

## Solution of the day/Nov-24, 2018

### 6<sup>th</sup> Class

- **Mathematics:** Ans :  $7+14a+2a^2$
- **Physics:** Ans: (A)
- **Chemistry:** Ans: (B)
- **Biology:** Ans: (C)

### 7<sup>th</sup> Class

➤ **Mathematics:**

Sol. Third proportional to 9 and 12 is the same as the fourth proportional to 9, 12 and 12.

Let  $9:12::12:x$ . Then,  $9 \times x = 12 \times 12$  or  $x = \left(\frac{12 \times 12}{9}\right) = 16$  Hence, the third proportional to 9 and 12 is 16.

- **Physics:** Ans: (A)
- **Chemistry:** (C)
- **Biology:** Ans: (B)

### 8<sup>th</sup> class

➤ **Mathematics:**

Sol:

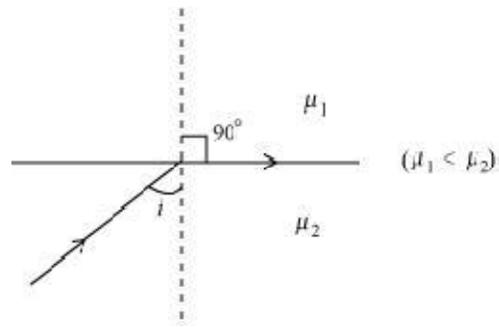
$$\begin{array}{r} 0.2x^2 + 5.3x - 9.85 \\ x + 2 \overline{) 0.2x^3 + 5.7x^2 + 0.75x + 1.25} \\ \underline{0.2x^3 + 0.4x^2} \phantom{+ 1.25} \\ 5.3x^2 + 0.75x \phantom{+ 1.25} \\ \underline{5.3x^2 + 10.60x} \phantom{+ 1.25} \\ -9.85x + 1.25 \phantom{+ 1.25} \\ \underline{-9.85x + 19.7} \\ -18.45 \end{array}$$

$$\text{Quotient} = 0.2x^2 + 5.3x - 9.85 ; \text{ Remainder} = -18.45$$

$$\text{Verification: } 0.2x^3 + 5.7x^2 + 0.75x + 1.25 = (0.2x^2 + 5.3x - 9.85)(x + 2) - 18.45$$

**Physics:** Ans : (B)

Critical angle is the minimum incidence angle at which angle of refraction is  $90^\circ$ . The given figure shows refraction of light at  $90^\circ$ .



From Snell's law,  $\frac{\sin i}{\sin 90^\circ} = \frac{\mu_2}{\mu_1}$        $\sin i = \frac{\mu_2}{\mu_1}$

Where,  $i$  is the critical angle. It is clear that critical angle depends on the refractive indices of the two media. The ratio of refractive indices of the two media is proportional to the speed of light in them. Hence, the ratio is proportional to the wavelength of light in the given media, since frequency of light remains constant.

$\sin i = \frac{\mu_2}{\mu_1} = \frac{v_1}{v_2} = \frac{\lambda_1}{\lambda_2}$  Hence, critical angle is directly proportional to the wavelength of light.

➤ **Chemistry:** Ans: (B)

➤ **Biology:** Ans: (B)

### 9<sup>th</sup> Class

➤ **Mathematics:** Ans: (A)

➤ **Physics:** Ans: (C)

➤ **Chemistry:** Ans: (A)

➤ **Biology:** Ans: (A)

### 10<sup>th</sup> class

➤ **Mathematics:** Ans : (A)

➤ **Physics:** Ans : (C)

➤ **Chemistry:** Ans: (ABC)

➤ **Biology:** Ans: (D)

➤ **Reasoning:** Sol: (D) On the basis of statements, we conclude that Q is the brother of P and P's son is the brother of Y, so Y is the daughter of P. Thus, Q is the uncle of X.