Evaluating Expressions and Formulae

Be able to substitute numbers for letters

Examples :-

If $p = 3$, $q = 4$ and $r = -2$, find the values of :-

1. $7p$
   $= 7 \times 3$
   $= 21$

2. $4p + r$
   $= 4 \times 3 + (-2)$
   $= 10$

3. $q^2 - p^2$
   $= (4 \times 4) - (3 \times 3)$
   $= 16 - 9$
   $= 7$

4. $2q^2$
   $= 2 \times q \times q$
   $= 2 \times 4 \times 4$
   $= 32$

5. $5p^2 + 6q + 20r$
   $= (5 \times p \times p) + (6 \times q) + (20 \times r)$
   $= (5 \times 3 \times 3) + (6 \times 4) + (20 \times (-2))$
   $= 45 + 24 - 40 = 29$

6. If $C = \frac{a + b}{4}$, find the value of C when when $a = 10$ and $b = 18$.

$$C = \frac{a + b}{4}$$

$$C = \frac{10 + 18}{4}$$

$$C = \frac{28}{4} = 7$$

Exercise 6

1. Find the value of each of the following when $a = 3$:-

   a $a + 6$ b $a - 1$ c $8a$ d $5a - 19$

   e $2 + 4a$ f $20 - 9a$ g a^2 h a^3

   i $a^2 - 9$ j $2a^2$ k $a^2 + a$ l $a^2 - 1{\cdot}2a$.

2. Find the value of each of the following when $x = 4$:-

   a $5x$ b $7x$ c x^2 d $2x^2$

   e x^3 f $10x^2$ g $20x^3$ h $18 - x^2$.

3. Find the values of each of the following :-

   a $g + 7$ when $g = 9$ b $3h + 4$ when $h = -1$

   c $p - 9$ when $p = 25$ d $12q - 30$ when $q = 3$

   e $15 - m$ when $m = -5$ f $s + t$ when $s = -9$ and $t = 4$

   g $5ef$ when $e = 4$ and $f = -2$ h $20 - 4ab$ when $a = 1$ and $b = -4$.

4. Given $p = 1$, $q = 3$ and $r = 7$, calculate the value of :-

   a $p + q + r$ b $2p + 5q + r$ c $q + p - 2r$

   d pqr e $5p + 5q + 10r$ f $pq + qr + pr$

   g $3p + 2q - r$ h $10pq - 4r$ i $5pqr - 100$.