

Learning Objectives:

Be able to substitute values into expressions

Understand what equivalence is

Understand how the commutative and associative laws are used

Show that expressions are not equivalent using substitution

$$\begin{array}{ccccccc} a & b & c & d & e & f \\ \uparrow & \uparrow & \uparrow & & & & \\ a = 1 & & b = 2 & & c = 3 & & \end{array}$$

eg. $3a$ = $3 \times a$ EVALUATE

\downarrow

$$\begin{aligned} &= 3 \times 1 \\ &= \underline{\underline{3}} \end{aligned}$$

Expression

eg 2. $4ab = 4 \times a \times b$

$$\begin{aligned} &= 4 \times 1 \times 2 \\ &= 4 \times 2 \\ &= \underline{\underline{8}} \end{aligned}$$

eg 3 $\underline{3a} + \underline{4b}$

\uparrow question

$$\begin{aligned} &= 3 \times a + 4 \times b \\ &= \underline{\underline{3 \times 1}} + \underline{\underline{4 \times 2}} \\ &= 3 + 8 \\ &= \underline{\underline{11}} \end{aligned}$$

B
I
D
M
A
S

eg $5x^2 + 2y + 3c$ $x = 3 \quad y = 6$

$$= 5 \times x \times x + 2 \times y + 3c$$

$$= 5 \times 3 \times 3 + 2 \times 6 + 3$$

$$x^2 = x \times x$$

$$\begin{aligned}
 &= 45 + 12 + 3 \\
 &= 57 + 3 \\
 &= \underline{\underline{60}}
 \end{aligned}$$

Equivalence

eg Are $x - 3$ and $3 - x$ equivalent

$$2 + 3 = 3 + 2 \quad \checkmark$$

$$\begin{aligned}
 2 - 3 &\neq 3 - 2 \quad \times \\
 (-1) &\neq (1)
 \end{aligned}$$

$$\begin{aligned}
 x = 1 \quad x - 3 &= 1 - 3 \\
 &= \underline{\underline{-2}} \\
 3 - x &= 3 - 1 \\
 &= \underline{\underline{2}}
 \end{aligned}$$

eg2. $a + b = b + 2a - a$

$$a=1 \quad 1 + 2 = 2 + \underline{2 \times 1} - 1$$

$$b=2$$

$$1 + 2 = 2 + 2 - 1$$

$$\underline{\underline{3}} = \underline{\underline{3}} \quad \checkmark$$

Interesting!

$$\begin{aligned}
 &b + 2a - a \\
 a + b &= b + a
 \end{aligned}$$

collect
like
terms