Simplify each. Make sure your answers have no exponents that are negative or zero.

1. $(4m^6n^{-3}p^7)(-m^3n)(5m^{-2}np^5)$

$$\frac{-20m^7p^{12}}{n}$$

2. $(6a^{-4}b^5c)^2(2a^2b^{-1}c^4)^3$

$36ba^{-8}b^{10}c^2 \cdot 8a^6b^{-3}c^{12}$

$$\frac{288b^7c^{14}}{a^2}$$

3. $\dfrac{-6h^5k^3}{12h^2k^8} = \dfrac{-1h^3}{2k^5}$

1

Tyra subscribes to an online gaming service that charges a monthly fee of $5.00 and $0.25 per hour for time spent playing premium games. Which of the following functions gives Tyra's cost, in dollars, for a month in which she spends x hours playing premium games?

$5 + 0.25x$

A) $C(x) = 5.25x$

B) $C(x) = 5x + 0.25$

C) $C(x) = 5 + 0.25x$

D) $C(x) = 5 + 25x$

2

A grocery store sells a brand of juice in individual bottles and in packs of 6 bottles. On a certain day, the store sold a total of 281 bottles of the brand of juice, of which 29 were sold as individual bottles. Which equation shows the number of packs of bottles, p, sold that day?

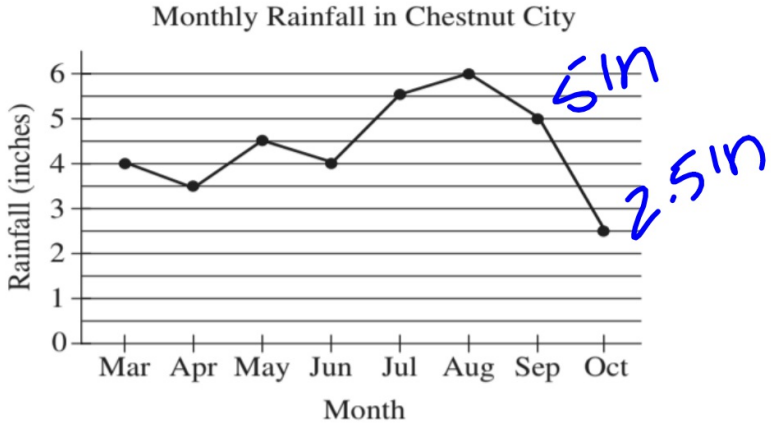
A) $p = \frac{281 - 29}{6}$

B) $p = \frac{281 + 29}{6}$

C) $p = \frac{281}{6} - 29$

D) $p = \frac{281}{6} + 29$

3



The line graph above shows the monthly rainfall from March to October last year in Chestnut City. According to the graph, what was the greatest change (in absolute value) in the monthly rainfall between two consecutive months?

A) 1.5 inches

B) 2.0 inches

C) 2.5 inches

D) 3.5 inches

4

A rectangle has perimeter P, length ℓ and width w. Which of the following represents ℓ in terms of P and w ?

A) $\ell = P - w$

B) $\ell = \frac{2P - w}{2}$

C) $\ell = \frac{P - 2w}{2}$

D) $\ell = 2P - 2w$

$P = 2\ell + 2w$

$P - 2w = 2\ell$

$\ell = \frac{P - 2w}{2}$

5

Which ordered pair (x, y) satisfies the system of equations shown below?

$$\begin{aligned} 4x - 2y &= 12 \\ 2x - y &= 6 \end{aligned}$$

$$x + 2y = -2$$

A) $(-6, 2)$

B) $(-2, 2)$

C) $(2, -2)$

D) $(4, 2)$

$+2(2x - y = 6)$

$5x = 10$

$x = 2$

6

A soda company is filling bottles of soda from a tank that contains 500 gallons of soda. At most, how many 20-ounce bottles can be filled from the tank? (1 gallon = 128 ounces)

A) 25
B) 78
C) 2,560
D) 3,200

500 * 128oz =
64,000/20 = 3200

7

A car traveled at an average speed of 80 miles per hour for 3 hours and consumed fuel at a rate of 34 miles per gallon. Approximately how many gallons of fuel did the car use for the entire 3-hour trip?

A) 2
B) 3
C) 6
D) 7

D=r·t
D=80·3=240/34=7.0

Properties of Exponents in Chapter 8

- Zero and Negative Exponents $5b^{-3}c^{0}$ (1) Reciprocal
- Multiplying powers with the same base $a^{4}a^{7}a$ + exp
- Raising a power to a power $(m^{5})^{8}$ mult.
- Raising a product to a power $(5a^{3}b^{7})^{2}$ mult
- Dividing powers with the same base $\frac{n^{8}}{n^{2}}$ subtr.
- Raising a quotient to a power $\left(\frac{x^{3}}{y^{7}}\right)^{4}$ mult.

Section 8-5:
Division Properties of Exponents

Dividing Powers with the Same Base:

Subtract Exponents

Exponent in Numerator − Exponent in Denominator

7. $\left(\frac{g^4h^{-3}k^5}{g^8h^{-6}k}\right)^{-2}\left(\frac{g^{-5}h^{-7}k^3}{g^{-2}h^4k^{-5}}\right)^3$

Simplify each.

1. $\frac{28w^8c}{14w^2c^6}$

2. $\frac{8k^8m^{-4}}{12k^{-3}m^{-9}}$

Simplify each. No negative exponents in your answer!

1. $\frac{36m^9}{20m^3} = \frac{9m^6}{5}$

2. $\frac{G^7}{G^{10}} = \frac{1}{G^3}$

3. $\frac{6k^{-7}}{24k^5} = \frac{1}{4k^{12}}$

4 $\frac{T^{-9}U^4V^{-3}}{T^{-6}U^{-4}V^{-3}} = \frac{U^8}{T^3}$

$4+4$

8

5. Simplify.

$\frac{7a^8b^9c^{-4}d^6}{35a^{-2}b^7c^{-8}d^{10}} = \frac{1a^{10}b^2c^4}{5d^4}$

6. Simplify

$$\left(\frac{10p^6q^5r^{-2}}{5p^2q^{-1}r^3p^4}\right)^3 = \left(\frac{2q^6}{1r^5}\right)^3 = \frac{8q^{18}}{r^{15}}$$

Simplify each.

7. $\left(\frac{a^9b^{-3}}{a^4c^{-5}}\right)^{-3} = \left(\frac{a^5c^5}{b^3}\right)^{-3} = \left(\frac{b^3}{a^5c^5}\right)^3 = \frac{b^9}{a^{15}c^{15}}$

8. $\left(\frac{8p^4q^{-3}r^6}{p^9q^2r^5}\right)^{-2} = \left(\frac{8r^1}{p^5q^5}\right)^{-2} = \left(\frac{p^5q^5}{8r}\right)^2 = \frac{p^{10}q^{10}}{64r^2}$

$$\left(\frac{2h^2j^6}{k^5}\right)^4 \cdot \left(\frac{h^5k^2}{j^8}\right)^2$$

$$\frac{16h^8j^{24}}{k^{20}} \cdot \frac{h^{10}k^4}{j^{16}} = \frac{16h^{18}j^8}{k^{16}}$$

Find each quotient without a calculator. Give your answer in Scientific Notation.

1. $\frac{3.6 \times 10^9}{1.2 \times 10^2}$ 3×10^7

2. $\frac{7.5 \times 10^3}{2.5 \times 10^{11}}$ $0.000000003 \times 10^{-8}$

0.34

$(3.6 \times 10^9)(1.2 \times 10^2)$

4.32×10^{11}