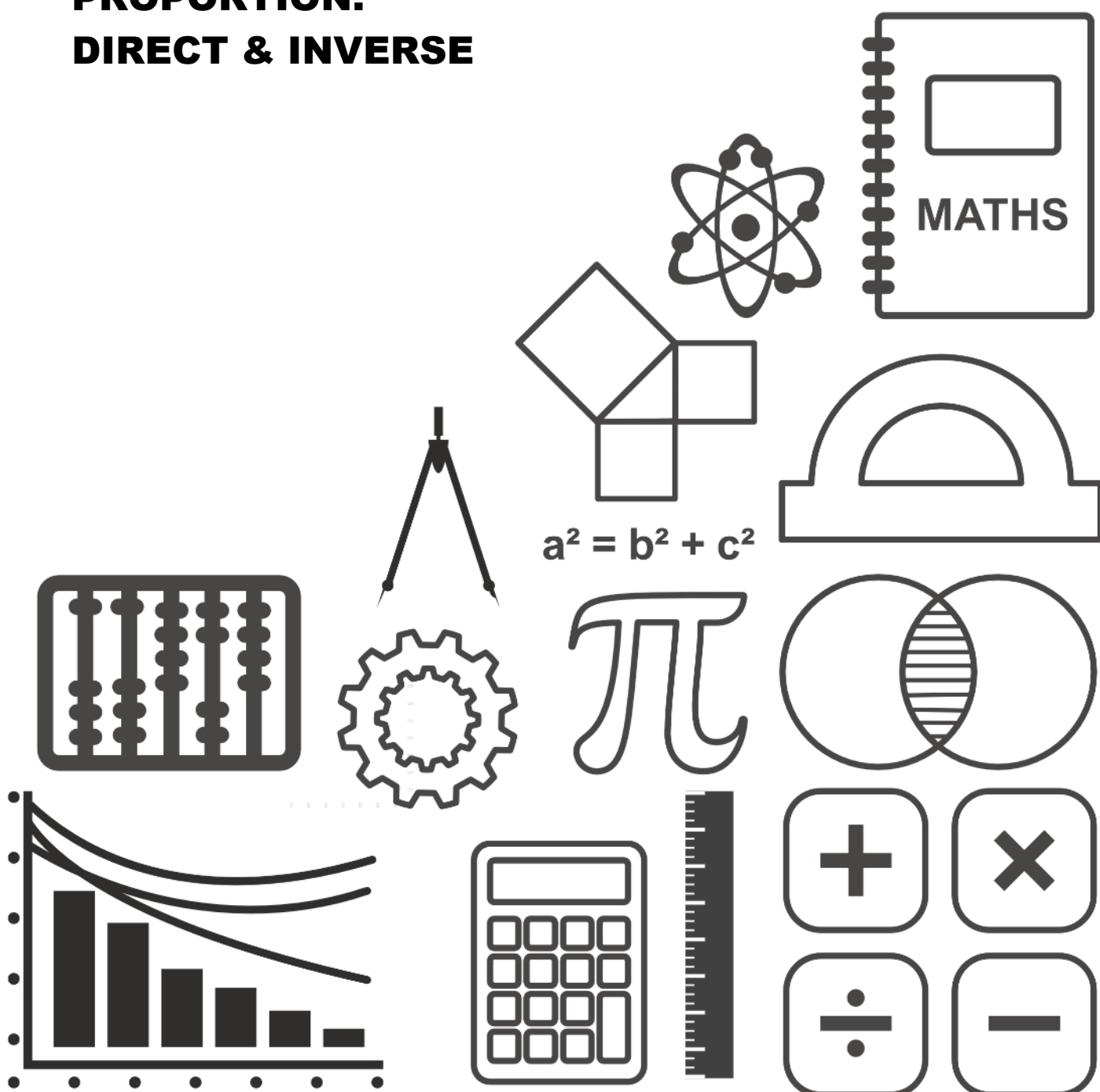


# MATHSDIY

## GCSE TOPIC BOOKLET PROPORTION: DIRECT & INVERSE



1. Given that  $g$  is proportional to  $h^2$ , and that  $g = 1$  when  $h = 3$ ,

(a) find an expression for  $g$  in terms of  $h$ ,

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[3]

(b) find  $g$  when  $h = 2$ .

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[1]

2. Given that  $y$  is proportional to  $x^2$ , and that  $y = 4$  when  $x = 0.5$ ,

(a) find an expression for  $y$  in terms of  $x$ ,

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[3]

(b) use the expression you found in (a) to complete the following table.

$x$	0.5	3	
$y$	4		6400

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[2]

3. Given that  $y$  is inversely proportional to  $x^2$ , and that  $y = 4$  when  $x = 10$ ,

(a) find an expression for  $y$  in terms of  $x$ ,

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[3]

(b) calculate

(i) the value of  $y$  when  $x = 20$ ,

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[1]

(ii) a value of  $x$  when  $y = \frac{1}{100}$ .

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[2]

4. Given that  $y$  is proportional to  $x^2$ , and that  $y = 12$  when  $x = 2$ , calculate

a) the value of  $y$  when  $x = 5$ .

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b) the value of  $x$  when  $y = 48$ .

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(5)

5. Given that  $y$  is inversely proportional to  $x$ , and that  $y = 4$  when  $x = 6$ ,

(a) find an expression for  $y$  in terms of  $x$ ,

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[3]

(b) complete the following table for values of  $x$  and  $y$ .

$x$	$\frac{1}{2}$	6	
$y$		4	3

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[2]

6. Given that  $y$  is proportional to  $x^3$ , and that  $y = 4$  when  $x = 1$ , calculate

a) the value of  $y$  when  $x = 2$ .

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b) the value of  $x$  when  $y = 256$ .

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(5)

7. You are given that  $y$  is inversely proportional to  $x^2$ , and that  $y = 100$  when  $x = 2$ .

(i) Find an expression for  $y$  in terms of  $x$ .

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(ii) Use the expression you found in (i) to complete the following table.

$x$	2	10	
$y$	100		$\frac{1}{4}$

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[5]

8. Given that  $y$  is inversely proportional to  $x^2$ , and that  $y = 10$  when  $x = 12$ , find an expression for  $y$  in terms of  $x$ .

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[3]

9. Given that  $y$  is inversely proportional to  $x$ , and that  $y = 3$  when  $x = 8$ ,

(a) find an expression for  $y$  in terms of  $x$ .

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[3]

(b) complete the following table for values of  $x$  and  $y$ .

$x$	$\frac{1}{2}$		8
$y$		4	3

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[2]

10. Given that  $y$  is inversely proportional to  $x$ , and that  $y = 3$  when  $x = 2$ ,

(a) find an expression for  $y$  in terms of  $x$ ,

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[3]

(b) use the expression you found in (a) to complete the following table.

$x$	-1	2	
$y$		3	0.1

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[2]

11. Given that  $y$  is inversely proportional to  $x^2$ , and that  $y = 2$  when  $x = 15$ ,

(a) find an expression for  $y$  in terms of  $x$ .

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[3]

(b) calculate

(i)  $y$  when  $x = 10$ ,

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[1]

(ii)  $x$  when  $y = 50$ .

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[2]