

When $y = 36$, $x = 4$

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

[3 marks]

Answer _____

1(b) Find the value of y when $x = 3$

[1 mark]

Answer _____

Turn over for next question

2 y is directly proportional to x^2 . (Level 6)

When $x = 2, y = 36$.

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

[3 marks]

Answer _____

2(b) Find the value of x when $y = 49$

[1 mark]

Answer _____



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3 In the table below, d is directly proportional to c

(Level 6)

c	3	5		12
d	12		28	

3(a) Find a formula for d in terms of c

[3 marks]

Answer _____

3(b) Hence, or otherwise, complete the table above.

[3 marks]

Answer _____



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- 4** x is inversely proportional to y
when $x = 7, y = 4$.

(Level 6)

- 4(a)** Find a formula for y in terms of x

[3 marks]

Answer _____

- 4(b)** Find the value of x when $y = 2$

[1 mark]

Answer _____

Turn over for next question

5 y is inversely proportional to the square of x . (Level 7)

When $y = 3$, $x = 4$.

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

[3 marks]

Answer _____

5(b) Find the value of y when $x = 5$

[1 mark]

Answer _____



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Turn over ►

6 If r is inversely proportional to x^2 and $r = 4$ when $x = 4$

(Level 7)

6(a) Find the formula for r in terms of x

[3 marks]

Answer _____

6(b) Find the value of r when $x = 2$

[1 mark]

Answer _____

6(c) Find the value of x when $r = 2$
Give your answer as a surd in its simplest form.

[2 marks]

Answer _____

7

a , b and c are three variables.

(Level 8)

a is proportional to b^2

a is also proportional to \sqrt{c}

$b = 4.5$ when $c = 2.25$

Find b when $c = 8$

Give your answer correct to 3 significant figures.

[6 marks]

Answer _____

End of questions