

## Class 9 maths - chapter 1

Number System : Some identities of Square Roots (concept and Mcq's)

$$\sqrt{a} + \sqrt{b}$$

$$2\sqrt{a} + 4\sqrt{a} = 6\sqrt{a}$$

$$4\sqrt{a} - 2\sqrt{a} = 2\sqrt{a}$$

Exp  $4\sqrt{3} - 2\sqrt{3}$

$$4\sqrt{3} - 2\sqrt{3} = 2\sqrt{3}.$$

$$\underline{\sqrt{ab} = \sqrt{a} \cdot \sqrt{b}}$$

$$\sqrt{6} = \sqrt{3 \times 2} = \sqrt{3} \sqrt{2}$$

$$\sqrt{3 \times 2} = \sqrt{3} \sqrt{2}$$

$$\underline{\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}}$$

Exp.  $\sqrt{\frac{4}{5}} = \frac{\sqrt{4}}{\sqrt{5}}$

$$\star \underline{(\sqrt{a} + \sqrt{b})(\sqrt{a} - \sqrt{b}) = a - b}$$

$$\left[ \begin{array}{l} (a+b)(a-b) \\ = a^2 - b^2 \end{array} \right]$$

$$\underline{\text{Exp.}} \quad (\sqrt{2} + \sqrt{5})(\sqrt{2} - \sqrt{5})$$

$$(\sqrt{2})^2 - (\sqrt{5})^2 = 2 - 5 = -3$$

$$\star \underline{(a + \sqrt{b})(a - \sqrt{b}) = a^2 - b}$$

$$\underline{\text{Exp.}} \quad (5 + \sqrt{5})(5 - \sqrt{5})$$

$$(5)^2 - (\sqrt{5})^2 = 25 - 5 = 20$$

$$\star \underline{(\sqrt{a} + \sqrt{b})(\sqrt{c} + \sqrt{d})}$$

$$\sqrt{a}(\sqrt{c} + \sqrt{d}) + \sqrt{b}(\sqrt{c} + \sqrt{d})$$

$$\sqrt{ac} + \sqrt{ad} + \sqrt{bc} + \sqrt{bd}$$

$$\star \underline{(\sqrt{a} + \sqrt{b})^2 = (\sqrt{a})^2 + (\sqrt{b})^2 + 2(\sqrt{a})(\sqrt{b})}$$
$$= \underline{a + b + 2\sqrt{ab}}$$

$$\left[ (\underline{a+b})^2 = a^2 + b^2 + 2ab \right]$$

$(\sqrt{a} + \sqrt{b})(\sqrt{a} - \sqrt{b})$  is

(a)  $a + b$

~~(b)~~  $a - b$

(c)  $2\sqrt{a}$

(d)  $2\sqrt{b}$

. On adding  $2\sqrt{3}$  and  $3\sqrt{2}$ , we get

(a)  $5\sqrt{5}$

(b)  $5(\sqrt{3} + \sqrt{2})$

(c)  $2\sqrt{3} + 3\sqrt{2}$

(d) none of these

1. On dividing  $6\sqrt{27}$  by  $2\sqrt{3}$ , we get

(a)  $3\sqrt{9}$

(b) 6

~~(c) 9~~

(d) none of these

$$\begin{aligned} & \frac{6\sqrt{27}}{2\sqrt{3}} \\ &= \frac{6}{2} \sqrt{\frac{27}{3}} = 3\sqrt{9} = 3\sqrt{3 \times 3} \\ &= 3\sqrt{(3)^2} \\ &= 3 \times 3 = 9. \end{aligned}$$

$$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$$

$(-5 + 2\sqrt{5} - \sqrt{5})$  is

- (a) an irrational number
- (c) a negative rational number

- (b) a positive rational number
- (d) an integer

$$(-5 + \sqrt{5})$$

$$2\sqrt{a} - 6\sqrt{a}$$

$$(-4\sqrt{a})$$

$(\sqrt{12} + \sqrt{10} - \sqrt{2})$  is

- (a) a positive rational number
- (c) an irrational number

- (b) equal to zero
- (d) a negative integer

$$\sqrt{12} = \sqrt{2 \times 2 \times 3}$$

$$= 2\sqrt{3}$$

$$\sqrt{10} = \sqrt{2 \times 5}$$

$(-7 + 4\sqrt{7} - 3\sqrt{7})$  is

- (a) a positive rational number
- (c) a negative rational number

- (b) an irrational number
- (d) equal to zero

$$-7 + \sqrt{7}$$



The number  $(3-\sqrt{3})(3+\sqrt{3})$  is

- (a) an irrational number
- (c) not a natural number

- (b) a rational number
- (d) none of these

$$(3-\sqrt{3})(3+\sqrt{3})$$

$$(3)^2 - (\sqrt{3})^2$$

$$9 - 3 = 6$$

$$\left[ \begin{aligned} (a-b)(a+b) \\ = a^2 - b^2 \end{aligned} \right]$$

On simplifying  $(\sqrt{5} + \sqrt{7})^2$ , we get

(a) 12

(b)  $\sqrt{35}$

(c)  $\sqrt{5} + \sqrt{7}$

(d)  $12 + 2\sqrt{35}$

$$\sqrt{5} + \sqrt{7}$$

$$= (\sqrt{5})^2 + (\sqrt{7})^2 + 2\sqrt{5}\sqrt{7}$$

$$= 5 + 7 + 2\sqrt{5 \times 7}$$

$$= 12 + 2\sqrt{35}$$

$$(\sqrt{a} + \sqrt{b})^2$$

$$\left[ \sqrt{ab} = \sqrt{a} \cdot \sqrt{b} \right] \left\{ \begin{array}{l} (a+b)^2 \\ = a^2 + b^2 \\ + 2ab. \end{array} \right.$$