

Value Based Questions

Que .1 Aman was facing some difficulties in simplifying $\frac{1}{\sqrt{7}-\sqrt{3}}$. His classmate, Sonia gave him a clue to rationalise the denominator for simplification. Aman simplified the expression and thanked Sonia for this goodwill. How did Aman simplify $\frac{1}{\sqrt{7}-\sqrt{3}}$? What values does it indicate?

$$\begin{aligned}\text{Sol. } \frac{1}{\sqrt{7}-\sqrt{3}} &= \frac{1}{\sqrt{7}-\sqrt{3}} \times \frac{\sqrt{7}+\sqrt{3}}{\sqrt{7}+\sqrt{3}} \\ &= \frac{\sqrt{7}+\sqrt{3}}{(\sqrt{7})^2-(\sqrt{3})^2} = \frac{\sqrt{7}+\sqrt{3}}{4}\end{aligned}$$

Helpfulness, cooperativeness, knowledge.

Que 2. In a school, 5 out of every 7 children participated in ‘Save Wild Life’ campaign organised by the school authorities. What fraction of the students participated in the campaign? Find what kind of decimal expansion it has. What value do the participating students possess?

Sol. $\frac{5}{7} = 0.\overline{714285}$, Non-terminating repeating decimal.

Caring, social, helpful, environmental concern.

Que 3. In a survey, it was found that 9 out of every 11 households are donating some amount of their income to an orphanage or old age homes or institutions for physically handicaps. What fraction of households are not donating? Write it in decimal form and find what kind of decimal expansion it has. What value of society are depicted here?

Sol. $\frac{2}{11} = 0.\overline{18}$, Non terminating repeating.

People are becoming more social, helpful, cooperative and caring.

Que 4. Teacher asked the students “Can we write $0.\overline{47}$ in $\frac{p}{q}$ form as $\frac{47}{100}$? Mukta answered, “No, it is $\frac{43}{90}$ ”. Is Mukta correct? Justify her answer. Which values of Mukta are depicted here?

Sol. Yes,

$$\text{Let } x = 0.477777\dots \quad (i)$$

$$10x = 4.77777\dots \quad (ii)$$

Subtracting (i) from (ii), we get

$$9x = 4.3 \quad \text{or} \quad x = \frac{43}{90}$$

Scientific temper, knowledge, curiosity.

Que 5. The number of trees planted on Van Mahotsav in a region was 103×98 . Find the number of trees planted without actual multiplication. Which values of the people living in this region are depicted here?

$$\begin{aligned}\text{Sol. } 103 \times 98 &= (100 + 3)(100 - 2) \\ &= 100^2 + (3 - 2) \times 100 - 3 \times 2 \\ &= 10,000 + 100 - 6 = 10,094\end{aligned}$$

Environmental care, social, happiness.

Que 6. 95 students each from 102 schools participated in the 'Republic Day Celebration' in Delhi. Find the number of students participated without actual multiplication. Which values of the students are depicted here?

$$\begin{aligned}\text{Sol. } 95 \times 102 &= (100 - 5)(100 + 2) \\ &= 100^2 + (-5 + 2)100 + (-5 \times 2) = 10,000 - 300 - 10 = 9,690\end{aligned}$$

Fraternity, patriotism.

Que 7. Two classmates Anya and Madhur simplified two different expressions during the revision of $\frac{\sqrt{2}}{\sqrt{5}+\sqrt{3}}$ and Madhur explains simplifications of $\sqrt{25} + \sqrt{98} + \sqrt{147}$.

write both the simplifications. What values does it depict?

$$\begin{aligned}\text{Sol. } \frac{\sqrt{2}}{\sqrt{5}+\sqrt{3}} &= \frac{\sqrt{2}(\sqrt{5}-\sqrt{3})}{(\sqrt{5}+\sqrt{3})(\sqrt{5}-\sqrt{3})} \\ &= \frac{\sqrt{10}-\sqrt{6}}{(\sqrt{5})^2-(\sqrt{3})^2} = \frac{\sqrt{10}-\sqrt{6}}{2}\end{aligned}$$

$$\begin{aligned}\text{Also, } \sqrt{28} + \sqrt{98} + \sqrt{147} &= \sqrt{2 \times 2 \times 7} + \sqrt{2 \times 7 \times 7} + \sqrt{3 \times 7 \times 7} \\ &= 2\sqrt{7} + 7\sqrt{2} + 7\sqrt{3}\end{aligned}$$

Cooperativeness, knowledge.