

Substitution

04 March 2019 11:27

You will be given a value for the variable

Eg $x=1$ or $y=-2$

Method

- 1) you replace the variable in the expression with the given value of the variable
- 2) When you substitute a value into an expression you USE BRACKETS (multiply)

Eg 1) If $x=2$ and $y=3$, Find the value of the following

1) $x+2$

$$(2)+2$$

$$=4$$

2) $3x+2y$

$$3(2)+2(3)$$

$$6+6$$

$$=12$$

3) $5xy$

$$5(2)(3)$$

$$=30$$

HW Pg 173 Q2.

Q2) $x=5$

i) $x+3$

$$(5)+3=8$$

ii) $5x$

$$5(5)=25$$

iii) $4x+5$

$$4(5)+5$$

$$20+5$$

$$=25$$

iv) $3x-7$

$$3(5)-7$$

$$15-7$$

$$=8$$

v) $12-x$

$$12-(5)$$

$$=7$$

vi) $15-2x$

$$15-2(5)$$

$$15-10$$

$$=5$$

vii) $-3x+20$

$$-3(5)+20$$

$$-15+20$$

$$=5$$

viii) $9-3x$

$$9-3(5)$$

$$9-15$$

$$=-6$$

Pg 173 Q3 $a=4, b=2$

i) $a-b$

$$(4)-(2)=2$$

iv) ab

$$(4)(2)=8$$

$$\begin{aligned} \text{ii) } & 6a + 3b \\ & 6(4) + 3(2) \\ & 24 + 6 = 30 \end{aligned}$$

$$\begin{aligned} \text{v) } & 6ab - 2a \\ & 6(4)(2) - 2(4) \\ & 48 - 8 = 40 \end{aligned}$$

$$\begin{aligned} \text{iii) } & 5a - 2b \\ & 5(4) - 2(2) \\ & 20 - 4 = 16 \end{aligned}$$

$$\begin{aligned} \text{vi) } & 6a - 2ab \\ & 6(4) - 2(4)(2) \\ & 24 - 16 = 8 \end{aligned}$$

$$\begin{aligned} \text{vii) } & 3ab + 6b \\ & 3(4)(2) + 6(2) \\ & 24 + 12 = 36 \end{aligned}$$

$$\begin{aligned} \text{viii) } & 2a - 6 + 4ab \\ & 2(4) - 6 + 4(4)(2) \\ & 8 - 6 + 32 \\ & = 34. \end{aligned}$$

Removing Brackets

Method: Multiply the number outside the bracket by everything inside the bracket.

$$\begin{aligned} \text{Eg 1) } & 4(x+2) \\ & \text{multiply} \\ & = 4x + 8 \end{aligned}$$

$$\begin{aligned} \text{Eg 2) } & 3(a+6) \\ & \text{multiply} \\ & = 3a + 18 \end{aligned}$$

CIW Pg 176 Q 4 → 9

$$\begin{aligned} 4) & 3(x+y) \\ & = 3x + 3y \end{aligned}$$

$$\begin{aligned} 5) & 5(2x+y) \\ & = 10x + 5y \end{aligned}$$

$$\begin{aligned} 6) & 4(2x+3y) \\ & = 8x + 12y \end{aligned}$$

$$\begin{aligned} 7) & 6(2x-y) \\ & 12x - 6y \end{aligned}$$

$$\begin{aligned} 8) & 3(x+2y+1) \\ & 3x + 6y + 3 \end{aligned}$$

$$\begin{aligned} 9) & 6(2a+b+3) \\ & 12a + 6b + 18 \end{aligned}$$

$$10) 6(a+4) + 2(2a+3)$$

$$6a + 24 + 4a + 6$$

$$= 10a + 30$$

Classwork - Homework \rightarrow 7/3/19

Pg 173 Q 4, 5, 6 } Has to be done.
Pg 176 Q 12 \rightarrow 23 }

Extra Work if finished Pg 174 Q 7 \rightarrow 12.

Q4 Pg 173 $y = 2$

$$\begin{aligned} \text{ii) } & 3(y+4) \\ & 3(2+4) \\ & 3(6) = 18 \end{aligned}$$

$$\begin{aligned} \text{iii) } & 4(2y-1) \\ & 4(2(2)-1) \\ & 4(4-1) \\ & 4(3) = 12 \end{aligned}$$

$$\begin{aligned} \text{iv) } & 3(5y-4) \\ & 3(5(2)-4) \\ & 3(10-4) \\ & 3(6) = 18 \end{aligned}$$

$$\begin{aligned} \text{v) } & y(y+3) \\ & (2)((2)+3) \\ & 2(5) = 10 \end{aligned}$$

$$\begin{aligned} \text{vi) } & 6y \times (2y+1) \\ & 6(2) \times (2(2)+1) \\ & 12 \times (5) \\ & = 60 \end{aligned}$$

Q5) $a = 1$, $b = 2$ and $c = 3$.

$$\begin{aligned} \text{i) } & 2a+b \\ & 2(1)+(2) \\ & 2+2 = 4 \end{aligned}$$

$$\begin{aligned} \text{ii) } & 3ab-c \\ & 3(1)(2)-(3) \\ & 6-3 = 3 \end{aligned}$$

$$\begin{aligned} \text{iii) } & 4abc+3c \\ & 4(1)(2)(3)+3(3) \\ & 24+9 = 33 \end{aligned}$$

$$\begin{aligned} \text{iv) } & 3bc-4ab \\ & 3(2)(3)-4(1)(2) \\ & 18-8 = 10 \end{aligned}$$

$$\begin{aligned} \text{v) } & 3abc-2ac \\ & 3(1)(2)(3)-2(1)(3) \\ & 18-6 = 12 \end{aligned}$$

$$\begin{aligned} \text{vi) } & 5bc-2ab \\ & 5(2)(3)-2(1)(2) \\ & 30-4 = 26 \end{aligned}$$

$$Q6) x = 9$$

$$i) \frac{x}{3} = \frac{(9)}{3} = 3$$

$$ii) \frac{x+5}{2} = \frac{(9)+5}{2} = \frac{14}{2} = 7$$

$$iii) \frac{5x}{3} = \frac{5(9)}{3} = \frac{45}{3} = 15$$

$$iv) \frac{3x+3}{10} = \frac{3(9)+3}{10} = \frac{30}{10} = 3$$

$$v) \frac{2x-6}{3} = \frac{2(9)-6}{3} = \frac{18-6}{3} = \frac{12}{3} = 4$$

$$vi) \frac{18}{x} = \frac{18}{(9)} = 2.$$

Pg 176 Q12 → 23

$$Q12) \begin{array}{l} 5(2a+3) - a + 4 \\ \text{multiply} \\ 10a + 15 - a + 4 \\ \hline 9a + 19 \end{array}$$

$$Q13) \begin{array}{l} 5(a-b) + 2(2a+3b) \\ 5a - 5b + 4a + 6b \\ \hline 9a + 1b \end{array}$$

$$Q14) \begin{array}{l} 5(x+2y) - 3x + 2y \\ 5x + 10y - 3x + 2y \\ \hline 2x + 12y \end{array}$$

$$Q15) \begin{array}{l} 6(a+b) - 3a + b \\ 6a + 6b - 3a + b \\ \hline 3a + 7b \end{array}$$

$$Q16) \begin{array}{l} 2(3x-2y) + 3x + 5y \\ 6x - 4y + 3x + 5y \\ \hline = 9x + 1y \end{array}$$

$$Q17) \begin{array}{l} 3(a-2) - 4(2a-3) \\ 3a - 6 - 8a + 12 \\ \hline -5a + 6. \quad \begin{array}{l} +12 \\ -6 \end{array} \end{array}$$

Pg 176 Q 18-23

Pg 177 Q24-27.