

Substitution

Remember 2s means 2 times the value of s. pqr means p x q x r

Order of operation still applies.

Examples

If $a=2$, $b=3$, $c=-1$ and $d=0$ evaluate the following

1. ab	2. $b^2 - ac$	3. $2 + a^2b - 3cd$
$= 2 \times 3$	$= 3^2 - 2 \times (-1)$	$= 2 + 2^2 \times 3 - 3 \times (-1) \times 0$
$= 6$	$= 9 + 2$	$= 2 + 12 + 0$
	$= 11$	$= 14$

Now do the following exercises

Exercise1

Find the value of the following expressions when $a = 3$, $b = -2$, $c = -1$ and $d = 0$

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|----------------|-----------------------|----------------------|
| 1 $3a + 2b$ | 2 $4a - 3c$ | 3 $5a + 2b + 3c$ |
| 4 $5a + 3d$ | 5 $5b - 3c$ | 6 $4a + 3b + 2c + d$ |
| 7 $5a - 4c$ | 8 $6b + 2c + 3d$ | 9 $5b - 4c$ |
| 10 $7a - 5b$ | 11 ab | 12 bc |
| 13 cd | 14 a^2 | 15 b^2 |
| 16 c^2 | 17 d^2 | 18 $3a^2$ |
| 19 $5b^2$ | 20 $6d^2$ | 21 $3ab + 4cd$ |
| 22 $6ac - 2bd$ | 23 $5a^2 - 3bc$ | 24 abc |
| 25 $2bcd$ | 26 $4a^2b$ | 27 $6ab^2$ |
| 28 $(2b)^2$ | 29 $3ab \times (b+c)$ | 30 $\frac{ab}{c}$ |

Exercise 2

- 1) The cost (C pence) of framing a picture depends on its length (L cm) and its height (H cm). If $C = 3L + 2H$, find C when:
- a) $L = 50$, $H = 20$
 - b) $L = 30$, $H = 25$
 - c) $L = 80$, $H = 50$
- 2) The time, T minutes for a man to cycle U km uphill and D km downhill is given by $T = 12U + 2D$. Find T when:
- a) $U = 2$, $D = 5$
 - b) $U = 6$, $D = 8$
 - c) $U = 3$, $D = 12$
- 3) The number of potatoes (n) which I plant in spring depends on the area of my vegetable plot ($A \text{ m}^2$) and the size of my lawn ($L \text{ m}^2$).
If $n = 5A - 3L$ find n when:
- a) $A = 20$, $L = 15$
 - b) $A = 100$, $L = 50$
 - c) $A = 200$, $L = 50$