

Class-9

MAT

1.(C) $1 + (2 \times 1) = 3$
 $4 + (4 \times 5) = 24$
 $6 + (6 \times 7) = 48$

2.(B) Hour hand
 In 12 hours it moves 360°

$$1 \text{ hr} \longrightarrow \left(\frac{360}{12}\right)^\circ$$

$$3 \text{ hr} \longrightarrow \left(\frac{360}{12} \times 3\right)^\circ$$

$$= 90^\circ$$

3.(A) PASS = 55
 In alphabetical order place value of P is 16
 In alphabetical order place value of A is 1
 In alphabetical order place value of S is 19
 So adding position values $16 + 1 + 19 + 19 = 55$
 Similarly FAIL = $6 + 1 + 9 + 12 = 28$

4.(D) Nephew

5.(B) $8^2 - 1 = 63$
 $7^2 - 1 = 48$
 $6^2 - 1 = 35$
 $5^2 - 1 = 24$

MATH

1.(B) Let the height of tower be h 'm'

$$\tan 60 = \frac{h}{x} \quad \dots (1)$$

$$\tan 30 = \frac{h}{40+x} \quad \dots (2)$$

Solving (1) & (2) we get,

$$h = 20\sqrt{3} \text{ m}$$

2.(D) $\angle PCA = 110^\circ$
 $\angle PCO = 90^\circ$ (radius \perp tangent)

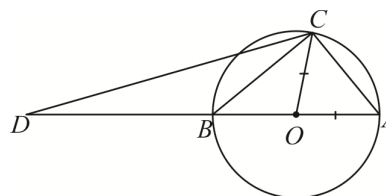
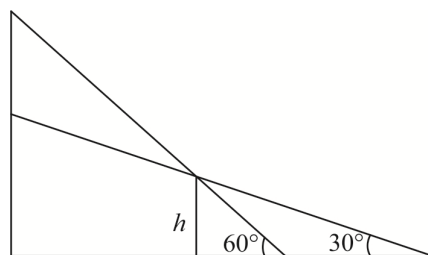
$$\angle OCA = 20^\circ$$

$$\angle OCA = \angle OAC = 20^\circ$$

$$\Rightarrow \angle COA = 140^\circ$$

$$\angle CBA = \frac{1}{2} \angle COA = 70^\circ$$

3.(C) $N_2 = 4 \times 12 = 48$
 $N_1 = 16 \times 6 = 96$
 $N_0 = 216 - (8 + 48 + 96) = 64$
 $N_0 : N_1 : N_2 = 4 : 6 : 3$



4.(C) $x^2 - 3x + 2 = 0$
 \swarrow α
 \searrow β

$\alpha + \beta = 3$
 $\alpha\beta = 2$

$$\frac{1}{2\alpha + \beta} + \frac{1}{2\beta + \alpha} = \frac{3(\alpha + \beta)}{5\alpha\beta + 2\alpha^2 + 2\beta^2}$$

$$\frac{3(\alpha + \beta)}{2((\alpha + \beta)^2 - 2\alpha\beta) + 5\alpha\beta} = \frac{9}{20}$$

Similarly, use product of roots
 And get the requires eqn.
 $20x^2 - 9x + 1 = 0$

Physics

- 1.(A) Statement II is correct explanation of Statement I
 2.(B) Farther the planet from sun more time it will take to complete one revolution

Chemistry

- 1.(B) 0.5 L liquid A produces : 50 kJ heat
 Let us assume density of A : d_A kg/l
 \therefore Mass of A : $0.5 \times d_A$ kg
 0.5 d_A kg of A produces = 50 kJ heat
 \therefore 1 kg of A produces = $\frac{50}{0.5 d_A}$ kJ heat
- Similarly 0.25 L of B produces = 25 kJ heat
 Density of B = $\frac{d_A}{2}$ (given)
 \therefore Mass of B: $0.25 \times \frac{d_A}{2}$ kg
 $\frac{0.25}{2} d_A$ kg of B produces 25 kJ
 1 kg of B produces : $\frac{25 \times 2}{0.25 d_A}$ kJ = $\frac{50}{0.25 d_A}$ kJ
 \therefore Colorific value of B is higher.

- 2.(C) Na is stored in kerosene and phosphorus is stored in water to prevent them from reacting.
 Na on reacting with acid produces H_2 gas.
 H_2 reacts with O_2 to give water.
 \therefore X = Sodium
 Y = Phosphorus
 Z = Water