Curriculum Outcome

(N1) Demonstrate an understanding of powers with integral bases (excluding base 0) and whole number exponents by: representing repeated multiplication using powers; using patterns to show that a power with an exponent of zero is equal to one; solving problems involving powers.

(N2) Demonstrate an understanding of operations on powers with integral bases (excluding base 0) and whole number exponents.

Student Friendly:
“Laws of exponents :
What happens to the exponent when you multiply like bases?"

Warm Up
Grade 9

1) Write the following as a repeated multiple and evaluate

a) $(-3)^5$ b) $-(-2)^3$ c) $-(-2)^6$ d) $-(3)^0(-4)^3$

2) Write as a power then evaluate

a) $-(2)(2)(2)(-3)(-3)(3)(3)$ b) $(-5)(-5)(4)(4)(4)(4)(4)$

3) Write the following as a powers of 10:

a) 68 706 324

4) Write the following in standard form:

a) $(5 \times 10^4) + (9 \times 10^2) + (7 \times 10^1) + (6 \times 10^0)$

Warm Up
Grade 9

1) Write the following as a repeated multiple and evaluate

a) $(-3)^5$

$= (-3)(-3)(-3)(-3)(-3)$

$= -243$

base : -3

b) $-(-2)^3$

$= -(-2)(-2)(-2)$

$= -(-8)$

$= 8$

base : -2

c) $-(-2)^6$

$= -(-2)(-2)(-2)(-2)(-2)(-2)$

$= -(64)$

$= -64$

base : -2

d) $-(3)^0(-4)^3$

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

$= -(1)(-64)$

$= 64$

base : 3, -4

2) Write as a power then evaluate

a) $-(2)(2)(2)(-3)(-3)(3)(3)$

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

$= -(8)(9)(9)$

$= -648$

b) $(-5)(-5)(4)(4)(4)(4)(4)$

$= (-5)^2(4)^5$

$= (25)(1024$

$=25\ 600$

3) Write the following as a powers of 10:

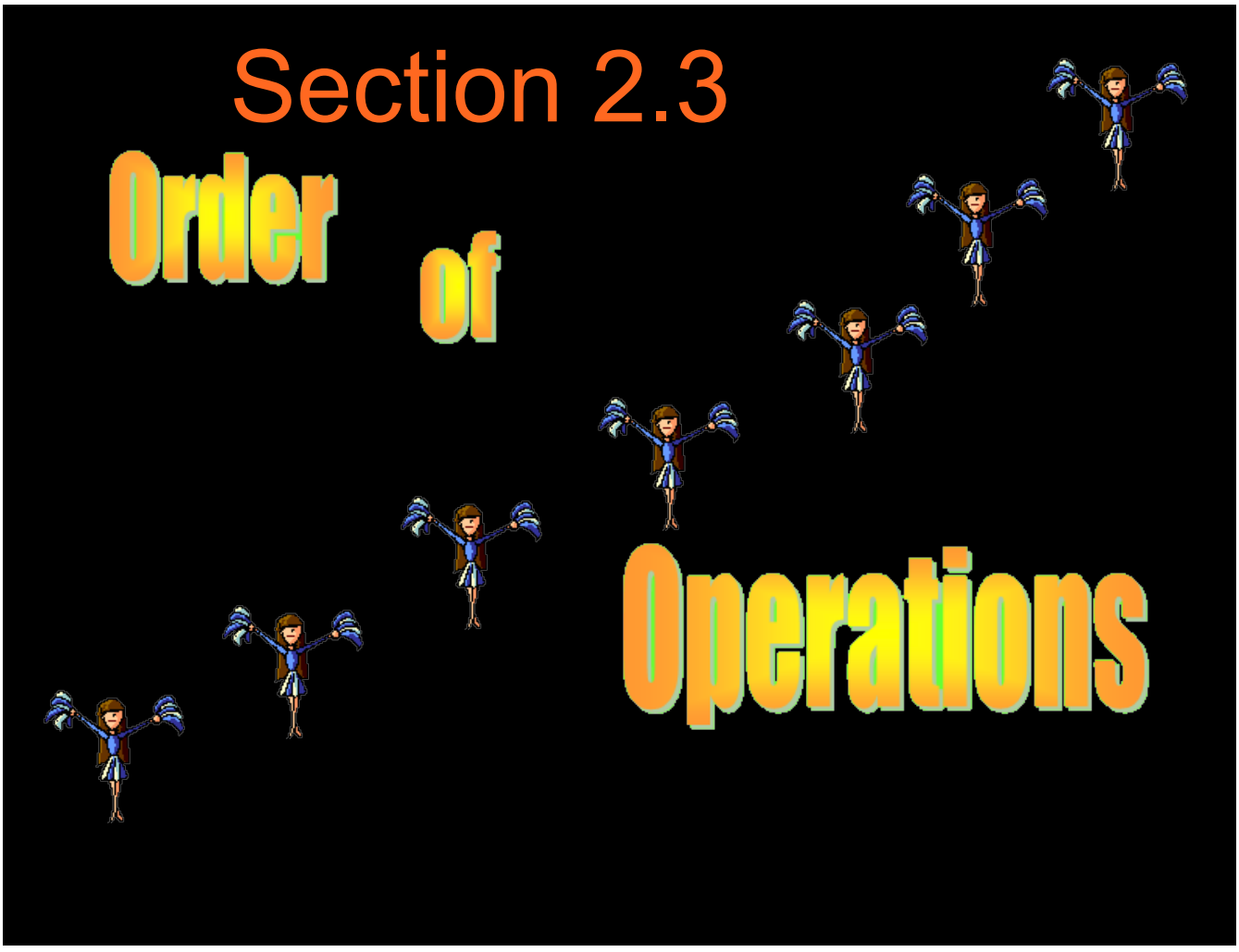
a) $68\ 706\ 324$

$= (6 \times 10^7) + (8 \times 10^6) + (7 \times 10^5) + (6 \times 10^3) + (3 \times 10^2) + (2 \times 10^1) + (4 \times 10^0)$

4) Write the following in standard form:

a) $(5 \times 10^4) + (9 \times 10^2) + (7 \times 10^1) + (6 \times 10^0)$

50 976


Section 2.3
Order of Operations


B
E
D
M
A
S
The key....
hee hee hee.

$$\frac{-15+3-13}{3\times 2-7^{0}}$$

Top:

$-15+3-13$

$= -12-13$

$= -25$

Bottom:

$3\times 2-7^{0}$

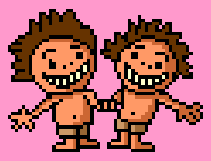
$= 3\times 2-1$

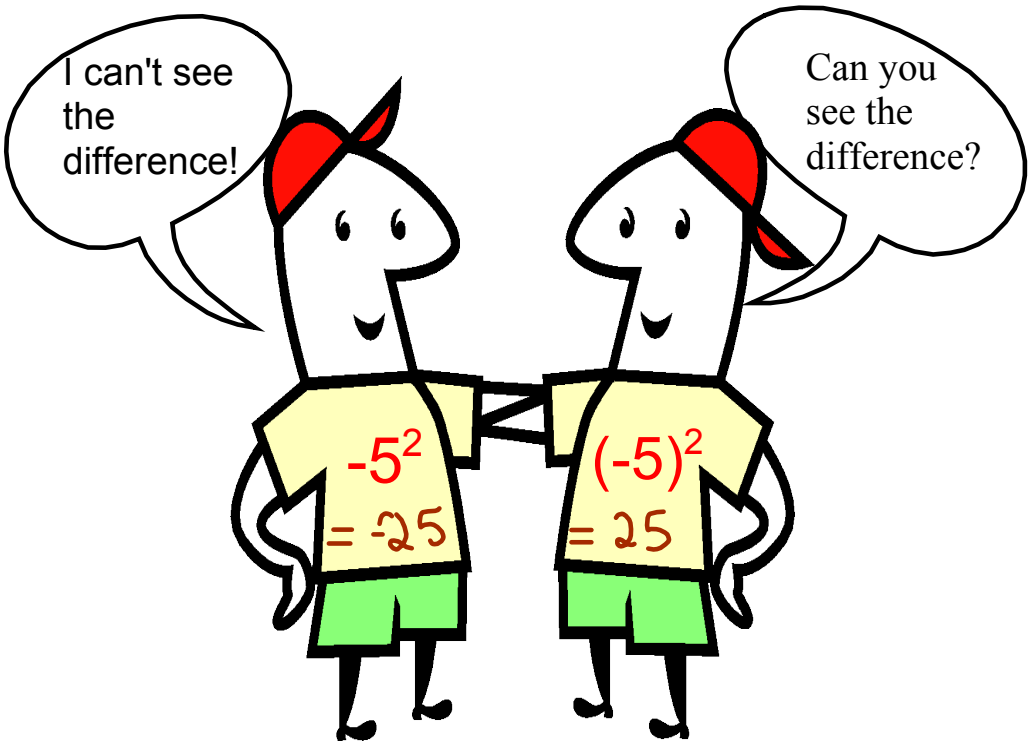
$= 6-1$

$= 5$

$\frac{\text{Top}}{\text{bottom}} = \frac{-25}{5} = \boxed{-5}$

Order of Operations with Exponents





$5 - 3^2$

$5 - 9$

$= -4$

$5 + (-3)^2$

$5 + 9$

$= 14$

$5 - (-3)^3$

$= 5 + (+27)$

$= 32$

THERE IS A **huge** DIFFERENCE!

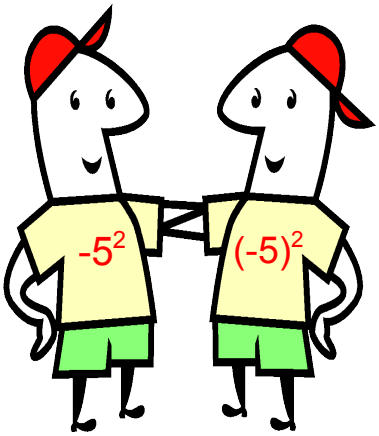
-5^2

$(-1)5^2$

$(-1)25$

-25

There is a negative one being multiplied by the 5^2.



$(-5)^2$

$(-5)(-5)$

25

1. -4^2 2. $(-3)^2$ 3. $(-2)^3$

BEDMAS

$$[3 + (-3)^0 - 5(3-7)^2] + 1$$

$$[3 + (-3)^0 - 5(-4)^2] + 1$$

$$[3 + (1) - 5(16)] + 1$$

$$[3 + (1) - 80] + 1$$

$$[-76] + 1$$

$$= -75$$

BEDMAS

$$-5^2 + [4 + (-2)^2 - 3]^3$$

$$-5^2 + [4 + (4) - 3]^3$$

$$-5^2 + [\quad 5 \quad]^3$$

$$-25 + 125$$

$$= 100$$

$$[(-4+(-3))^2]^2 - (-5^3+2)^3$$

$$[(-1)^2]^2 - (-125+2)^3$$

$$[(1)]^2 - (-123)^3$$

$$[1] - (+1\,860\,867)$$

$$1\,860\,868$$

Class/Homework

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SHOW WORK

3 (a, c, e)
4 (a, c, e,)
5 (e, g)
8 (a, c, e)