Exponent laws: 10 practice questions

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Name: _____ Date: _____

Attempt all questions and show your working. Suggested time: 15 to 20 minutes.

Section A: Consolidating (Questions 1-4)

Question 1

Write each expression in index form.

(a) $5 \times 5 \times 5 \times 5$

(b) $a \times a \times a \times b \times b$

Question 2

Evaluate:

(a) 2^5

(b) 3^4

(c) 10^0

(d) $(-2)^3$

Question 3

Simplify, writing each answer as a single power.

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

(b) $y^9 \div y^2$

(c) $(m^2)^5$

Question 4

Write 64 as:

(a) a power of 2

(b) a power of 4

(c) a power of 8

Section B: Standard (Questions 5-10)

Question 5

Simplify:

(a) $3a^2 \times 4a^5$

(b) $2x^3y \times 5xy^4$

(c) $-6m^4n^2 \times 3mn$

Question 6

Simplify:

(a) $20x^8 \div 5x^3$

(b) $(18a^6b^4)/(6a^2b)$

(c) $(12p^5q^3)/(8p^5q)$

Question 7

Simplify:

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

(b) $(-3a^2b)^3$

(c) $(2x/5)^3$

Question 8

Evaluate or simplify each expression. Assume x and a are not zero.

(a) 7^0

(b) $5x^0$

(c) $(5x)^0$

(d) $4a^0 + (4a)^0$

Question 9

Use the index laws to evaluate each expression without a calculator.

(a) $(2^{10})/(2^7)$

(b) $(5^6 \times 5^3)/(5^7)$

(c) $(10^2)^3 \div 10^4$

Question 10

Find the number that goes in each box.

(a) x^(□) × $x^4 = x^{11}$

(b) (a^(□))$^3 = a^{18}$

(c) $(m^{12})/(m^{\square}) = m^3$

(d) $(2y^3)^{\square} = 8y^9$

Exponent laws: answers

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Question 1

Answer: (a) 5^4 (b) a^3b^2

Question 2

Answer: (a) 32 (b) 81 (c) 1 (d) -8

Question 3

Answer: (a) x^7 (b) y^7 (c) m^{10}

Question 4

Answer: (a) 2^6 (b) 4^3 (c) 8^2

Question 5

Answer: (a) $12a^7$ (b) $10x^4y^5$ (c) $-18m^5n^3$

Question 6

Answer: (a) $4x^5$ (b) $3a^4b^3$ (c) $(3q^2)/(2)$ (also accept $1.5q^2$ or $3/2q^2$)

Question 7

Answer: (a) $16x^{12}$ (b) $-27a^6b^3$ (c) $(8x^3)/(125)$

Question 8

Answer: (a) 1 (b) 5 (c) 1 (d) 5 ($4 \times 1 + 1$)

Question 9

Answer: (a) 8 (2^3) (b) 25 (5^2) (c) 100 ($10^6 \div 10^4 = 10^2$)

Question 10

Answer: (a) 7 (b) 6 (c) 9 (d) 3