

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

**Indices**

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

**Questions**

**Q1.**

(a)  *A* = 22 × 3 × 52

*B* = 23 × 5

(i)  Find the Highest Common Factor (HCF) of *A* and *B*.

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

(ii)  Find the Lowest Common Multiple (LCM) of *A* and *B*.

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

**(3)**


(b)   = 2*n*

Find the value of *n*.

*n* = ...........................................................

**(2)**

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

**Q2.**

(a) Simplify

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

**(2)**

(b) Given that 2*p* × 8*q* = 2*n*

express *n* in terms of *p* and *q*.

*n* = ...........................................................

**(2)**

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

**Q3.**

(a)  Write 23 × 24 as a single power of 2

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

**(1)**

(b)  280 = 2n × 5 × 7

Find the value of *n*.

*n* = ...........................................................

**(2)**

**(Total for Question is 3 marks)**

**Q4.**

(a) Write 23 × 26 as a single power of 2

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

**(1)**



(b) Write as a single power of 3

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

**(1)**



(c) = 53

Find the value of *n*.

*n* = ...........................................................

**(2)**

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

**Q5.**

(a)  Simplify

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

**(2)**



(b)  Work out the value of *k*.

*k* = ...........................................................

**(3)**

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

**Q6.**

(a)  Simplify

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

**(1)**

(b)  Solve

Show clear algebraic working.

*y* = ...........................................................

**(4)**

(c)  Make *g* the subject of   *g* − 1 = *gh* + 3*h*

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

**(3)**

**(Total for question = 8 marks)**

**Q7.**

*g* = 23 × 3 × 72               *h* = 2 × 3 × 73

(a)  Express *gh* as a product of powers of its prime factors.

Simplify your answer.

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

**(2)**



(b)  Find the value of *a*, the value of *b* and the value of *c*.

*a* = ...........................................................

*b* = ...........................................................

*c* = ...........................................................

**(2)**

(c)  Show that (7 − 2√5)(7 + 2√5) = 29

Show your working clearly.

**(2)**



(d)  Work out the exact value of *n*.

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

**(3)**

**(Total for question = 9 marks)**

**Q8.**

(3 + √*c*)(2√*c* − 3) = 1 + *k*√*c*

where *c* and *k* are prime numbers.

(a)  Find the value of *c* and the value of *k*.

*c* = ..............................   *k* = ..............................

**(3)**



(b)  Find the value of *m*.

*m* = ...........................................................

**(3)**

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

**Q9.**

1. Simplify, leaving your answers in index form,
2. 65 × 62 × 6

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

(ii) (97)2

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

**(2)**

(b) = 54

Find the value of *n*.

*n* = ...........................................................

**(2)**

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

**Q10.**

(a)  Simplify   *e*8 × *e*7

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

**(1)**

(b)  Simplify fully

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

**(2)**

(c)  Write down the value of *m*0

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

**(1)**

(d)  Simplify fully

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

**(2)**

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

**Q11.**

Given that   

express *n* in terms of *x* and *y*.

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

**(Total for Question is 3 marks)**

**Q12.**

*m* = 8 × 109*n* where *n* is an integer.

Express  in standard form.
Give your answer, in terms of *n*, as simply as possible.

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

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

**Q13.**

Solve 3 × 42*k*+8 = 24
Show your working clearly.

*k* = ...........................................................

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

**Q14.**

Solve the equation   = 1

Show clear algebraic working.

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

**(Total for Question is 3 marks)**

**Q15.**



(a) Write down the value of

(i)  *p*

*p* = ...........................................................

(ii)  *q*

*q* = ...........................................................

(iii)  *r*

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

**(3)**


(b)  Show that

You must write down each stage of your working.

**(2)**

(*e* − 2√3)2 = *f* − 20√3 where *e* and *f* are integers.

(c)  Find the value of *e* and the value of *f*

*e* = ...........................................................

*f* = ...........................................................

**(3)**

**(Total for question = 8 marks)**

**Q16.**

(a)   Simplify   (16*x*4*y*2)

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

**(2)**

(b)   Simplify fully

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

**(3)**

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

**Q17.**

(a) Write as a power of 2

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

**(2)**

(b)  Show that (4 + √12)(5 − √3) = 14 + 6√3
       Show each stage of your working clearly.

**(3)**

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

**Q18.**

(a)  Express 600 as a product of powers of its prime factors.

Show your working clearly.

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

**(3)**



(b)  Simplify

Give your answer as a power of 5

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

**(2)**

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

**Q19.**

(a)  Factorise     *a*2 − *b*2

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

**(1)**

*N* = 222 − 1

(b)  Write *N* as the product of two integers, both of which are greater than 1000

........................................................... × ...........................................................

**(2)**

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

**Q20.**

(a)  Simplify *p*5 × *p*4

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

**(1)**

(b)  Simplify (*m*4)-3

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

**(1)**

(c)  Write down the value of *c*0

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

**(1)**

(d)  Write  as a power of 2

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

**(1)**

(e)  Solve 5(*x* + 7) = 2*x* – 10

Show clear algebraic working.

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

**(3)**

**(Total for question = 7 marks)**

**End of questions**