**Higher IGCSE (9 – 1) Revision Pack**

**Direct and Inverse Proportion**

**Name --------------------------------**

**Questions**

**Q1.**

*P* is inversely proportional to the square of *q*.
When *q* = 2, *P* = 12.8

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

 ...........................................................

**(3)**

(b)  Find the value of *P* when *q* = 8

 ...........................................................

**(1)**

**(Total for question = 4 marks)**

**Q2.**

*T* is directly proportional to
*T* = 400 when *x* = 625

(a)  Find a formula for *T* in terms of *x*.

 ...........................................................

**(3)**

(b)  Calculate the value of *T* when *x* = 56.25

 ...........................................................

**(1)**

**(Total for question = 4 marks)**

**Q3.**

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 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* = ...........................................................

**(2)**

**(Total for question = 5 marks)**

**Q4.**

*y* is directly proportional to *x*3
 When *x* = 10, *y* = 250

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

*x* = ...........................................................

**(3)**

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

*x* = ...........................................................

**(2)**

**(Total for question = 5 marks)**

**Q5.**

*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 is 5 marks)**

**Q6.**

*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* = ...........................................................

**(3)**

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

*P* = ...........................................................

**(1)**

**(Total for question = 4 marks)**

**Q7.**

*M* is directly proportional to *p*3
*M* = 128 when *p* = 8

(a)  Find a formula for *M* in terms of *p*.

 ...........................................................

**(3)**

(b)  Find the value of *M* when *p* = 5

 ...........................................................

**(1)**

**(Total for question = 4 marks)**

**Q8.**

The pressure *P*, of water leaving a cylindrical pipe, is inversely proportional to the square
of the radius, *r*, of the pipe.

*P* = 22.5 when *r* = 2

(a) Find a formula for *P* in terms of *r*.

.............................................................

**(3)**

(b) Calculate the value of *P* when *r* = 1.5

*P* = ...............................

**(1)**

(c) Calculate the value of r when P = 10

*r* = ...............................

**(2)**

**(Total for question = 6 marks)**

**Q9.**

*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 is 5 marks)**

**Q10.**

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 is 6 marks)**

**Q11.**

(a) There are 32 students in a class.
All the students are either left-handed or right-handed.
The ratio of the number of left-handed students to the number of right-handed
students is 1 : 7

Work out the number of right-handed students.

...........................................................

**(2)**

(b) Sajid makes a scale model of a lorry.
He uses a scale of 1 : 32
The length of Sajid's model lorry is 45 cm.
Chitra makes a scale model of the same lorry.
She uses a scale of 1 : 72

Work out the length of Chitra's model lorry.

........................................................... cm

**(3)**

**(Total for question is 5 marks)**

**Q12.**

Here is a list of the ingredients needed to make leek and potato soup for 6 people.


(a)  Ainsley wants to make leek and potato soup for 13 people.

Work out the amount of chicken stock he needs.

........................................................... ml

**(2)**

(b)  Delia makes leek and potato soup for a group of people.
She uses 1250 g of leeks.

Work out the number of people in the group.

...........................................................

**(2)**

**(Total for Question is 4 marks)**

**Q13.**

The weekly rent for a holiday apartment is £530, which is the same as 715.5 euros.
The weekly rent for a holiday cottage is £750

Using the same rate of currency exchange, work out the weekly rent for the cottage in euros.

 ........................................................... euros

**(Total for question = 3 marks)**

**Q14.**

Lyn went on holiday to India.
She changed £250 into rupees.

The exchange rate was £1 = 97 rupees.

(a)  How many rupees did Lyn get?

 ........................................................... rupees

**(2)**

When she returns from holiday, Lyn has **four** 500 rupee notes.
She changes this money into pounds.

The exchange rate is now £1 = 93.5 rupees.

(b)  Work out how many pounds Lyn gets.

Give your answer to the nearest pound.

£ ...........................................................

**(3)**

**(Total for question = 5 marks)**

**Q15.**

Aiko, Max and Pau share 5400 yen in the ratios 5 : 3 : 4

How much money does each of them get?

Aiko ........................................................... yen

Max ........................................................... yen

Pau ........................................................... yen

**(Total for question = 3 marks)**

**Q16.**

On 1st May 2012, the cost of 5.7 grams of gold was 15 960 rupees.

(a)  Work out the cost, in rupees, of 4.6 grams of gold on the same day.

........................................................... rupees

**(2)**

The cost of gold decreased by 7.5% from 1st May 2012 to 1st May 2013

(b)  Work out the cost, in rupees, of 5.7 grams of gold on 1st May 2013

........................................................... rupees

**(3)**

**(Total for question = 5 marks)**

**Q17.**

Here is a list of the ingredients needed to make lentil soup for 6 people.


Jenny wants to make lentil soup for 24 people.

(a)  Work out the amount of vegetable stock she needs.

........................................................... ml

**(2)**

Ravi is going to make lentil soup.
He uses 450 g of carrots.

(b)  How many people is Ravi making the lentil soup for?

...........................................................

**(2)**

**(Total for question = 4 marks)**

**Q18.**

*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 = 5 marks)**

**Q19.**

*A* is directly proportional to *x*2

*A* = 480 when *x* = 5

Find the value of *A* when *x* = 1.5

 ...........................................................

**(Total for question = 3 marks)**

**Q20.**

*Q* is inversely proportional to *t*2
*Q* = 320 when *t* = 0.5

Find a formula for *Q* in terms of *t*

 ...........................................................

**(Total for question = 3 marks)**

**Q21.**

*P* is inversely proportional to
*P* = 10 when *q* = 0.0064

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

 ...........................................................

**(3)**

(b)  Find the value of *q* when *P* = 20

 ...........................................................

**(2)**

**(Total for question = 5 marks)**

**Q22.**

*V* is inversely proportional to the square of *t*

*V* = 28 when *t* = 2.5

(a)  Express *V* in terms of *t*

...........................................................

**(3)**

(b)  Work out the value of *V* when *t* = 6.25

*V* = ...........................................................

**(2)**

**(Total for question = 5 marks)**

**Q23.**

*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 = 5 marks)**

**Q24.**

*A*, *r* and *T* are three variables.

*A* is proportional to *T*2
*A* is also proportional to *r*3

*T* = 47 when *r* = 0.25

Find *r* when *T* = 365
Give your answer correct to 3 significant figures.

...........................................................

**(Total for question = 4 marks)**

**End of questions**