

GCSE Maths: Multiplying and dividing terms, and the laws of indices (Higher): answers

GCSE Maths - Algebra Basics - Higher - Lesson 7.3

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch07-algebra-basics/higher/multiplying-and-dividing-terms-and-the-laws-of-indices/

Exercise 7C Multiplying, dividing and indices Non-calculator

1 Simplify each product.

(a) $4x \times 3$

Answer: $12x$

(b) $2a \times 5b$

Answer: $10ab$

(c) $x \times x$

Answer: x^2

(d) $3y \times 2y$

Answer: $6y^2$

(e) $5m \times m^2$

Answer: $5m^3$

(f) $ab \times ab$

Answer: a^2b^2

2 Write each as a single power.

(a) $x^3 \times x^4$

Answer: x^7

(b) $a^5 \div a^2$

Answer: a^3

(c) $(y^2)^3$

Answer: y^6

(d) $p \times p \times p$

Answer: p^3

(e) $m^6 \div m$

Answer: m^5

(f) $k^8 \times k$

Answer: k^9

3 Simplify each product.

(a) $3x^2 \times 2x^4$

Answer: $6x^6$

(b) $4a^3 \times 5a$

Answer: $20a^4$

(c) $6b \times b^2$

Answer: $6b^3$

(d) $2y^3 \times 7y^2$

Answer: $14y^5$

4 Simplify each division.

(a) $12x \div 3$

Answer: $4x$

(b) $20a^2 \div 4a$

Answer: $5a$

(c) $15y^3 \div 5y$

Answer: $3y^2$

(d) $18p^4 \div 6p^2$

Answer: $3p^2$

(e) $8m \div 2m$

Answer: 4

(f) $9t^2 \div 3t^2$

Answer: 3

5 Simplify each product.

(a) $3ab \times 2a$

Answer: $6a^2b$

(b) $4xy \times 5x$

Answer: $20x^2y$

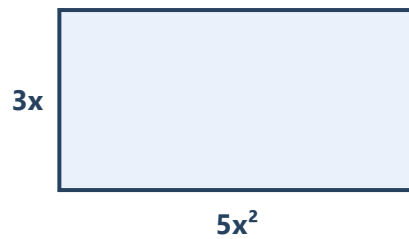
(c) $2pq \times 3pq$

Answer: $6p^2q^2$

(d) $a^2b \times ab^2$

Answer: a^3b^3

- 6 The rectangle has length $5x^2$ cm and width $3x$ cm. Write a simplified expression for its area.



Answer: $15x^3 \text{ cm}^2$

- 7 A square has sides of length $4a$. Write a simplified expression for its area.

Answer: $16a^2$

- 8 A cuboid has length $2x$ cm, width $3x$ cm and height x^2 cm. Write a simplified expression for its volume.

Answer: $6x^4 \text{ cm}^3$

- 9 Ali says that $2x \times 3x = 6x$. Use $x = 2$ to test his answer, and give the correct answer.

Answer: Ali is wrong: the answer is $6x^2$

- 10 Lena writes $3x^2 \times 2x^3 = 6x^6$. Find her mistake and write the correct answer.

Answer: She multiplied the powers. They should be added. The correct answer is $6x^5$

- 11 Simplify each expression.

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

Answer: x^6

(b) $(2a)^3$

Answer: $8a^3$

(c) $(3b^2)^2$

Answer: $9b^4$

(d) $(5x)^2$

Answer: $25x^2$

(e) $(ab)^4$

Answer: a^4b^4

(f) $(2y^3)^4$

Answer: $16y^{12}$

12 Simplify each fraction.

(a) $\frac{6x^2}{3x}$

Answer: $2x$

(b) $\frac{10a^3b}{5ab}$

Answer: $2a^2$

(c) $\frac{12xy^2}{4y}$

Answer: $3xy$

(d) $\frac{15p^3q^2}{3pq}$

Answer: $5p^2q$

13 Find the missing power in each statement.

(a) $x^? \times x^4 = x^9$

Answer: 5

(b) $x^7 \div x^? = x^2$

Answer: 5

(c) $(x^?)^3 = x^{12}$

Answer: 4

(d) $3x^? \times 2x^2 = 6x^5$

Answer: 3

14 Show that $\frac{(2x^2)^3}{4x^4} = 2x^2$.

Answer: $2x^2$

15 Work out the value of each. Explain your answers.

(a) 5^0

Answer: 1

(b) y^0

Answer: 1

(c) $6x^0$

Answer: 6

(d) $(3a)^0$

Answer: 1

16 The area of a rectangle is $12x^3 \text{ cm}^2$. Its length is $4x \text{ cm}$. Write an expression for its width.

Answer: $3x^2 \text{ cm}$

17 Simplify each expression.

(a) $x^{-2} \times x^5$

Answer: x^3

(b) $3a^{-1} \times 4a^3$

Answer: $12a^2$

(c) $y^4 \div y^7$

Answer: y^{-3}

(d) $(x^{-2})^3$

Answer: x^{-6}

(e) $12p^2 \div 4p^5$

Answer: $3p^{-3}$

(f) $(2x^{-1})^3$

Answer: $8x^{-3}$

18 Simplify each expression.

(a) $x^{1/2} \times x^{1/2}$

Answer: x

(b) $(x^{1/2})^4$

Answer: x^2

(c) $(8x^6)^{1/3}$

Answer: $2x^2$

(d) $x^{3/2} \div x^{1/2}$

Answer: x

(e) $(16y^4)^{1/2}$

Answer: $4y^2$

19 Simplify each expression.

(a) $\frac{(3x^2y)^3}{9xy^2}$

Answer: $3x^5y$

(b) $\frac{(2a^3b)^2 \times 3ab}{6a^2b}$

Answer: $2a^5b^2$

(c) $\frac{(5x^2y^3)^2}{10xy}$

Answer: $\frac{5x^3y^5}{2}$

(d) $\frac{(4pq^2)^3}{8p^2q^5}$

Answer: $8pq$

20 Write $4^n \times 2^{n+1}$ as a single power of 2.

Answer: 2^{3n+1}