ORDER OF OPERATIONS – PART 2

CHECK YOUR UNDERSTANDING

1) Use your knowledge of integer multiplication to evaluate the following powers.

a) $(3)^2$ b) $(-3)^2$ c) $(-4)^2$ d) $(2)^3$ e) $(-2)^3$ f) $(-2)^4$

2) If n represents a natural number (1, 2, 3, 4, …), when will $(-3)^n$ give a positive result and when will it give a negative result?

3) Evaluate each of the following.

a) $11+(-6)-4$

b) $6+(-3)\times 2$

c) $-4(3)+5(-2)$

d) $-7-(2-5)$

e) $-6+4^2-3(-3)$

f) $(5-9)^2$

g) $(-7+8\div 2)^3$

h) $-4\left(2^2-2\times 5\right)$

i) $10-(10-12)^4$

j) $(5-6)^2+(5-6)^3$

k) $2\left[-20+(-9)\div(-3)-2\right]+5^2$

l) $\left[5-2^2+(-3)\right]^3\div(-4)$

m) $(-8)^2+(-2)(3-8)^2$

n) $\left[(5-6)^3(8-6)^2\right]^3$

o) $\left[-5-2(8-4\times 3)\right]^2$

p) $-2\left[\left(11-2^2\right)+\left(20-25\right)^2\right]$

4) Is -3^2 the same as $(-3)^2$? Explain.

5) Evaluate $20+\left(-2^4\right)+\left(-2\right)^4$.

ANSWERS

1) a) 9 b) 9 c) 16 d) 8 e) −8 f) 16

2) If n is an even number, the result will be positive. If n is an odd number, the result will be negative.

3) a) 1 b) 0 c) −22 d) −4 e) 19 f) 16 g) −27 h) 24
i) −6 j) 0 k) −13 l) 2 m) 14 n) −64 o) 9 p) −64

4) No. For -3^2, the exponent applies only to the base of 3 (not -3). We can think of this expression as *the negative of* 3^2 or *the opposite of* 3^2. Therefore, $-3^2=-(3\times 3)=-9$.
The base of the power $(-3)^2$, however, is -3. Therefore, $(-3)^2=(-3)\times(-3)=9$.

5) 20