

Dividing and Simplifying Square / Cube Terms

Key Rules:

When dividing powers with the same base: $a^m \div a^n = a^{m-n}$

$$(a^m)^n = a^{m \times n}$$

$$(ab)^n = a^n b^n$$

Example 1:

Simplify $\frac{x^6}{x^2}$

Solution: $\frac{x^6}{x^2} = x^{6-2} = x^4$

Example 2:

Simplify $\frac{(2y^3)^2}{4y^2}$

Solution:

First, expand the numerator: $(2y^3)^2 = 2^2(y^3)^2 = 4y^6$

Now divide: $\frac{4y^6}{4y^2} = \frac{4}{4} \times \frac{y^6}{y^2} = 1 \times y^{6-2} = y^4$

Example 3:

Simplify $\frac{a^9 b^6}{a^3 b^2}$

Solution: $\frac{a^9}{a^3} = a^{9-3} = a^6$

$$\frac{b^6}{b^2} = b^{6-2} = b^4$$

So, $a^6 b^4$

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Multiple Choice Questions

1. Simplify $\frac{m^8}{m^3}$

a) m^{11}

b) m^5

c) m^{24}

d) m^2

2. Simplify $\frac{(3x^2y)^3}{9x^3y^2}$

a) x^3y

b) $3x^3y$

c) x^6y

d) $3x^3y^3$

3. Simplify $\frac{a^6b^9}{a^4b^3}$

a) a^2b^6

b) $a^{10}b^{12}$

c) a^2b^3

d) a^3b^2

4. Simplify $\frac{(2x^3)^2}{4x}$

a) x^5

b) $4x^6$

c) x^2

d) x^4

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True/False Questions

1. True or False: $\frac{x^5}{x^2} = x^3$
2. True or False: $\frac{(2y^2)^3}{8y^4} = y^2$
3. True or False: $\frac{a^6}{a^2} = a^4$
4. True or False: $\frac{b^8}{b^2} = b^{10}$

Short Answer Questions

1. Simplify $\frac{(x^2y^3)^2}{x^3y}$
2. Simplify $\frac{(3a^2b)^3}{9a^3b^2}$
3. Simplify $\frac{(5m^4)^2}{25m^3}$
4. Simplify $\frac{(2p^2q^3)^3}{8p^3q^4}$

Challenge Question

Simplify $\frac{(4x^3y^2)^2}{8x^4y}$ as much as possible.

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Answer Key

Multiple Choice Questions

1. b) m^5
2. a) x^3y
3. a) a^2b^6
4. d) x^4

Fill in the Blank Questions

1. y^3
2. $5z^2$
3. b^7
4. $2a^1$ or simply $2a$

True/False Questions

1. True
2. True
3. True
4. False – The correct answer is b^6

Short Answer Questions

1. x^1y^5 or simply xy^5
2. a^3b
3. m^5
4. p^3q^5

Challenge Question

$$x^2y^3$$