

## CBSE Classes IX–X — Maths Sectionals — Answer Key

ANSWER KEY

CBSE Classes IX–X Mathematics (NCERT) · practice set by Atulya Defence Academy

### Answer key

| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 |
|----|----|----|----|----|----|----|----|----|----|
| C  | B  | A  | B  | C  | A  | A  | B  | A  | A  |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| A  | B  | B  | A  | B  | A  | A  | A  | B  | A  |

### Solutions & explanations

**Q14 – (A)** Basic proportionality:  $AD/DB = AE/EC \rightarrow 2/3 = 4/EC \rightarrow EC = 6$ .

**Q16 – (A)** Right triangle ( $5^2 + 12^2 = 13^2$ ):  $\frac{1}{2} \times 5 \times 12 = 30$ .

**Q19 – (B)** Primes 2, 3, 5  $\rightarrow 3/6$ .

**Q21.** Assume  $\sqrt{2} = p/q$  in lowest terms. Then  $p^2 = 2q^2$ , so  $p^2$  is even  $\Rightarrow p$  even,  $p = 2k$ . Then  $4k^2 = 2q^2 \Rightarrow q^2 = 2k^2 \Rightarrow q$  even.  $p$  and  $q$  share factor 2 – contradiction. Hence  $\sqrt{2}$  is irrational. *Marking: assumption 1, p even 1, q even 1, conclusion 1.*

**Q22.**  $2x^2 - 6x - x + 3 = 0 \Rightarrow 2x(x - 3) - 1(x - 3) = 0 \Rightarrow (2x - 1)(x - 3) = 0 \Rightarrow x = 1/2$  or  $x = 3$ .

**Q23.**  $a = 9$ ,  $d = 8$ .  $S = n/2[18 + 8(n - 1)] = n(4n + 5) = 636 \Rightarrow 4n^2 + 5n - 636 = 0 \Rightarrow (n - 12)(4n + 53) = 0 \Rightarrow n = 12$ .

**Q24.** Let ratio  $k : 1$ .  $x: (6k - 3)/(k + 1) = -1 \Rightarrow 6k - 3 = -k - 1 \Rightarrow k = 2/7$ . Ratio  $2 : 7$  (check  $y: (-16/7 + 10)/(9/7) = 54/9 = 6 \checkmark$ ).

**Q25.**  $\tan 30^\circ = 75/d \Rightarrow d = 75\sqrt{3} \approx 129.9$  m.