

DIVIDING AN ALGEBRAIC TERM OR AN ALGEBRAIC EXPRESSION BY AN ALGEBRAIC TERM

Dividing an Algebraic Term by another Algebraic Term

When dividing an algebraic term by another algebraic term , follow the steps :

- ① Divide the coefficients of the terms , apply the rule of signs.
- ② Divide the symbolic factors , subtract the exponents of the variables with the same bases (subtract the exponents of the divisor from the exponents of the dividend).

Remember the rule of signs in division

- The quotient of two numbers with the same sign is a positive number.
- The quotient of two numbers with different signs is a negative number.

Choose the correct answer from the given ones :

1. $(a^4 + a^3) \div a^2 = \dots$ $a^2 + a$

(a) $a^6 + a^5$

(b) $a^8 + a^6$

(c) $a^3 + a^2$

(d) $a^2 + a$

2. $\dots \div (-3x^2y) = 4x^3y^3$

~~(a) $12x^6y^3$~~

(b) $-12x^5y^4$

(c) $-7x^5y^3$

(d) $-7x^6y^3$

3. A rectangle has an area of $(15x^3 + 25x^2 - 15x)$ square units, and one of its dimensions is $(5x)$ length units. What is the length of other dimension in terms of x ?

~~(a) $3x^3 + 5x^2 - 3x$~~

(c) $3x^2 + 5x - 3$

~~(b) $15x^3 + 5x^2 - 3$~~

~~(d) $3x^2 + 5x + 3$~~

$3x^2 + 5x$

Find the quotient of each of the following :

$$\frac{-12x^5y^2}{-4x^2y}$$

$$= 3x^3y$$

$$(-32a^1b^6) \div (-4a^3b^2)$$

$$= 8b^4$$

$$\frac{15a^3b^2c}{3a^2b^2}$$

$$= 5a$$

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$$\frac{32x^5 - 48x^3 + 72x^7}{-8x^3}$$

$$\begin{aligned} & -4x^2 + 6 - 9x^4 \\ & = -9x^4 - 4x^2 + 6 \end{aligned}$$

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$$\frac{18x^4y^2 - 42x^5y^4 + 30x^6y^5}{-6x^2y^2}$$

$$= -3x^2 + 7x^3y^2 - 5x^4y^3$$

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$$\frac{-15a^3x^2 + 10a^4x^3}{-5a^3x^2}$$

$$3 - 2ax$$

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Simplify each of the following to the simplest form

$$\frac{28x^2 - 42x}{7x} + \frac{14x^2 - 35x}{-7x}$$

$$4x - 6 + -2x + 5$$
$$= 2x - 1$$

$$\frac{\cancel{2x}(6x^2 - 2x + 8)}{2\cancel{x}}$$

$$3x^2 - x + 4$$

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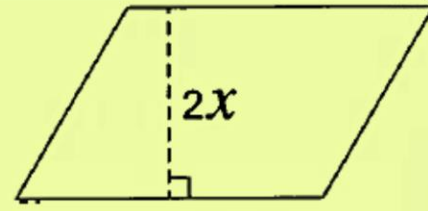
If $(30x^2y^3 - 15xy) \div (-3x) = nxy^2 + 5y$, what is the value of n ?

$$\frac{30x^2y^3 - 15xy}{-3x} = -10xy^2 + 5y$$

$$\rightarrow n = -10$$

The area of a parallelogram is $(2x^3 + 4x^2 + 10x)$ square units,
and its height is $(2x)$ length units.

Find the length of the base of the parallelogram corresponding to
this height in terms of x .



$$A = b \times h$$

$$b = A/h$$

$$b = \frac{2x^3 + 4x^2 + 10x}{2x} = x^2 + 2x + 5$$

length units



Creative Thinking

- 17 The volume of a cuboid is $(24x^3 + 32x^2y)$ cubic centimeters, and its base is in the shape of a square with a side length of $(2x)$ cm. Find its height in terms of x and y , then find the numerical value of the height when $x = 2, y = 1$

$$V = A \times h \Rightarrow h = \frac{V}{A}$$

$$A = S \times S = 2x \times 2x = 4x^2$$

$$h = \frac{24x^3 + 32x^2y}{4x^2} = 6x + 8y$$

$$\begin{aligned} &12 + 8 \\ &= 20 \\ &= \end{aligned}$$