

## What's Going On?

**Checking In**

Learning Goal Log

**Minds on**

What do we already know?

**Action!**

Key Terms

**Consolidation**

Exit Question

**Learning Goal - I will be able to evaluate powers and write them in their various forms.**

## Checking In

## Learning Goal Log

Please get a green pen from the zebra bag

Copy the expression below into your LGL from yesterday.

Simplify the expression using the rules of polynomial addition and subtraction.

Simplify

$$(4a^2 + 2a + 3) + (3a^2 - 4a - 4) - (5a^2 + 3a - 6)$$

$$= 4a^2 + 2a + 3 + 3a^2 - 4a - 4 - 5a^2 - 3a + 6$$

$$= 2a^2 - 5a + 5$$

**Minds on**

# Exponents

What do we already know?

$$2^2 = 2 \times 2 = 4$$

$$2^3 = 2 \times 2 \times 2 = 8$$

$$2^4 = 2 \times 2 \times 2 \times 2 = 16$$

$$(-2)^2 = -2 \times -2 = +4$$

$$(-2)^3 = -2 \times -2 \times -2 = -8$$

$$-2^2 = -(2 \times 2) = -4$$

$$-2^3 = -(2 \times 2 \times 2) = -8$$

## Minds on

## Whiteboards!

Condense into exponent form

$$7 \times 7 \times 7 = 7^3$$

$$5 \times 5 \times 5 \times 5 \times 5 \times 5 \times 5 = 5^7$$

$$9 = 9^1$$

$$(-3) \times (-3) = (-3)^2$$

$$-3 \times -3 = (-3)^2$$

$$\frac{3}{4} \times \frac{3}{4} \times \frac{3}{4} \times \frac{3}{4} = \frac{3^4}{4^4} = \left(\frac{3}{4}\right)^4$$

$$(-\frac{1}{2}) \times (-\frac{1}{2}) \times (-\frac{1}{2})$$

$$= -\frac{1}{2} \times -\frac{1}{2} \times -\frac{1}{2}$$

**Minds on**

# Whiteboards!

Write in expanded form

$$11^5 = 11 \times 11 \times 11 \times 11 \times 11$$

$$21^2 = 21 \times 21$$

$$\left(\frac{1}{4}\right)^3 = \frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}$$

$$(-1)^5 = -1 \times -1 \times -1 \times -1 \times -1$$

$$(-1)^4 = -1 \times -1 \times -1 \times -1$$

## Minds on

Evaluate. Give exact answers, no decimals.

$$9^2 = 9 \times 9 = 81$$

$$(-8)^3 = -512$$

$$(-6)^4 = 1296$$

$$(1)^5 = 1$$

$$\left(-\frac{2}{3}\right)^7 = \frac{-2^7}{3^7} =$$

**Minds on**

Evaluate. Give exact answers, no decimals.

$$(-1)^4 = 1$$

$$(-1)^7 = -1$$

$$(-1)^{1,234} = +1$$

$$(-1)^{456,789} = -1$$

$$-1^{1,234} = -1$$

$$(5)^0 = 1$$

$$-9^0 = -1$$

**Action!**

## Key Terms

The diagram illustrates the expansion of the power form  $2^5$ . A bracket under the  $2^5$  is labeled "power form". An arrow points from the word "base" to the number 2, and another arrow points from "exponent" to the number 5. The equation  $2^5 = 2 \times 2 \times 2 \times 2 \times 2 = 32$  is shown. A large curved arrow above the multiplication part is labeled "expanded form". An arrow points from the word "solution" to the final result, 32.

$$2^5 = 2 \times 2 \times 2 \times 2 \times 2 = 32$$



**Action!**

## Rules

A negative number to an even exponent is always:

$$(-1)^{234} = \text{+ve}$$

A negative number to an odd exponent is always:

$$(-1)^{567} = \text{-ve}$$

Any number to the exponent zero is always:

$$(-37)^0 = 1$$

When you have a fraction to an exponent:

$$\left(\frac{a}{b}\right)^3 = \frac{a^3}{b^3}$$

the exponent  
hits the top  
(a) bottom

**Action!**

## Substituting Values

If asked to substitute  $x = 3$  into the expression below, what would you get?

$$4x^2$$

$$= 4(3)^2$$

$$= 4 \times 9$$

$$= 36$$

**Consolidation**

## Exit Question

Copy the question into your learning goal log.  
Evaluate. Write your final answer in lowest terms.  
Explain any rules you use in each step.

$$\left(\frac{2}{3}\right)^2 \times (-1)^6 \times \left(\frac{7}{5}\right)^0 \times (-2)^3$$

**Consolidation**

# Homework!!!

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