Name:

Level 2 Further Maths

# Laws of Indices

Corbettmaths

Ensure you have: Pencil or pen

**Guidance**

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Revision for this topic

www.corbettmaths.com/more/further-maths/

1. Write $(x^3)^2$ as a single power of x

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**(1)**

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2. (a) $c^4 \times c^n = c^8$

Work out the value of n

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**(1)**

(b) $\frac{y^{12}}{y^4} = y^m$

Work out the value of m

.....

**(1)**

(c) $(a^n)^4 = \frac{(a^3)^6}{a^7}$

Work out the value of n

.....

**(3)**

3. $\dfrac{y^7 \times y^8}{y^4 \times y^n} = y^5$

Find the value of n

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**(2)**

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4. (a) $y^4 \times y^n = 1$

Work out the value of n

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**(1)**

(b) Simplify fully $\dfrac{a^8}{a^3 \times a^{-9}}$

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**(2)**

5. Work out the value of $(2^{\frac{7}{2}} - 2^{\frac{1}{2}})^2$

……..

**(3)**

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6. (a) Simplify $(2xy^2)^4$

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**(2)**

(b) Simplify $(3x^3y^5)^3$

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**(2)**

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7. Simplify fully $(\frac{3}{4}x^5y)^3$

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**(2)**

8. $-1 < x < 0$

Write the following expressions in order, starting with the smallest.

$$x \qquad x^2 \qquad x^3 \qquad x^4$$

.....

**(2)**

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9. Simplify fully $\dfrac{(6xy^3)^3}{4xy^5}$

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**(3)**

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10. Write $\sqrt[3]{w^{-10} \times w^{-2}}$ as an integer power of w.

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**(2)**

11. Given that $a = 3^x$ and $b = 3^y$

(a) Write $3^{x+1}$ in terms of $a$

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**(2)**

(b) Write $3^{x+y}$ in terms of $a$ and $b$

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**(1)**

(c) Write $3^{2y}$ in terms of $b$

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**(1)**

12. Given that $125^x = 25^{x+5}$

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**(3)**

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13. Given that $16^x = 4^{10-x}$

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**(3)**

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14. Find the value of y

$2^y \times 4^{y+3} = 16$

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**(3)**

15. Solve $\frac{16^{2x+3}}{4^x} = 32$

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**(4)**

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16. Find the exact values of w

$3^{w^2} = 9 \times 27^{w+5}$

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**(4)**

17. Solve

$$\frac{81^x}{9^{x+1}} = 3\sqrt{3}$$

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**(4)**