Name:

Exam Style Questions

Laws of Indices

Corbettmaths

Equipment needed: Pen, Calculator

Guidance

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

Video Tutorial

www.corbettmaths.com/contents

Videos 17, 174

Answers and Video Solutions

1. $2^2 \times 2^3 = 2^{\boxed{5}}$

Write the missing power in the box.

(1)

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2. Simplify $5^4 \times 5^3$

5^7

Circle the correct answer.

25^7 $\quad$ 5^{12} $\quad$ (5^7) $\quad$ 25^{12}

(1)

---

3. Simplify $n^2 \times n^4$

n^6

(1)

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4. $p^6 \times p^2 = p^x$

$p^6 \times p^2 = p^8$

Find the value of x

8

(1)

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5. Jonah was asked to simplify $y^8 \times y^3$

His answer is y^{24}

Explain Jonah's mistake.

Jonah has multiplied the powers, he should have added them: y^{11}

(1)

6.

(a) Simplify

$$w^4 \times w^4$$

w^8

.....

(1)

(b) Simplify

$$a^6 \div a^3$$

a^3

.....

(1)

7.

(a) Simplify

$$m^5 \times m^3$$

m^8

.....

(1)

(b) Simplify

$$m^8 \div m^2$$

m^6

.....

(1)

(c) Simplify

$$(m^3)^2$$

m^6

.....

(1)

8. Simplify $\frac{c^{12}}{c^4}$

c^8

.....

(1)

9. Simplify

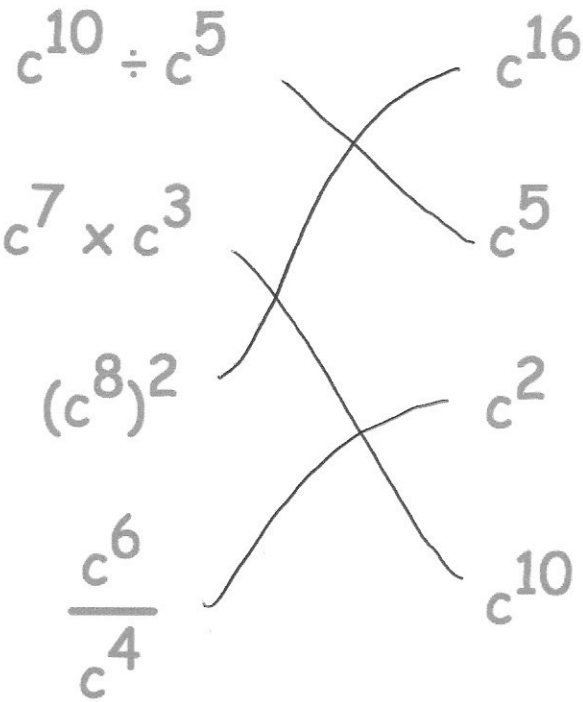
$\frac{m^9 \times m}{m^5}$ $\frac{m^{10}}{m^5}$

m^5

.....

(2)

10. Match the expressions.



(4)

11. Simplify the following.

$$\frac{s^3 \times s^4}{s^2}$$

s^7 / s^2

s^5

.....

(2)

12.

(a) Simplify $w^3 \times w^{-5}$

w^{-2}

.....

(1)

(b) Simplify $a^4 \div a^{-2}$

a^6

.....

(1)

---

13. Simplify $c^7 \times (c^6)^4$

$c^7 \times c^{24}$

c^{31}

.....

(2)

14. Work out the value of $\dfrac{2^9 \times 2^{-2}}{2^3}$

$\frac{2^7}{2^3} = 2^4$

$2 \times 2 \times 2 \times 2$

16

.....

(2)

---

15. Simplify $(5^{-3} \times 5^7)^3$

Give your answer as a power of 5.

$(5^4)^3 = 5^{12}$

5^{12}

.....

(2)

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16. Simplify $2a^3c^3 \times 3a^2c$

$6a^5c^4$

$6a^5c^4$

.....

(2)

17. Simplify

$$\frac{10m^5n^4}{2m^2n}$$

$5m^3n^3$

(2)

18. Simplify $(7x^3)^2$

$49x^6$

Circle the correct answer.

$49x^5$ $14x^6$ $14x^5$ $49x^6$

(1)

19. Simplify $(2m^4)^3$

$8m^{12}$

$8m^{12}$

(2)

20. Simplify $(2xy^3)^4$

$16x^4y^{12}$

(2)

21. Work out the value of $3^{16} \div (3^2)^7$

$3^{16} \div 3^{14} = 3^2$

9

.....

(2)

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22. Simplify

$$\frac{a^{\frac{1}{5}} \times a^{\frac{2}{3}}}{a^{\frac{3}{5}}}$$

$\frac{1}{5} + \frac{2}{3} = \frac{13}{15}$

$\frac{a^{13/15}}{a^{3/5}}$

$\frac{13}{15} - \frac{3}{5} = \frac{4}{15}$

$a^{4/15}$

$a^{4/15}$

.....

(3)

23. Simplify fully

$$\sqrt{\frac{50\pi a^5}{2\pi a^3}}$$

$\sqrt{25a^2} = 5a$

$5a$

.....

(3)

---

24. Work out

$$\sqrt[3]{\frac{2^3 \times 3^8}{3^2}}$$

$\sqrt[3]{2^3 \times 3^6}$

$= 2 \times 3^2$

$= 2 \times 9 = 18$

18

.....

(2)

25. Simplify $25 \times 5^3 \times 5^6$

Give your answer as a power of 5.

$5^{2} \times 5^{3} \times 5^{6} = 5^{11}$

5^{11}

.....

(2)

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26. Write 27×9^x as a power of 3 in terms of x

$3^3 \times (3^2)^x$

$3^3 \times 3^{2x}$

3^{2x+3}

3^{2x+3}

.....

(3)

or

3^{3+2x}