

Quantitative Aptitude Question & Answers

1) The internal bisector of the $\angle B$ and $\angle C$ of the ΔABC , intersect at O. If $\angle A = 100$, then the measure of $\angle BOC$ is:-

a) 110

b) 130

c) 140

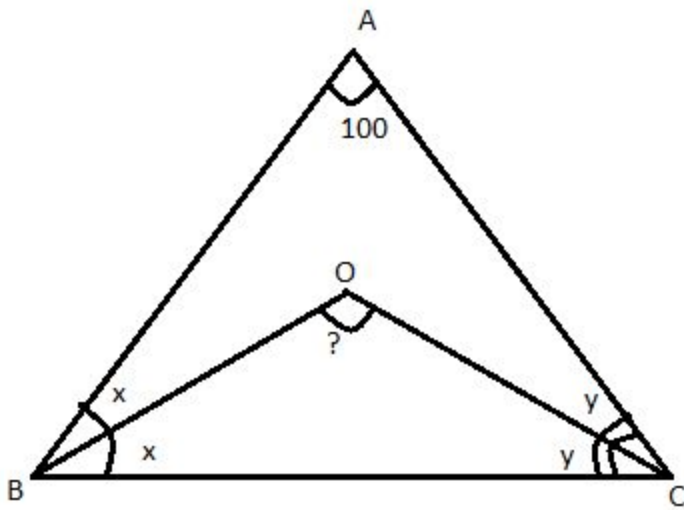
d) 120

Ans. (c.)

Explanation: in triangle ABC, $100 + 2x + 2y = 180$; $\Rightarrow x + y = 40$;

In triangle BOC,

$$\angle BOC = 180 - (x + y) = 180 - 40 = 140;$$



2) A conical iron piece having diameter 28 cm and height 30cm is totally immersed in the rise of water level by 6.4cm. The diameter, in cm, of the vessel is:-

a) 3.5

b) 32

c) 35

d) $35/2$

Ans. (c.)

Explanation: Let the radius of the vessel = r cms;

Volume of displaced water = volume of conical iron piece;

$$\pi \cdot r^2 \cdot 6.4 = \frac{1}{3} \cdot (14)^2 \cdot 30; \Rightarrow r = 17.5 \text{ cms};$$

Hence, the diameter of the vessel = 35 cms.

3) The value of the following is $3(\sin^4\theta + \cos^4\theta) + 2(\sin^6\theta + \cos^6\theta) + 12\sin^2\theta\cos^2\theta$

a) 3

b) 0

c) 5

d) 2

Ans. (c.)

Explanation:

$$= 3(\sin^4\theta + \cos^4\theta) + 2(\sin^6\theta + \cos^6\theta) + 12\sin^2\theta\cos^2\theta;$$

$$= 3(\sin^4\theta + \cos^4\theta) + 2(\sin^2\theta + \cos^2\theta)(\sin^4\theta + \cos^4\theta - \sin^2\theta\cos^2\theta) + 12\sin^2\theta\cos^2\theta;$$

$$= 5(\sin^4\theta + \cos^4\theta) + 10\sin^2\theta\cos^2\theta;$$

$$= 5(\sin^4\theta + \cos^4\theta + 2\sin^2\theta\cos^2\theta);$$

$$= 5(\sin^2\theta + \cos^2\theta)^2;$$

$$= 5;$$

4) If the area of the base, height and volume of a right prism be $(3\sqrt{3}/2) P^2 \text{ cm}^2$, $100\sqrt{3} \text{ cm}$ and 7200 cm^3 respectively, then the value of P will be?

a) $2/\sqrt{3}$

b) $\sqrt{3}$

c) $3/2$

d) 4

Ans. (d.)

Explanation: Volume of prism = area of base * height;

$$7200 = (3\sqrt{3}/2) P^2 * 100\sqrt{3}; \Rightarrow P = 4;$$

5) If the discount of 10% is given on the marked price of a radio, the gain is 20%. If the discount is increased to 20%, the gain is:-

a) 5%

b) 6.67%

c) 7.62%

d) 6.25%

Ans. (b.)

Explanation: Suppose marked price = Rs. 100;

Price after discount = Rs. 90;

Since, the realized gain = 20%; Hence, the cost price = Rs. 75;

If the discount price = 20%, then the price after discount = Rs. 80;

Hence, the required answer = $5 \times 100 / 75 = (20/3) \% = 6.67\%$;

6) If $4a - 4/a + 3 = 0$ then the value of $a^3 - 1/a^3 + 3 = ?$

a) $3/16$

b) $21/64$

c) $7/16$

d) $21/16$

Ans.

Explanation: $a - 1/a = -3/4$;

Cubing both sides-

$$a^3 - 1/a^3 - 3(a - 1/a) = -27/64;$$

$$a^3 - 1/a^3 = -27/64 + 3(-3/4);$$

$$a^3 - 1/a^3 = -171/64;$$

$$a^3 - 1/a^3 + 3 = -171/64 + 3 = 21/16;$$

7) O is the circumcentre of $\triangle ABC$. If $\angle BAC = 85^\circ$ $\angle BCA = 75^\circ$, the $\angle OAC$ is equal to:-

a) 60°

b) 70°

c) 50°

d) 40°

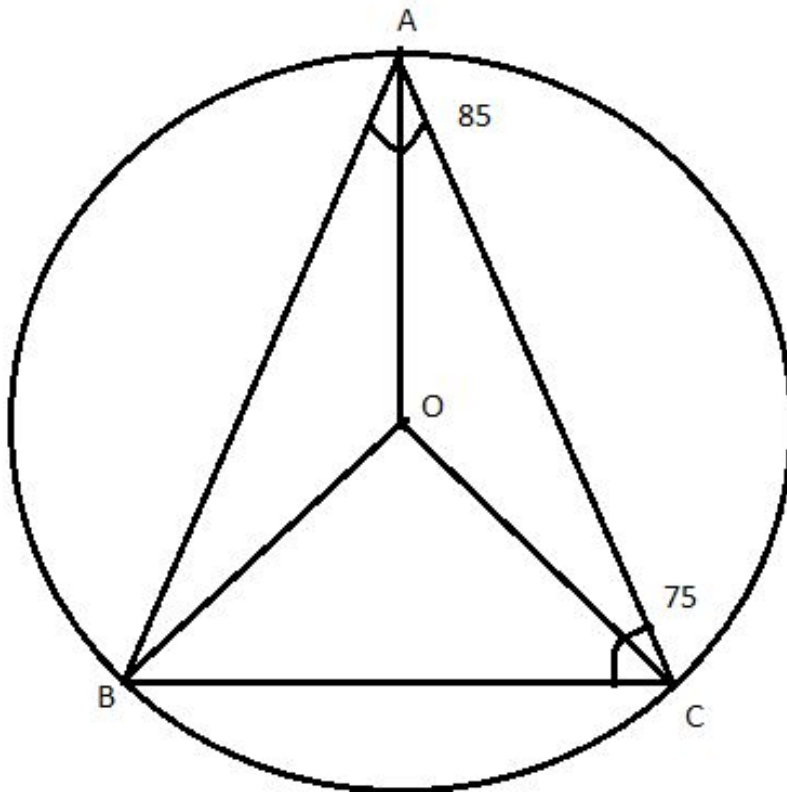
Ans. (b.)

Explanation: Angle $ABC = 180 - (85 + 75) = 20$;

Hence, Angle $OAC = 20 \times 2 = 40$ degrees;

Since, $OA = OC$; therefore, Angle $OAC = \text{Angle } OCA$;

Hence, Angle $OAC = 140/2 = 70$ degrees;



8) If A, B and C can complete a work in 6 days. If A can work twice faster than B thrice faster than C, then the number of days C alone can complete the work is:

a) 22 Days

b) 44 Days

c) 33 Days

d) 11 Days

Ans. (c.)

Explanation: (A + B + C)'s efficiency = $(100/6)\%$;

A's efficiency = 2 * B's efficiency = 3 * C's efficiency;

$$3C + 3C/2 + C = 100/6; \Rightarrow 11C/2 = 100/6;$$

$$C's \text{ efficiency} = 100/(3*11);$$

Hence, C alone can finish the work in = 33 days;

9) Given that: $\Delta ABC \sim \Delta PQR$, If $\frac{\text{area}(\Delta PQR)}{\text{area}(\Delta ABC)} = \frac{256}{441}$ and PR = 12cm, then AC is equal to?

a) 15.75 cm

b) 16 cm

c) 15.5 cm

d) $12\sqrt{2}$ cm

Ans. (a.)

Explanation: In similar triangles,

$$\frac{\text{Area}(PQR)}{\text{Area}(ABC)} = (PR/AC)^2; \Rightarrow AC = (12 \cdot \sqrt{256/441}) = 15.75 \text{ cms};$$

10) A circular swimming pool is surrounded by a concrete wall 4m wide. If the area of the concrete wall surrounding the pool is $\frac{11}{25}$ that of the pool, then the radius (in m) of the pool is:

a) 8

b) 20

c) 16

d) 30

Ans. (b.)

Explanation: Let the radius of the swimming pool = R meter;

Radius of pool with wall = (R + 4) meters;

$$\pi * [(R + 4)^2 - R^2] = \frac{11}{25} * \pi * R^2;$$

$$8(R + 2) = \frac{11}{25} * R^2;$$

After solving this equation- we get,

$$R = 20 \text{ meter.}$$

11) Two pipes A and B can fill a tank with water in 30 minutes and 45 minutes respectively. The water pipe C can empty the tank in 36 minutes. First A and B are opened. After 12 minutes C is opened. Total time (in minutes) in which the tank will be filled up is:-

a) 12

b) 30

c) 36

d) 24

Ans. (d.)

Explanation: A's efficiency to fill the tank in every minute = $(100/30)\% = 3.33\%$

B's efficiency to fill the tank in every minute = $(100/45)\% = 2.22\%$ and

C's efficiency to empty the tank in every minute = $(100/36) = 2.78\%$;

In 12 minutes, A and B will fill the tank in a minute = $5.55 \times 12 = 66.6\%$;

In 1 minute, A and B fill the tank = 5.55% ;

Therefore, A, B and C will fill the tank in 1 minute = $5.55 - 2.78 = 2.77\%$;

Remaining tank to be filled = $100 - 66.6 = 33.4\%$;

Time taken to fill the empty tank = $33.4/2.77 = 12.05$ minutes;

Total time = $12 + 12 = 24$ minutes;

12) A shopkeeper allows a discount of 10% on the marked price of a camera. Marked price of the camera, which costs him Rs. 600, to make a profit of 20% should be:-

a) Rs. 750

b) Rs. 800

c) Rs. 700

d) Rs. 650

Ans. (a.)

Explanation: Cost price = Rs. 600;

Suppose the marked price = Rs. X;

$$X \times 0.8 - 500 = 500 \times 20\%;$$

$$X = 500 \times 1.2 / 0.8 = \text{Rs. } 750;$$

13) O is the incentre of $\triangle PQR$ and $\angle QPR = 50$, then the measure of $\angle QOR$ is :-

a) 130

b) 125

c) 115

d) 100

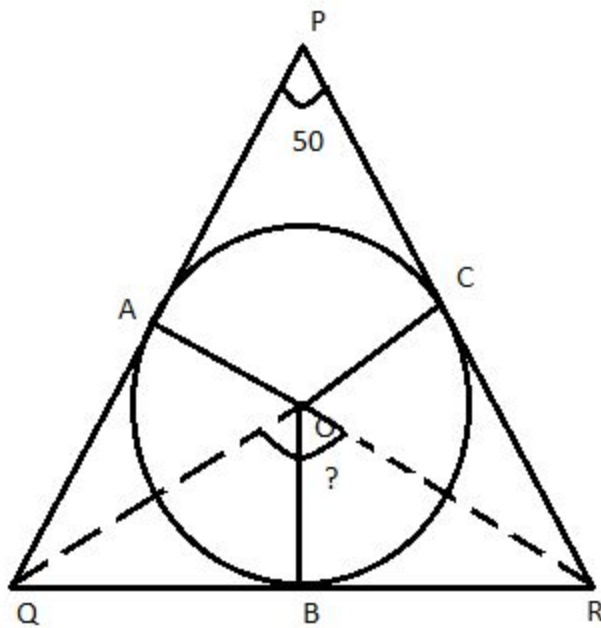
Ans. (a.)

Explanation: The inner radius will be perpendicular to the sides PQ and PR. Hence,

In quadrilateral,

$$\angle APO + \angle AOP = 180; \Rightarrow \angle AOP = 130;$$

$$\angle AOP = \angle QOR = 130 \text{ degrees};$$



14) If $x^2 + y^2 + z^2 = 2(x + z - 1)$, then the value of $x^3 + y^3 + z^3 = ?$

a) 1

b) 0

c) 2

d) -1

Ans. (c.)

Explanation: Take $x = 1$ $y = 0$ $z = 1$

$$1+0+1= 2$$

$$2(1+1-1) =2$$

So $1+0+1= 2$;

15) If $\frac{\sec\Theta + \tan\Theta}{\sec\Theta - \tan\Theta} = 2\frac{51}{79}$ then the value of $\sin\Theta$ is-

- a) $65/144$
- b) $91/144$
- c) $39/72$
- d) $35/72$

Ans. (a.)

Explanation: After simplifying the equation, we get-

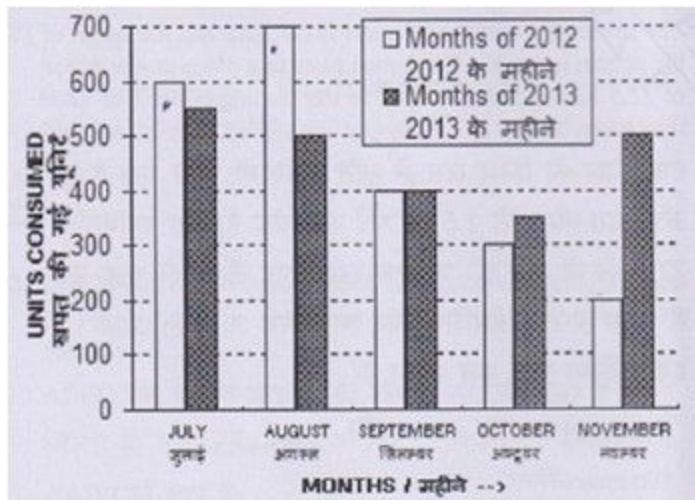
$$(1 + \sin\Theta) / (1 - \sin\Theta) = 209/79;$$

$$79 + 79 \sin\Theta = 209 - 209 \sin\Theta;$$

$$\sin\Theta = 130/288 = 65/144;$$

Directions: In Question nos. 16 to 19, Study the following bar-diagram and answer the questions.

Electricity units consumed by a family in two consecutive years during July to November



16) In how many months in 2012, the consumption of electric units was more than the average units consumption in that years.

- a) 5
- b) 2
- c) 3
- d) 4

Ans. (b.)

Explanation: Average of electric units in the year 2012 = $(600 + 700 + 400 + 300 + 200)/5 = 2200/5 = 440$; hence, there will be only two months where consumption of units will be higher than the average i.e. july and august.

17) The maximum difference in the units consumption between these two years has been found in the month of:-

- a) October
- b) August
- c) November
- d) July

Ans. (c.)

Explanation: In November, difference between the consumption of electric units = $500 - 200 = 300$; (which is higher than others)

18) The average electric consumption by the family during these 5 months in 2013 is

- a) 470 units
- b) 460 units
- c) 450 units
- d) 400 units

Ans. (b.)

Explanation: Average of electric units in the year 2013 = $(550 + 500 + 400 + 350 + 500)/5 = 2300/5 = 460$.

19) The Total units consumption in the year 2013 during these 5 months, in respect of the same in the previous year has been:-

a) decreased by 2.27%

b) increased by 4.54%

c) increased by 2.27%

d) found unaltered

Ans. (b.)

Explanation: The total electric units in the year 2013 = $(550 + 500 + 400 + 350 + 500) = 2300$;

The total electric units in the year 2012 = $(600 + 700 + 400 + 300 + 200) = 2200$;

The required percentage = $100 \times 100 / 2200 = 4.54\%$;

20) AC is a transverse common tangent to two circles with centers P and Q and radii 6cm and 3cm at the point A and C respectively. If AC cuts PQ at the point B and AB = 8cm then the length of PQ is:-

a) 12 cm

b) 13 cm

c) 10 cm

d) 15 cm

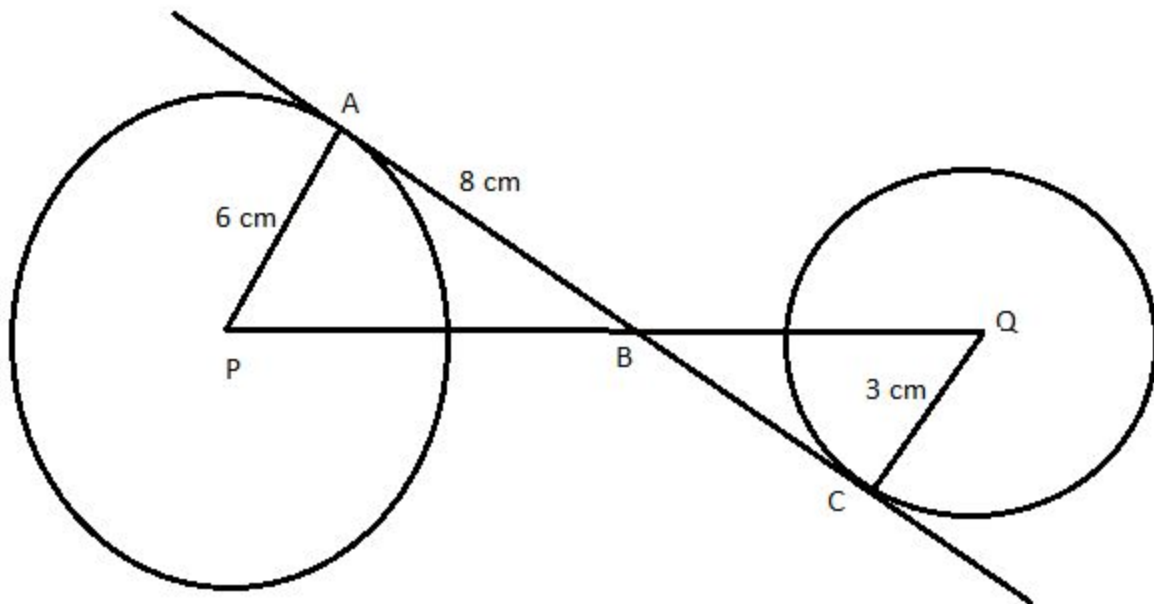
Ans.

Explanation: In triangle ABP, PB = 10 cms; (Pythagoras theorem)

Triangle ABP and BQC are similar triangles; Hence,

$$AP/QC = PB/BQ; \Rightarrow BQ = 5 \text{ cms};$$

$$PQ = 10 + 5 = 15 \text{ cms};$$



21) A dealer sold a bicycle at a profit of 10%. Had he brought the bicycle at 10% less price and sold it at a price Rs. 60 more, he would have gained 25%. The cost price of the bicycle was- <https://www.freshersnow.com/previous-year-question-papers/>

a) Rs. 2600

b) Rs. 2200

c) Rs. 2400

d) Rs. 2000

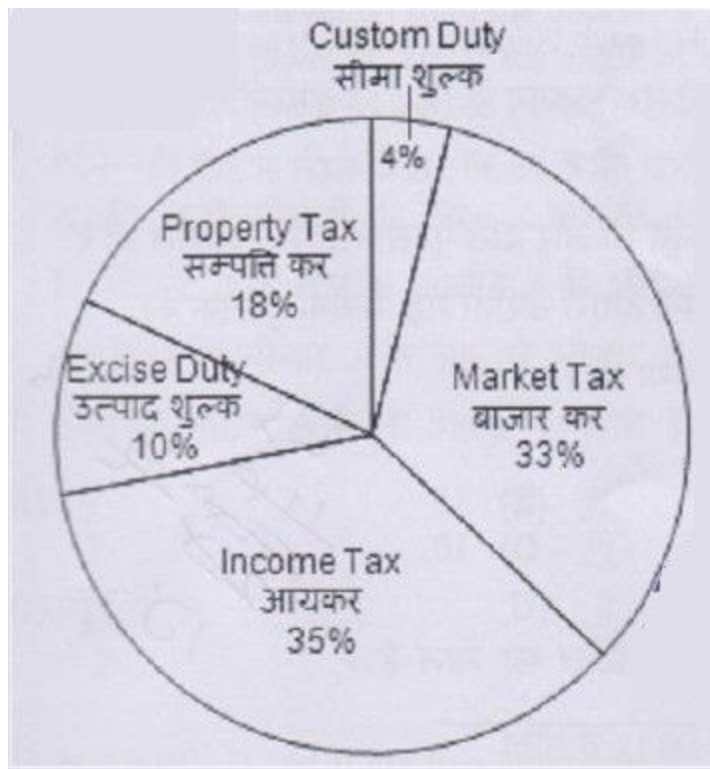
Ans.

Explanation: Cost price = Rs. x ; SP = $1.1x$;

$$0.9 \times \text{CP} \times 125\% = 1.1x + 60;$$

$$1.25 \times 0.9 \times x = 1.1x + 60; \Rightarrow x = \text{Rs. } 2400;$$

Directions: In Question nos. 22 to 24, The income of a state under different heads is given in the following pie-chart. Study the chart and answer the questions.



22) The central angle of the sector representing income tax is

a) 126°

b) 119°

c) 135°

d) 150°

Ans. (a.)

Explanation: The required angle = 35% of $360 = 126$ degrees.

23) If the total income in a year be Rs. 733 crores then the income (in Rs. crores) from 'Income tax' and 'Excise duty' is:-

a) Rs. 329.80

b) Rs. 331.50

c) Rs. 331.45

d) Rs. 329.85

Ans. (d.)

Explanation: income from income tax and excise duty = $(35 + 10)\%$ of 733 = $733 \times 0.45 =$
Rs. 329.85;

24) If the income from the market tax in a year be Rs. 165 crores then the total income from other sources is (in Rs. crores):-

a) Rs. 335

b) Rs. 345

c) Rs. 325

d) Rs. 365

Ans.

Explanation: Market tax = 33% of the total tax;

Hence, the total tax = $165 \times 100/33 = \text{Rs. } 500$;

The required total income = 67% of total tax = Rs. 335;

25) A dealer buys an article listed at 100 and gets successive discounts of 10% and 20%. He spends 10% of the Cost Price on transportation. At what price should he sell the article to earn a profit of 15%?

a) Rs. 91.20

b) Rs. 92.00

c) Rs. 90.80

d) Rs. 91.08

Ans.

Explanation: Resultant successive discount = $20\% + 10\% - 20\% \times 10\% = 28\%$;

The buying price of the article = $100 \times (100 - 28)\% = 100 \times 72\% = \text{Rs. } 72$;

Buying price after transportation = $72 + 7.2 = \text{Rs. } 79.2$;

Hence, the selling price = $79.2 \times 1.15 = \text{Rs. } 91.08$;