Section 1.5: The Order of Operations

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a nice way to remember the order of operations:

B – brackets / parentheses come first
E exponents
D } division and multiplication
M }
A } addition and subtraction
S }

note: the fraction bar ___ behaves like brackets

$$\frac{1}{2+3} = \frac{1}{(2+3)} = \frac{1}{5}$$

examples:

$(4-8)^2 \div 4 \times 3$

↑ do Brackets first

$= (-4)^2 \div 4 \times 3$ exponent next

$= 16 \div 4 \times 3$ division / multiplication from left to right

$= 4 \times 3$

$= 12$

$6 - 3^2 \cdot 6 + 4$

$6 - 3^2 \cdot 6 + 4$

$6 - 9 \cdot 6 + 4$

$6 - 54 + 4$

$6 + 4 - 54$

-44

BEDMAS

examples:

evaluate $(-5)^2 + 15 \div 3 + 4 \cdot 2$

$25 + 5 + 8$

38

$7 + 36 \div (12)(3) - 14$

$7 + (3)(3) - 14$

$7 + 9 - 14$

2

$36 \div (12)(3)$

$36 \cdot \frac{1}{12} \cdot 3$

$$\frac{1}{3} \div \left(\frac{-2}{5}\right) \div \left(\frac{-5}{6}\right) + (-18)$$

$$\frac{1}{3} \times \left(\frac{-5}{2}\right) \times \left(\frac{-6}{5}\right) + (-18)$$

$$\frac{30}{30} + (-18)$$

$$1 + (-18)$$

$$-17$$

note: $\frac{1}{3} \div \left(\frac{-2}{5}\right) \div \left(\frac{-5}{6}\right) = \left[\frac{1}{3} \div \left(\frac{-2}{5}\right)\right] \div \left(\frac{-5}{6}\right)$

could do first

$$6 - [-3(2-4)^2 - 3(4+1)]$$

$$6 - [-3(-2)^2 - 3(5)]$$

$$6 - [-3(4) - 15]$$

$$6 - [-12 - 15]$$

$$6 - (-27) \qquad = 6 + (-1)(-27)$$

$$6 + 27$$

$$33$$