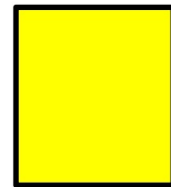


DHW CHECK

Box 1: Exponents Day 1 #9

Box 2: Exponents Day 1 #18



Warm-up

1. A rectangular swimming pool has a width that is 6 feet less than its length. The perimeter of the pool is 84 feet. What is the length of the pool?

A. 18 ft

B. 21 ft

C. 24 ft

D. 36 ft

$$\begin{aligned}x + x - 6 + x - 6 + x &= 84 && \text{P} = 84 \\4x - 12 &= 84 && \text{Diagram: } \begin{array}{c} \square \\ x \end{array} \\4x - 12 + 12 &= 84 + 12 \text{ (add. prop. =)} \\4x &= 96 \\ \frac{4x}{4} &= \frac{96}{4} \text{ (div. prop. =)} && x = 24\end{aligned}$$

2. If the equation $5(3x + 7) - 1 = 3(5x + k) + 4$ has infinitely many solutions, what is the value of k ?

A. 7

B. 10

C. 27

D. 30

$$\begin{aligned}15x + 35 - 1 &= 15x + 3k + 4 && \text{same} \\ \cancel{15x} + 34 &= \cancel{15x} + 3k + 4 && \text{(dist. prop.)} \\ 34 &= 3k + 4 \\ 34 - 4 &= 3k + 4 - 4 \text{ (subt. prop. =)} \\ 30 &= 3k \\ \frac{30}{3} &= \frac{3k}{3} \text{ (div. prop. =)} \\ 10 &= k\end{aligned}$$

Zero and Negative Exponents

Exponents

$1) 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1$
 $2) 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$
 $3) (-1)(-1)(-1)$
 $4) 0 \cdot 0 \cdot 0 \cdot 0 \cdot 0$

Examples:
 1) $3^4 = 3 \cdot 3 \cdot 3 \cdot 3$
 2) $10^2 = 10 \cdot 10$
 3) $2^3 = 2 \cdot 2 \cdot 2$

Expanded Form and Exponential Form

Simplifying Powers
Evaluating Expressions
Zero Exponents
Negative Exponents

* Any number or variable to the zero power equals 1!!

$$\text{Ex 1) } 3^0 = 1$$

$$\text{Ex 2) } (-0.25)^0 = 1$$

$$\text{Ex 3) } (-7)^0 = 1$$

$$\text{Ex 4) } -4^0 = -1$$

$$\text{Ex 5) } 3^0 \cdot 4 = 1 \cdot 4 = 4$$

$$\text{Ex 6) } 3a^0 = 3 \cdot 1 = 3$$

Zero Exponents

* You cannot have a negative exponent!

- If there is a negative exponent, change the position (negative exponent in numerator \rightarrow denominator (bottom), negative exponent in denominator \rightarrow numerator (top))
- When you change the position, the exponent becomes positive.

* If it's not a fraction, put a 1 in the denominator and then move it!

$$\text{Ex 1) } 10^{-4} = \frac{10^{-4}}{1} = \frac{1}{10^4} = \frac{1}{10,000}$$

$$\text{Ex 2) } 2^{-3} = \frac{2^{-3}}{1} = \frac{1}{2^3} = \frac{1}{8}$$

$$\text{Ex 3) } a^{-2}b^4 = \frac{a^{-2}b^4}{1} = \frac{b^4}{a^2}$$

Negative Exponents

$$\text{Ex 4)} \frac{a^3 b^{-1}}{d^{-4}} = \frac{a^3 \cancel{b^{-1}}}{\cancel{d^{-4}}} = \frac{a^3 d^4}{b^1} = \frac{a^3 d^4}{b}$$

$$\text{Ex 5)} \frac{2^{-2} b^2}{c^{-4}} = \frac{\cancel{2^{-2}} b^2}{\cancel{c^{-4}}} = \frac{b^2 c^4}{2^2} = \frac{b^2 c^4}{4}$$

$$\text{Ex 6)} \frac{a^4 b^{-2}}{c^{-6} d^{-4}} = \frac{a^4 \cancel{b^{-2}}}{\cancel{c^{-6}} \cancel{d^{-4}}} = \frac{a^4 c^6 d^4}{b^2}$$