

Solution of the day/Sep-12, 2018

6th Class

➤ Mathematics:

Sol. The mean proportional between a and b is \sqrt{ab}

$$\therefore \text{Man proportional between 49 and 64} = \sqrt{49 \times 64} = (7 \times 8) = 56$$

➤ Physics: Ans: (D)

➤ Chemistry: Ans: (C)

➤ Biology: Ans: (D)

7th Class

➤ Mathematics: Ans: (A)

➤ Physics: Ans: (B)

➤ Chemistry: Ans: (B, C, D)

➤ Biology: Ans: (A)

8th class

➤ Mathematics:

Sol: In figure $\triangle ABC$ is right angled at B.

$BC = 5$ and $AC - AB = 1$ cm, i.e., $AC = AB + 1$ cm

Using Pythagoras theorem, we have

$$AC^2 = AB^2 + BC^2 \Rightarrow (AB + 1)^2 = AB^2 + BC^2$$

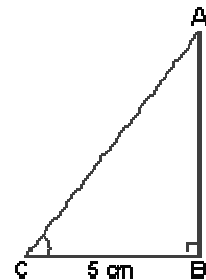
$$\Rightarrow AB^2 + 2AB + 1 = AB^2 + (5)^2 \Rightarrow 2AB + 1 = 25 \text{ or } 2AB = 24$$

$$\Rightarrow AB = 12 \text{ cm} \Rightarrow AC = 12 \text{ cm} + 1 = 13 \text{ cm}$$

From $\triangle ABC$, we have

$$\sin C = \frac{AB}{AC} = \frac{12}{13} \Rightarrow 1 + \sin C = 1 + \frac{12}{13} = \frac{25}{13} \text{ Also } \cos C = \frac{BC}{AC} = \frac{5}{13}$$

$$\text{Then } \frac{1 + \sin C}{\cos C} = \frac{\left(\frac{25}{13}\right)}{\left(\frac{5}{13}\right)} = \frac{25}{5}, \text{ i.e., } \frac{1 + \sin C}{\cos C} = 5.$$



➤ Physics: Ans: One

➤ Chemistry: Ans: (B)

➤ **Biology:** Ans: (D)

9th Class

➤ **Mathematics:**

Sol: (D) From the given relation we have $\frac{\tan A}{\sqrt{3}} = \frac{\tan B}{\sqrt{5}} = k$ (say), (clearly $k > 0$)

$$\text{Also } 2 \sin A = \sqrt{3} \sin B \Rightarrow \frac{2 \tan A}{\sqrt{1 + \tan^2 A}} = \frac{\sqrt{3} \tan B}{\sqrt{1 + \tan^2 B}} \Rightarrow \frac{2\sqrt{3}k}{\sqrt{1 + 3k^2}} = \frac{\sqrt{3} \times \sqrt{5}k}{\sqrt{1 + 5k^2}}$$

$$\Rightarrow 4(1 + 5k^2) = 5(1 + 3k^2) \Rightarrow k^2 = \frac{1}{5} \Rightarrow k = \frac{1}{\sqrt{5}} \Rightarrow \tan A = \frac{\sqrt{3}}{\sqrt{5}}, \tan B = 1 \Rightarrow \tan A + \tan B = \frac{\sqrt{3} + \sqrt{5}}{\sqrt{5}}$$

➤ **Physics:** Ans: Same

➤ **Chemistry:** Ans: (C)

➤ **Biology:** Ans: (C)

10th class

➤ **Mathematics:**

Sol: Here, $\sin A = \frac{m}{n}$

$$\begin{aligned} \text{Now, } \frac{\tan A + 4}{4 \cot A + 1} &= \frac{\frac{m}{\sqrt{n^2 - m^2}} + 4}{4 \frac{\sqrt{n^2 - m^2}}{m} + 1} = \frac{m + 4\sqrt{n^2 - m^2}}{4\sqrt{n^2 - m^2} + m} \\ &= \frac{m + 4\sqrt{n^2 - m^2}}{\sqrt{n^2 - m^2}} \times \frac{m}{4\sqrt{n^2 - m^2} + m} = \frac{m}{\sqrt{n^2 - m^2}} \end{aligned}$$

➤ **Physics:** Ans: a-s, b-t, c-q, d-p, e-r

➤ **Chemistry:** Ans: (B)

➤ **Biology:** Ans: (C)

➤ **Reasoning :**

Sol : (b) $\begin{array}{cccccc} 5 & 9 & 17 & 29 & 45 & ? \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ & +4 & +8 & +12 & +16 & +20 \end{array}$ $? = 45 + 20 = 65$

