

The product of first three terms of a G.P. is 512. If we add 2 to its second term, the three terms form an A.P. Find the terms of the G.P.

Solution:

Let the first three terms of G.P. be

$$\frac{a}{r}, a, ar$$

$$\therefore \text{it is given that } \frac{a}{r} \times a \times ar = 512 \Rightarrow a^3 = 512$$

$$\Rightarrow \boxed{a=8}$$

now,  $\frac{a}{r}, a+2, ar$  are in A.P.

$$\Rightarrow \frac{a+2-a}{r} = ar - a - 2$$

$$\Rightarrow \frac{10-8}{r} = 8r - 10$$

$$\Rightarrow \frac{8r+8}{r} = 20$$

$$\Rightarrow 8r^2 - 20r + 8 = 0$$

$$\Rightarrow 2r^2 - 5r + 2 = 0$$

$$\Rightarrow (2r-1)(r-2) = 0$$

$$\Rightarrow r = 2 \text{ or } \frac{1}{2}$$

When,

$r=2$ , the terms are 4, 8, 16

$r=\frac{1}{2}$ , the terms are 16, 8, 4