



# Bishops Online Tutoring



Education Consultancy

## Edexcel GCSE Mathematics

### ALGEBRA: INDICES

#### Materials Required:

- Pen
- HB Pencil
- Ruler (in centimetres and millimetres)
- Protractor
- Compass

#### Instructions:

- Use a black ink pen to answer all questions
- Fill your name in the section below
- Answer the questions in the spaces provided
- Show your working out for all answers

#### Information:

- The marks allocated for each question are displayed within brackets – utilise this information to gauge the appropriate amount of time to dedicate to each question
- Questions marked with an asterisk (\*) will assess your written communication; be careful of spelling, punctuation and grammar with these questions

#### Advice:

- Carefully read the question before attempting to answer it
- Be vary of time and try to answer every question
- If you have enough time in the end, go back and check your answers. A good way to check your answers is to retry the question with the hope of getting the same answer as before without looking at your working out from before

## NO CALCULATOR ALLOWED

<b>NAME:</b>	
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1. (a) Simplify  $m^3 \times m^6$

.....  
(1)

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

.....  
(1)

(c) Simplify  $(2n^3)^4$

.....  
(2)

**(4 marks)**

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2. (a) Simplify  $m^6 \times m^7$

.....  
(1)

(b) Simplify  $x^0$

.....  
(1)

(c) Simplify  $(16y^6)^{1/2}$

.....  
(2)

**(4 marks)**

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

.....  
(1)

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

.....  
(2)

**(3 marks)**

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

.....  
(1)

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

.....  
(2)

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

.....  
(1)

**(4 marks)**

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

.....  
(1)

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

.....  
(1)

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

.....  
(2)

**(4 marks)**

6. Simplify fully

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

.....(1)

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

.....(2)

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

.....(2)

**(4 marks)**

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

.....

(2)

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

.....

(2)

**(4 marks)**

8. Work out the value of

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

.....

(1)

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

.....

(1)

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

.....

(2)

(d)  $4^{-2}$

.....

(1)

**(5 marks)**

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

.....

(1)

(b) Simplify

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

.....

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

.....

(2)

**(3 marks)**

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

.....

**(2 marks)**

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

Find the value of  $k$ .

$k = \dots\dots\dots$

**(2 marks)**

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

.....

**(1)**

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

.....

**(2)**

**(3 marks)**

13. Find the value of

(i)  $36^{1/2}$

.....

(ii)  $3^{-2}$

.....

**(2 marks)**

14. (a) Write as a power of 7

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

.....

(ii)  $\frac{7^2 \times 7^2}{7^1}$

.....

(3)

(b) Write down the reciprocal of 2

.....

(1)

(4 marks)

---

15. (a) Simplify

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

.....

(2)

(b) Simplify

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

.....

(2)

(4 marks)

---

16. (a) Work out the value of

(i)  $4^2$

.....

(ii)  $\sqrt{64}$

.....

(iii)  $3 \times 2^3$

.....

(3 marks)

17. Simplify

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

.....

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

.....

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

.....

(iii)  $(q^3)^4$

.....

**(6 marks)**

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18. Simplify fully

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

.....

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

.....

**(4 marks)**

---

19. Work out

(i)  $4^0$

.....

(ii)  $4^{-2}$

.....

(iii)  $16^{3/2}$

.....

**(4 marks)**

20. (a) Find the value of

(i)  $64^\circ$

.....

(ii)  $64^{1/2}$

.....

(iii)  $64^{-2/3}$

.....

**(4 marks)**

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