Do Now

Evaluate

1. $8 \cdot [6 \div (5 - 3)]^2$

72

$8 \cdot (6 \div (2))^2$

$8 \cdot (3)^2$

$8 \cdot 9$

72

2. $12 - 10 + 4$

$2 + 4$

6

3. $16 - 6 + 2 \cdot 4$

$16 - 6 + 8$

$10 + 8$

18

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The Rules of Exponents

Powers and Exponents

Exponent – a number that represents how many times a base is used as a factor in repeated multiplication

Base – The number that is used as a factor in repeated multiplication

4^5

Power – A product formed from repeated multiplication by the same number. A power consists of a base and an exponent

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Writing a Power as Repeated Multiplication

4 to the second power

$4^2 = 4 \cdot 4$

Seven squared

$7^2 = 7 \cdot 7$

Nine cubed

$9^3 = 9 \cdot 9 \cdot 9$

8 to the power of five

$8^5 = 8 \cdot 8 \cdot 8 \cdot 8 \cdot 8$

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0 and 1 as Exponents

Any base raised to the 0 power equals 1

$7^0 = 1$

$y^0 = 1$

Any base raised to the 1 power equals the base

$8^1 = 8$

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Evaluate:

1) $100^0 =$ 1

2) $(xy)^0 =$ 1

3) $(-2)^0 =$ 1

4) $5x^0 =$

$5 \cdot x^0$

$5 \cdot 1$

5

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Multiplying Terms

Method 1 - Expanding

$7x^3 \bullet 5x^2$

$7 \cdot x \cdot x \cdot x \cdot 5 \cdot x \cdot x$

$35x^5$

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Multiplying Terms

Method 2 - Rule

$7x^3 \cdot 5x^2$

$35x^5$

Add exponents of like Bases

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Multiplication Rule of Exponents

$$x^a \cdot x^b = x^{a+b}$$

1) Multiply Coefficients
2) Add Exponents of the same base

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Practice

1) $b^7 \cdot b^2 = b^9$

2) $2n^{11} \cdot 6n^8 = 12n^{19}$

3) $4kh^2 \cdot 9k^5 = 36k^6h^2$

$4kh^2 \cdot 9k^5h^1$

$36k^6h^3$

4) $x^4y^2 \cdot 8x^{-3}y^2$

$8x^1y^4$ or $8xy^4$

5) $-3x^2y^5(-2x^{-2}y^{-3})$

$6x^0y^2$

$6 \cdot 1 \cdot y^2$

$6y^2$

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