

# Indices

## Mark Scheme

Level	GCSE
Subject	Maths
Exam Board	Edexcel GCSE
Topic	Indices
Grade Level	Grade 4
Booklet	Mark Scheme

**Time Allowed:** 88 minutes

**Score:** /73

**Percentage:** /100

**Grade Boundaries:**

1. (a) Simplify  $m^3 \times m^6$   $m^9$   
(1)

(b) Simplify  $\frac{p^8}{p^2}$   $p^6$   
(1)

(c) Simplify  $(2n^3)^4$   $16n^{12}$   
(2)

(4 marks)

2. (a) Simplify  $m^6 \times m^7$   $m^{13}$   
(1)

(b) Simplify  $x^0$   $1$   
(1)

(c) Simplify  $(16y^6)^{\frac{1}{2}}$   $4y^3$   
(2)

(4 marks)

3. (a) Simplify  $m^5 \div m^3$   $m^2$   
(1)

(b) Simplify  $5x^4y^3 \times x^2y$   $5x^6y^4$   
(2)

(3 marks)

4. (a) Simplify  $a^4 \times a^5$

$a^9$   
.....  
(1)

(b) Simplify  $\frac{45e^6f^8}{5ef^2}$

$9e^5f^6$   
.....  
(2)

(c) Write down the value of  $9^{\frac{1}{2}}$

3  
.....  
(1)

(4 marks)

5. (a) Simplify  $m^2 \times m^4$

$m^6$   
.....  
(1)

(b) Simplify  $y^7 \div y^5$

$y^2$   
.....  
(1)

(c) Simplify  $(m^3)^5$

$m^{15}$   
.....  
(2)

(4 marks)

6. Simplify fully

(a)  $p^2 \times p^7$

$p^9$   
.....  
(1)

(b)  $\frac{3q^4 \times 2q^5}{q^3}$

$6q^6$   
.....  
(2)

(c)  $(2xy^3)^5$

$32x^5y^{15}$   
.....  
(2)

(4 marks)

7. (a) Simplify  $15y^6 \div 3y^2$

$5y^4$   
.....  
(2)

(b) Simplify  $7wx^2 \times 3w^3x$

$21w^4x^3$   
.....  
(2)

**(4 marks)**

8. Work out the value of

(a)  $(2^2)^3$

$64$   
.....  
(1)

(b)  $(\sqrt{3})^2$

$3$   
.....  
(1)

(c)  $\sqrt{2^4 \times 9}$

$12$   
.....  
(2)

(d)  $4^{-2}$

$\frac{1}{16}$   
.....  
(1)

**(5 marks)**

9. (a) Write down the value of  $49^{\frac{1}{2}}$

$7$   
.....  
(1)

(b) Simplify

(i)  $\frac{x^6}{x^2}$

$x^4$   
.....

(ii)  $(y^4)^3$

$y^{12}$   
.....  
(2)

**(3 marks)**

10. Simplify  $\frac{15a^3 b^7}{3a^2 b^3}$

$$5ab^4$$

(2 marks)

11.  $7^5 \times 7^6 = 7^3 \times 7^k$

Find the value of  $k$ .

$$k = \dots 8 \dots$$

(2 marks)

12. (a) Simplify  $p^3 \times p^2$

$$p^5$$

(1)

(b) Simplify  $\frac{q^3 \times q^4 \times q}{q^2}$

$$q^6$$

(2)

(3 marks)

13. Find the value of

(i)  $36^{\frac{1}{2}}$

$$6$$

(ii)  $3^{-2}$

$$\frac{1}{9}$$

(2 marks)

14. (a) Write as a power of 7

(i)  $7^8 \div 7^3$

$7^5$   
.....

(ii)  $\frac{7^2 \times 7^3}{7}$

$7^4$   
.....

(3)

(b) Write down the reciprocal of 2

$\frac{1}{2}$   
.....

(1)

(4 marks)

15. (a) Simplify

$12y^3 \div 3y^5$

$4y^{-2}$   
.....

(2)

(b) Simplify

$2w^3x^2 \times 3w^4x$

$6w^7x^3$   
.....

(2)

(4 marks)

16. (a) Work out the value of

(i)  $4^2$

$16$   
.....

(ii)  $\sqrt{64}$

$8$   
.....

(iii)  $3 \times 2^3$

$24$   
.....

(3 marks)

17. Simplify

(i)  $x^4 \times x^5$

$x^9$

(ii)  $\frac{p^8}{p^3}$

$p^5$

(iii)  $3s^2t^3 \times 4s^4t^2$

$12s^6t^5$

(iv)  $(q^3)^4$

$q^{12}$

(6 marks)

18. Simplify fully

(i)  $(p^3)^3$

$p^9$

(ii)  $\frac{3q^4 \times 2q^5}{q^3}$

$6q^6$

(4 marks)

19. Work out

(i)  $4^0$

$1$

(ii)  $4^{-2}$

$\frac{1}{16}$

(iii)  $16^{\frac{3}{2}}$

$64$

(4 marks)

20. (a) Find the value of

(i)  $64^\circ$

.....1.....

(ii)  $64^{\frac{1}{2}}$

.....8.....

(iii)  $64^{-\frac{2}{3}}$

..... $\frac{1}{16}$ .....

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(4 marks)