

### 1-1 Expressions and Formulas

**Objective:** To use order of operations to evaluate expressions.  
To use formulas.

**What is the order of operations?**

**PEMDAS**  
 P: parentheses  
 E: exponents  
 M: multiplication  
 D: division  
 A: addition  
 S: subtraction  
 in order from left to right

#### I. Simplify.

Ex 1)  $(2(10 - 4)^2 + 3) \div 5$

$$\begin{aligned} & (2 \cdot 6^2 + 3) \div 5 \\ & (2 \cdot 36 + 3) \div 5 \\ & (72 + 3) \div 5 \\ & 75 \div 5 \\ & \textcircled{15} \end{aligned}$$

Ex 2)  $(384 - 3(7 - 2)^3) \div 3$

$$\begin{aligned} & (384 - 3 \cdot 5^3) \div 3 \\ & (384 - 3 \cdot 125) \div 3 \\ & (384 - 375) \div 3 \\ & 9 \div 3 \\ & \textcircled{3} \end{aligned}$$

#### II. Evaluate

Ex 3)  $s - t(t^2 - t)$  if  $s = 2$  and  $t = 3.4$ .

$$\begin{aligned} & 2 - 3.4(3.4^2 - 3.4) \\ & 2 - 3.4(11.56 - 3.4) \\ & 2 - 3.4(8.16) \\ & 2 - 27.744 = \textcircled{-25.744} \end{aligned}$$

Ex 4)  $\frac{8xy + z^3}{y^2 + 5}$  if  $x = 5$ ,  $y = -2$ ,  $z = -1$

$$\frac{8(5)(-2) + (-1)^3}{(-2)^2 + 5} = \frac{-80 + -1}{4 + 5} = \frac{-81}{9} = \textcircled{-9}$$

Ex 5)  $\frac{a^3 + 2bc}{c^2 - 5}$  if  $a = 2$ ,  $b = -4$ ,  $c = -3$

$$\frac{2^3 + 2(-4)(-3)}{(-3)^2 - 5} = \frac{8 + 24}{4} = \frac{32}{4} = \textcircled{8}$$

Ex 6) Find the area of a trapezoid with base lengths of 13 and 25 m and height of 8 m.



$$\begin{aligned} A &= \frac{1}{2}h(b_1 + b_2) \\ &= \frac{1}{2}(8)(13 + 25) \\ &= \frac{1}{2}(8)38 \\ &= 4 \cdot 38 = \textcircled{152\text{m}^2} \end{aligned}$$