



Variation

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1) June 2010 V1

- 14 y varies inversely as the square of x .
 $y = 1.5$ when $x = 8$.

Find y when $x = 5$.

Answer $y =$ [3]

2) November 2010 V2

- 11 The resistance, R , of an object being towed through the water varies directly as the **square** of the speed, v .

$R = 50$ when $v = 10$.

Find R when $v = 16$.

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Answer $R =$ [3]

3) June 2011 V2

- 8 p varies directly as the square root of q .
 $p = 8$ when $q = 25$.

Find p when $q = 100$.

Answer $p =$ [3]

4) November 2011 V1

- 8 Seismic shock waves travel at speed v through rock of density d .
 v varies **inversely** as the **square root** of d .

$v = 3$ when $d = 2.25$.

Find v when $d = 2.56$.

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Answer $v =$ [3]

5) November 2011 V2

6 The force, F , between two magnets varies **inversely** as the **square** of the distance, d , between them.

$$F = 150 \text{ when } d = 2.$$

Calculate F when $d = 4$.

Answer $F =$ [3]

6) November 2011 V3

16 The time, t , for a pendulum to swing varies **directly** as the **square root** of its length, l .

$$\text{When } l = 9, t = 6.$$

(a) Find a formula for t in terms of l

Answer(a) $t =$ [2]

(b) Find t when $l = 2.25$

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Answer(b) $t =$ [1]

7) June 2012 V1

- 13 y is **inversely** proportional to x^2 .
When $x = 4, y = 3$.

Find y when $x = 5$.

Answer $y = \dots\dots\dots$ [3]

8) June 2012 V2

- 11 y varies directly as the square of $(x - 3)$.
 $y = 16$ when $x = 1$.

Find y when $x = 10$.

Answer $y = \dots\dots\dots$ [3]

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9) June 2012 V3

- 10 The periodic time, T , of a pendulum varies directly as the square root of its length, l .
 $T = 6$ when $l = 9$.

Find T when $l = 25$.

Answer $T =$ [3]

10) November 2012 V1

The electrical resistance, R , of a length of cylindrical wire varies inversely as the square of the diameter, d , of the wire.

$R = 10$ when $d = 2$.

11

Find R when $d = 4$.

Answer $R =$ [3]

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1) November 2012 V2

13 The mass, m , of an object varies directly as the **cube** of its length, l .

$$m = 250 \text{ when } l = 5.$$

Find m when $l = 7$.

Answer $m =$ [3]

2) November 2012 V3

14 y varies inversely as the square root of x .

$$\text{When } x = 9, y = 6.$$

Find y when $x = 36$.

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Answer $y =$ [3]

13) June 2013 V1

- 19 t varies inversely as the square root of u
 $t = 3$ when $u = 4$.

Find t when $u = 49$.

Answer $t = \dots\dots\dots$ [3]

14) June 2013 V2

- 14 y is inversely proportional to x^3 .
 $y = 5$ when $x = 2$.

Find y when $x = 4$.

Answer $y = \dots\dots\dots$ [3]

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15) June 2013 V3

- 8 The mass, m , of a sphere varies directly with the **cube** of its radius, r .
 $m = 160$ when $r = 2$.

Find m when $r = 5$.

Answer $m = \dots\dots\dots$ [3]

16) November 2013 V2

- 11 The speed, v , of a wave is inversely proportional to the square root of the depth, d , of the water.
 $v = 30$ when $d = 400$.

Find v when $d = 25$.

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Answer $v = \dots\dots\dots$ [3]

17) November 2013 V3

- 8 m varies directly as the cube of x .
 $m = 200$ when $x = 2$.

Find m when $x = 0.4$.

Answer $m = \dots\dots\dots$ [3]

18) June 2014 V2

- 13 w varies inversely as the square root of x .
When $x = 4$, $w = 4$.

Find w when $x = 25$.

Answer $w = \dots\dots\dots$ [3]

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19) June 2014 V3

- 11** y varies as the cube root of $(x + 3)$.
When $x = 5, y = 1$.

Find the value of y when $x = 340$.

Answer $y = \dots\dots\dots$ [3]

20) November 2014 V1

- 13** y varies directly with $\sqrt{x + 5}$.
 $y = 4$ when $x = -1$.

Find y when $x = 11$.

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Answer $y = \dots\dots\dots$ [3]

21) November 2014 V2

- 10 The cost of a circular patio, \$ C , varies as the square of the radius, r metres.
 $C = 202.80$ when $r = 2.6$.

Calculate the cost of a circular patio with $r = 1.8$.

Answer \$..... [3]

22) November 2014 V3

- 9 y varies inversely as $(x + 5)$.
 $y = 6$ when $x = 3$.

Find y when $x = 7$.

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Answer $y =$ [3]

23) June 2015 V1

- 12 p is inversely proportional to the square of $(q + 4)$.
 $p = 2$ when $q = 2$.

Find the value of p when $q = -2$.

Answer $p = \dots\dots\dots$ [3]

24) November 2015 V1

- 12 V is directly proportional to the cube of $(r + 1)$.
When $r = 1$, $V = 24$.

Work out the value of V when $r = 2$.

Answer $V = \dots\dots\dots$ [3]

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25) November 2015 V2

- 17 y is directly proportional to the square of $(x - 1)$.
 $y = 63$ when $x = 4$.

Find the value of y when $x = 6$.

Answer $y = \dots\dots\dots$ [3]

26) November 2015 V3

- 19 y is inversely proportional to $(x + 2)^2$.
When $x = 1, y = 2$.

Find y in terms of x .

Answer $y = \dots\dots\dots$ [2]

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27) March 2015 V2

- 13 x varies directly as the cube root of y
 $x = 6$ when $y = 8$.

Find the value of x when $y = 64$.

Answer $x = \dots\dots\dots$ [3]

28) June 2016 V1

- 21 y is directly proportional to the positive square root of x .
When $x = 9, y = 12$.

Find y when $x = \frac{1}{4}$

$y = \dots\dots\dots$ [3]

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29) June 2016 V3

- 16 y is directly proportional to $(x + 2)^2$
When $x = 8, y = 250$.

Find y when $x = 4$.

$y = \dots\dots\dots$ [3]

30) November 2016 V1

- 14 y is directly proportional to the square root of $(x + 2)$.
When $x = 7, y = 2$.

Find y when $x = 98$.

$y = \dots\dots\dots$ [3]

31) November 2016 V3

1 $V = 4p^2$

Find V when $p = 3$.

$V = \dots\dots\dots$ [1]

32) November 2016 V3

16 d is inversely proportional to $(w + 1)^2$.
 $d = 3.2$ when $w = 4$.

Find d when $w = 7$.

$d = \dots\dots\dots$ [3]

33) June 2018 V1

15 y is directly proportional to $(x - 1)^2$.
When $x = 5$, $y = 4$.

Find y when $x = 7$.

$y = \dots\dots\dots$ [3]

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