Class 9 maths - chapter 1

Number System : Rationalise the Denominator (concept and Mcq's)

$$\frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{\sqrt{2} \times \sqrt{2}}$$

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

$$= \frac{\sqrt{2}}{\sqrt{2 \times 2}} = \frac{\sqrt{2}}{\sqrt{(2)^2}}$$

$$= \frac{\sqrt{2}}{2}$$

$$\frac{1}{2+\sqrt{3}} = \frac{1}{2+\sqrt{3}} \times \frac{2-\sqrt{3}}{2-\sqrt{3}} = \frac{2-\sqrt{3}}{(2+\sqrt{3})(2-\sqrt{3})}$$

$$= \frac{2-\sqrt{3}}{(2)^2-(\sqrt{3})^2} = \frac{2-\sqrt{3}}{4-3}$$

$$(a+b)(a-b) = a^2 - b^2$$

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

Exp. 19

$$\frac{5}{\sqrt{3}-\sqrt{5}} \times \frac{\sqrt{3}+\sqrt{5}}{\sqrt{3}+\sqrt{5}}$$

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

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

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

For rationalising the denominator of the expression $\frac{1}{\sqrt{12}}$ we multiply and divide by

(a) $\frac{1}{\sqrt{12}}$ ✗ (b) 12 ✗ (c) $\sqrt{2}$ ✗ (d) $\sqrt{3}$ ✓

$$\frac{1}{\sqrt{12}} = \frac{1}{\sqrt{2 \times 2 \times 3}}$$

$$= \frac{1}{\sqrt{2 \times 2}\,\sqrt{3}}$$

$\sqrt{ab} = \sqrt{a}\,\sqrt{b}$

$$= \frac{1}{2\sqrt{3}}$$

. The value of $\frac{1}{\sqrt{10}}$ when $\sqrt{10} = 3.162$ is

(a) .3162 (b) 31.62 (c) .03162 (d) 316.2

$$\frac{1}{\sqrt{10}} \times \frac{\sqrt{10}}{\sqrt{10}} = \frac{\sqrt{10}}{10} = \frac{3.162}{10}$$

$$= .3162$$

$\sqrt{10} \times \sqrt{10}$

$\sqrt{10 \times 10}$

$\sqrt{(10)^2}$

10

The number obtained on rationalising the denominator of $\frac{1}{\sqrt{7}-2}$ is

(A) $\frac{\sqrt{7}+2}{3}$ (B) $\frac{\sqrt{7}-2}{3}$ (C) $\frac{\sqrt{7}+2}{5}$ (D) $\frac{\sqrt{7}+2}{45}$

$$\frac{1}{\sqrt{7}-2} \times \frac{\sqrt{7}+2}{\sqrt{7}+2} = \frac{\sqrt{7}+2}{(\sqrt{7}-2)(\sqrt{7}+2)}$$

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

$$= \frac{\sqrt{7}+2}{7-4} = \frac{\sqrt{7}+2}{3}$$

$(a+b)(a-b)$

$= a^2-b^2$

$\frac{1}{\sqrt{9}-\sqrt{8}}$ is equal to

(A) $\frac{1}{2}(3-2\sqrt{2})$ (B) $\frac{1}{3+2\sqrt{2}}$

(C) $3-2\sqrt{2}$ (D) $3+2\sqrt{2}$

$$\frac{1}{\sqrt{9}-\sqrt{8}} \times \frac{\sqrt{9}+\sqrt{8}}{\sqrt{9}+\sqrt{8}}$$

$$\frac{\sqrt{3\times 3} + \sqrt{2\times 2\times 2}}{(\sqrt{9}-\sqrt{8})(\sqrt{9}+\sqrt{8})} = \frac{3+2\sqrt{2}}{9-8} = 3+2\sqrt{2}$$

After rationalising the denominator of $\dfrac{7}{3\sqrt{3}-2\sqrt{2}}$, we get the denominator as

(A) 13 (B) 19 (C) 5 (D) 35

$$\frac{7}{3\sqrt{3}-2\sqrt{2}} \times \frac{3\sqrt{3}+2\sqrt{2}}{3\sqrt{3}+2\sqrt{2}}$$

$$\frac{7(3\sqrt{3}+2\sqrt{2})}{(3\sqrt{3})^2-(2\sqrt{2})^2} = \frac{?}{9\times 3-4\times 2} = \frac{?}{27-8} = \frac{?}{19}$$