

Order of Operations and Parentheses

- 1) multiplications and divisions are to be carried out before additions and subtractions, unless otherwise indicated.
- 2) Parentheses are used when addition is to be performed multiplication or division.

Ex) Simplify $7 + 5(8 - 2)$

$$\begin{aligned} &= 7 + 5(6) \\ &= 7 + 30 \\ &= 37 \end{aligned}$$

simplify $7 + 5 \cdot 8 - 2$

$$\begin{aligned} &= 7 + 40 - 2 \\ &= 47 - 2 \\ &= 45 \end{aligned}$$

* + and - left to right

Ex) $3(5 + 2) - \frac{8 + 7}{3}$

$$= 3(7) - \frac{15}{3}$$

$$= 21 - 5$$

$$= 16$$

* the bar serves to indicate division and acts as parentheses.

Ex) Evaluate $3(a - b) + 2(a + 2b)$ When $a = 5$, $b = 3$

$$\begin{aligned} &3(5 - 3) + 2(5 + 2(3)) \\ &= 3(2) + 2(5 + 6) \\ &= 3(2) + 2(11) \\ &= 6 + 22 \\ &= 28 \end{aligned}$$

Ex) Simplify $3(2x-1) + 2(x+4)$

<u>S</u>	<u>R</u>
$3(2x-1) + 2(x+4)$	D.A.
$6x - 3 + 2x + 8$	C.L.T.
$8x + 5$	

Ex) Evaluate $5(3y-2) + 2(y+6)$ when $y=3$

$$\begin{aligned} & 5(3(3)-2) + 2(3+6) \\ &= 5(9-2) + 2(3+6) \\ &= 5(7) + 2(9) \\ &= 35 + 18 \\ &= 53 \end{aligned}$$

Ex) Solve $3(x-2) + x = 2(x+5) + 1$

<u>STEPS</u>	<u>REASONS</u>
$3(x-2) + x = 2(x+5) + 1$	Given
$3x - 6 + x = 2x + 10 + 1$	D.A.
$4x - 6 = 2x + 11$	C.L.T.
$4x = 2x + 17$	A ₆ , C.L.T.
$2x = 17$	S _{2x}
$x = 17/2$	D ₂ , Red