



INDIAN SCHOOL MUSCAT
SENIOR SECTION
DEPARTMENT OF MATHEMATICS
CLASS IX
WORKSHEET NO. - 1
NUMBER SYSTEMS

**SECTION A: (1 MARK)**

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| 1. | Given that $\sqrt{10} = 3.162$, find the value of $\frac{1}{\sqrt{10}}$ (CCE 2010) | [0.3162] |
| 2. | Simplify: $\frac{28}{\sqrt{28} - \sqrt{7}}$ | [$4\sqrt{7}$] |
| 3. | Simplify: $16^{\frac{-1}{4}} \times \sqrt[4]{16}$ | [1] |
| 4. | Simplify: $\sqrt{10} \times \sqrt{15}$ (NCERT EXEMPLAR QN.) | [$5\sqrt{6}$] |

SECTION B: (2 MARKS)

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| 5. | If $x = 3 + 2\sqrt{2}$, then find whether $x + \frac{1}{x}$ is rational or irrational (CCE 2011) | [Rational] |
| 6. | Simplify: $\left(\frac{\frac{1}{125}}{\frac{1}{275}}\right)^{\frac{5}{2}}$ | $\left(\frac{2}{3}\right)^5$ |
| 7. | Express $1.4191919\dots$ in the form of p/q , where p and q are integers and $q \neq 0$. | $\frac{281}{198}$ |
| 8. | Find the product: $\sqrt[3]{2} \times \sqrt[4]{2} \times \sqrt[12]{32}$ (NCERT EXEMPLAR QN.) | [2] |
| 9. | Insert a rational number and an irrational number between 0.17 and 0.18 | |

SECTION C: (3 MARKS)

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| 10. | If $x = 2 + \sqrt{3}$, find the value of $x^2 + \frac{1}{x^2}$ | [14] |
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| 11. | Simplify : $3\sqrt{45} - \sqrt{125} + \sqrt{200} - \sqrt{50}$ | (CCE 2011) | $4\sqrt{5} + 5\sqrt{2}$ |
| 12. | Represent $\sqrt{8.5}$ on the number line. | | |
| 13. | Classify the following numbers as rational or irrational with justification: (a) $\frac{\sqrt{12}}{\sqrt{3}}$ (b) $0.14\overline{16}$ (c) $-\sqrt{0.4}$ (d) $0.401400140001\dots$ (e) $\sqrt{\frac{9}{27}}$ (f) $(1 + \sqrt{5}) - (4 + \sqrt{5})$ | a ,b, f - rational c , d, e – irrational | |
| 14. | Write $\sqrt[3]{4}$, $\sqrt{3}$, $\sqrt[4]{6}$ in ascending order. | (CCE2013) | $\sqrt[4]{6}, \sqrt[3]{4}, \sqrt{3}$ |
| 15 | Locate $\sqrt{3}$ on the number line | (CCE2010) | |
| 16. | Visualize on the number line 2.463. | | |

SECTION D: (4 MARKS)

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| 17. | Simplify: $\frac{1}{3-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-2}$ | (HOTS) | [5] |
| 18. | Find the value of p and q if $\frac{7+\sqrt{5}}{7-\sqrt{5}} - \frac{7-\sqrt{5}}{7+\sqrt{5}} = p - 7\sqrt{5} q$. | (HOTS) | $p=0,$ $q = -1/11$ |
| 19. | If $X = \frac{\sqrt{a+1} + \sqrt{a-1}}{\sqrt{a+1} - \sqrt{a-1}}$, then show that $x^2 - 2ax + 1 = 0$ | (CCE2014) | |
| 20. | If $X = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ and $y = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$, find the value of $x^2 + y^2 + xy$. (CCE2011) | | [99] |