

3. a. $\frac{3x^3y}{4x} \cdot \frac{2x^2y^2}{y^3}$ $\frac{9x^5y^3}{x^1y^2}$

$9x^4$

b. $\left(\frac{3x^2}{y}\right)^3$ $\frac{3^3(x^2)^3}{y^3}$ $\frac{27x^6}{y^3}$

c. $\frac{5x^{-3}y^2}{x^5y^{-1}} \cdot \frac{(2xy^3)^{-2}}{xy}$ $\frac{5y^2}{x^8y(2xy^3)^2}$

$\frac{5y^2}{x^9y(2^2x^2y^6)}$

$= \frac{5y^3}{4x^{11}y^7}$
 $= \frac{5}{4x^{11}y^4}$

4. a. A middle-range weekly wage for a man in the U.S. from 1980 to 1997 can be modeled by $y = 460(1.035)^t$ where $t = 0$ represents the year 1990. Find the ratio of weekly earnings in 1997 to the earnings in 1980.

(1997) $t = 7$
 (1980) $t = 0$
 $y = \frac{460(1.035)^7}{460(1.035)^0} = (1.035)^7$
 $y \approx 1.7946 \dots$

b. You toss a number cube 5 times in a row. What is the probability of getting all sixes?

$P(6) = \left(\frac{1}{6}\right)^5$

$P = \left(\frac{1}{6^5}\right)$

$P = \frac{1}{7776}$

$y \approx 1.79$

Section 8.4 Scientific Notation

Assignment:

*** A number is in scientific notation if it is in the form $c \times 10^n$, where $1 < c < 10$ and n is an integer.

6.29×10^5
Yes

329×10^5
No

Examples

1. Rewrite in decimal form

Pos Exp
right
Neg Exp
left

a. 3.128×10^3 → 3,128

b. 6.4×10^4 → 64,000

c. 3.9×10^{-1} → .39

d. 6.12×10^{-5} → .0000612

2. Rewrite in scientific notation.

$c > 10$
Pos Exp
 $c < 1$
Neg Exp

a. 52,314 → 5.2314×10^4

b. 3.2 → 3.2×10^0

c. 0.0000428 → 4.28×10^{-5}

d. 602,000,000 → 6.02×10^8

3. Evaluate each expression. Write the result in scientific notation.

a. $(2.5 \times 10^4)(5.8 \times 10^2)$
 $(2.5 \cdot 5.8) (10^4 \times 10^2)$
 $14.5 \times 10^{6+1}$
 1.45×10^7

b. $(1.82 \times 10^{-1}) \div (1.4 \times 10^{-3})$

$\frac{(1.82) \times 10^{-1}}{(1.4) \times 10^{-3}}$ → 1.3×10^2

c. $(1.5 \times 10^{-4})^3$

$1.5^3 \times (10^{-4})^3 = 3.375 \times 10^{-12}$