

CLASS 9 · HOTS · OLYMPIAD PREPARATION · DPP SHEET

Chapter 3: HOTS: The World of Numbers (Class 9)

Daily practice problems: 8 questions with an answer key

Try every question on your own first. The answer key is on the last page.

1. Express $0.\overline{6}$ (0.666...) as a fraction.
2. Express $0.\overline{14}$ (0.141414...) as a fraction.
3. Find three rational numbers between $\frac{1}{4}$ and $\frac{1}{3}$.
4. Rationalise the denominator of $\frac{1}{\sqrt{7} + \sqrt{5}}$.
5. If $x = 3 - 2\sqrt{2}$, find $x + \frac{1}{x}$ and $x^2 + \frac{1}{x^2}$.
6. Simplify $\sqrt{12} + \sqrt{27} - \sqrt{48}$.
7. Find the value of $(2 + \sqrt{3})(2 - \sqrt{3})$.
8. Is the number 0.101001000100001... (the number of zeroes grows each time) rational or irrational?

Answer Key

1. $\frac{2}{3}$.
2. $\frac{14}{99}$.
3. For example $\frac{4}{15}$, $\frac{17}{60}$ and $\frac{3}{10}$.
4. $\frac{\sqrt{7} - \sqrt{5}}{2}$.
5. 6 and 34.
6. $\sqrt{3}$.
7. 1.
8. Irrational, because the decimal neither terminates nor repeats.