

## Aptitude Previous Year Questions

**1. A father can do job as fast as 2 sons working together. If one son does the job in 3 hours and the other in 6 hours, the number of hours taken by the father, to do the job alone is**

- a. 1
- b. 2
- c. 3
- d. 4

**Ans. 2**

**Explanation:-** The efficiency of first son =  $1 \times 100 / 3 = 33.33\%$ .

The efficiency of second son =  $100 / 6 = 16.67\%$ .

Hence, the efficiency of father =  $33.33 + 16.67 = 50\%$ .

And, the number of hours taken by father to complete the same job =  $100 / 50 = 2$  hours.

**2. The perimeter of a rhombus is 240 m and the distance between any two parallel sides is 20 m. The area of the rhombus in sq.m. is**

- a. 600
- b. 1200
- c. 2400
- d. 4800

**Ans. 1200**

**Explanation:-** the side of rhombus=  $240/4= 60$  m.

Altitude= distance between any parallel sides= 20 m.

Hence, the area of rhombus=  $60*20=1200$  sq. m.

**3.A man sold an article for Rs. 450, after allowing a discount of  $16 \frac{2}{3}$  % on the printed price. What is that printed price?**

a. Rs.525

b. Rs.530

c. Rs.535

d. Rs.540

**Ans.** Rs.540

**Explanation:-**Let the printed price= Rs. x;

If the discount is  $(\frac{50}{3})\%$ , then the sold percentage will be  $(\frac{250}{3})\%$ .

$$x * [\frac{250}{(3 * 100)}] = 450;$$

$$x = 540;$$

**4. A sum of Rs. 770 has been divided among A, B, C in such a way that A receives  $\frac{2}{9}$ th of what B and C together receive. Then A's share is**

a. Rs.140

b. Rs.154

c. Rs.165

d. Rs.170

**Ans.** Rs.140

**Explanation:-**  $A = \frac{2}{9}(B+C)$ ;

Hence,  $B + C = \frac{9A}{2}$ ;

Since,  $A + B + C = 770$ ;

$\frac{11A}{2} = 770$ ;  $\Rightarrow A = \text{Rs. } 140$ .

**5. A man bought 4 dozen eggs at Rs. 24 per dozen and 2 dozen eggs at Rs. 32 per dozen. To gain 20% on the whole, he should sell the eggs at**

- a. 16 per dozen
- b. 21 per dozen
- c. 32 per dozen
- d. 35 per dozen

**Ans.** 32 per dozen

**Explanation:-** Total price paid for the eggs =  $4 \times 24 + 2 \times 32 = \text{Rs. } 160$ .

The total price after 20% gain =  $160 \times 1.2 = \text{Rs. } 192$ ;

Hence, the selling price per dozen =  $192/6 = \text{Rs. } 32$ ;

**6. P's salary is 25% higher than Q, what percentage is Q's salary lower than that of P?**

- a. 20
- b. 29
- c. 31
- d.  $33\frac{1}{3}$

**Ans.** 20

**Explanation:-** Let the salary of Q= Rs. x; then, the salary of P= Rs. 1.25x.

% change in salary=  $(0.25x/1.25x)*100= 20\%$ .

**7.A and B start running at the same time and from the same point around a circle. If A can complete one round in 40 seconds and B in 50 seconds, how many seconds will they take to reach the starting point simultaneously?**

- a. 10
- b. 200
- c. 90
- d. 2000

**Ans. 200**

**Explanation:-** time taken to reach the starting point simultaneously= LCM(40, 50)= 200 seconds.

**8.** *If  $x - \frac{1}{3x} = \frac{1}{3}$  the value of  $3(x - \frac{1}{3x})$  is*

- a. -1
- b. 1
- c. -2
- d. 2

**Ans. 1**

**Explanation:-** The answer is obvious=  $3*1/3=1$ .

**9.** *If  $P = 3 + \frac{1}{p}$ , the value of  $p^4 + \frac{1}{p^4}$  is:*

- a. 81
- b. 27
- c. 120
- d. 119

**Ans. 119**

**Explanation:-**  $p - 1/p = 3$ ;

Squaring both sides-

$$P^2 + 1/p^2 - 2 = 9; \Rightarrow p^2 + 1/p^2 = 11;$$

Square again of both sides-

$$P^4 + 1/p^4 + 2 = 121; \Rightarrow p^4 + 1/p^4 = 119;$$

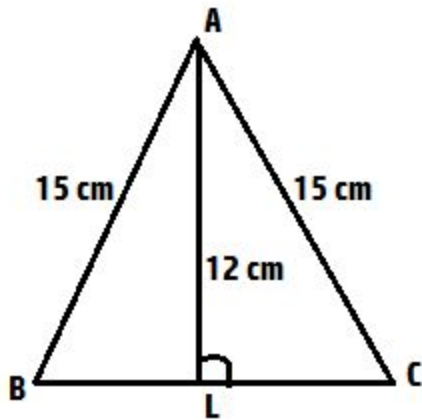
**10.  $\triangle ABC$  is an isosceles triangle with  $AB = AC = 15$  cm and altitude from A on BC is 12 cm. Length of side BC is**

- a. 9 cm
- b. 12 cm
- c. 18 cm
- d. 20 cm

**Ans. 18 cm**

**Explanation:-** Since,  $BL = CL$ ; Hence, using Pythagoras theorem;

$$15^2 = 12^2 + BL^2; BL = 9 \text{ cm. Hence, the length of base} = 9 * 2 = 18 \text{ cm.}$$



11. The mid points of AB and AC of a triangle ABC are respectively X & Y. If  $BC + XY = 12$  units, then the value of  $BC - XY$  is:

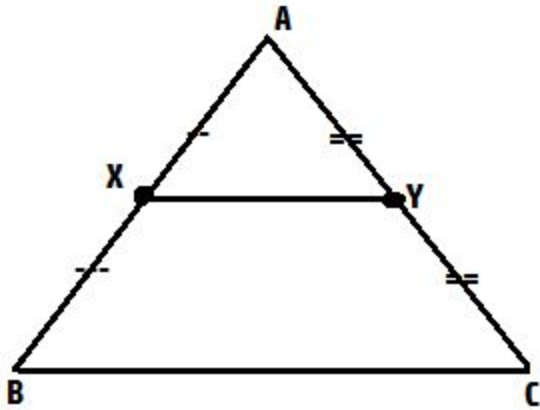
- a. 2 units
- b. 6 units
- c. 8 units
- d. 4 units

**Ans.** 4 units

**Explanation:-** If the mid points of two sides of a triangle is merged, then  $BC \parallel XY$  and  $XY = \frac{1}{2} BC$ .

By putting this value in the given equation,  $BC + \frac{1}{2} BC = 12$ ;  $\Rightarrow BC = 8$  units and  $XY = 4$  units.

Hence,  $BC - XY = 8 - 4 = 4$  units.



12. Which of the following relations is correct for  $0 < \theta < 90$ ?

- a.  $\sin\theta = \sin 2\theta$
- b.  $\sin\theta < \sin 2\theta$
- c.  $\sin\theta > \sin 2\theta$
- d.  $\sin\theta = \operatorname{cosec}\theta$

**Ans.**  $\sin\theta > \sin 2\theta$

**Explanation:-** substitute  $\theta=30$ ;

Then,  $\sin 30 > \sin 60$ ; hence, option(c.) holds true.

13. The difference between two numbers is 9 and the difference between their squares is 207. The numbers are

- a. 17, 8
- b. 16, 7
- c. 15, 6
- d. 23, 14

**Ans. 16, 7**

**Explanation:-** Let number be x and y. then –

$$x - y = 9; \text{-----}(i.)$$

$$x^2 - y^2 = 207; \text{-----}(ii.)$$

$$x + y = 23; \text{-----}(iii.)$$

solving eq.(i) and (iii), we get-

$$x = 16 \text{ and } y = 7;$$

**14.The average of 20 numbers is calculated as 35. It is discovered later on that while calculating the average, one number, namely 85, was read as 45. The correct average is**

- a. 36
- b. 36.5
- c. 37
- d. 37.5

**Ans. 37**

**Explanation:-** the sum of estimated numbers =  $35 \times 20 = 700$ ;

The correct sum of the numbers will be =  $700 - 45 + 85 = 740$ ;

Hence, the correct average =  $740 / 20 = 37$ ;

**15.If  $x^2 - xy + y^2 = 2$  and  $x^4 + x^2y^2 + y^4 = 6$ , then the value of  $x^2 + xy + y^2$  is:**

- a. 1
- b. 12



c. 3

d. 36

**Ans. 3**

**Explanation:-**  $x^2 - xy + y^2 = 2$  -----(i.)

$x^4 + x^2y^2 + y^4 = 6$  -----(ii.)

Divide eq.(ii) by eq.(i)-

$$\frac{x^4 + x^2y^2 + y^4}{x^2 - xy + y^2} = \frac{6}{2};$$

Multiply by  $x^2 - y^2$  in both numerator and denominator -

$$\frac{(x^2 - y^2)(x^4 + x^2y^2 + y^4)}{(x^2 - y^2)(x^2 - xy + y^2)} = 3;$$

$$\frac{x^6 - y^6}{(x - y)(x + y)(x^2 - xy + y^2)} = 3;$$

$$\frac{(x^3 + y^3)(x^3 - y^3)}{(x - y)(x^3 + y^3)} = 3;$$

$$x^2 - xy + y^2 = 3;$$

**16.If  $a^2 + 13b^2 + c^2 - 4ab - 6bc = 0$ , then a: b: c is**

a. 1:2:3

b. 2:3:1

c. 2:1:3

d. 1:3:2

**Ans. 2: 1: 3**

**Explanation:-**

$$a^2 + 13b^2 + c^2 - 4ab - 6bc = 0$$

$$(a-2b)^2 + 9b^2 + c^2 - 6bc = 0;$$

$$(a-2b)^2 + (3b-c)^2 = 0;$$

first keep  $a-2b=0$ ;  $\Rightarrow a:b=2:1$ ;

Then keep  $3b-c=0$ ;  $\Rightarrow b:c=1:3$ ;

Hence,  $a:b:c=2:1:3$ ;

**17. The circumcenter of a triangle ABC is O. If  $\angle BAC = 85^\circ$ ,  $\angle BCA = 75^\circ$ , then  $\angle OAC$  is of**

a.  $70^\circ$

b.  $72^\circ$

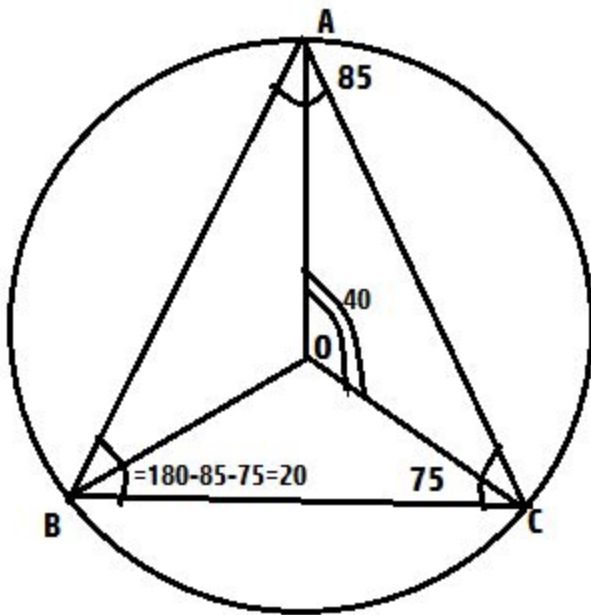
c.  $75^\circ$

d.  $74^\circ$

**Ans.**  $70^\circ$

**Explanation:-** Since,  $OA=OB=OC$ ; hence, angle  $OAC$ = angle  $OCA$ ;

Hence, angle  $OAC = (180-40)/2=70$  degree.



18. Radius of the incircle of an equilateral  $\Delta ABC$  of sides  $2\sqrt{3}$  units is  $x$  cm. The value of  $x$  is

- a.  $\frac{1}{3}$
- b.  $\frac{1}{2}$ ;
- c. 1
- d.  $\sqrt{3}$

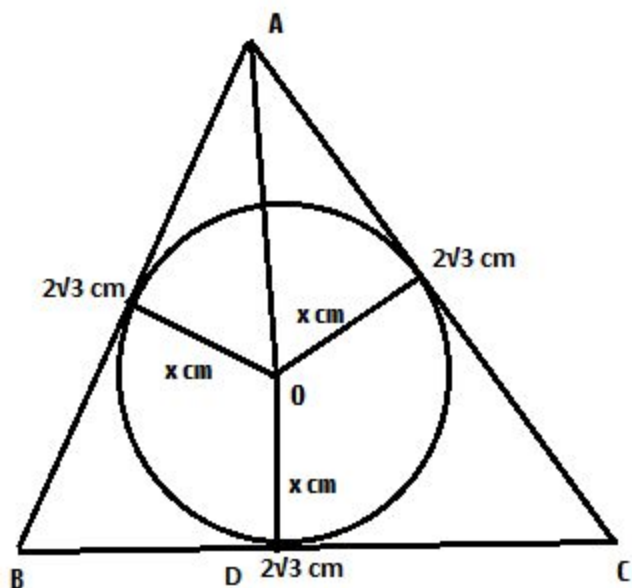
**Ans.** 1

**Explanation:-** The altitude of the triangle =  $\frac{\sqrt{3}}{2} \times \text{side} = 3$  cm.

If  $AD = 3$  cm;  $OA = (3-x)$  cm.

Then,  $(3-x)^2 = (\sqrt{3})^2 + x^2$ ;

$9 + x^2 - 6x = 3 + x^2$ ;  $x = 1$  cm.



19. If  $\tan 3\theta \cdot \tan 7\theta = 1$ , then the value of  $\tan(\theta + 36^\circ)$  is

- a.  $1/\sqrt{3}$
- b. 0
- c. 1
- d.  $\sqrt{3}$

**Ans. 1**

**Explanation:-**  $1 - \tan 3\theta \cdot \tan 7\theta = 0$ ;

$$(\tan 3\theta + \tan 7\theta) / (1 - \tan 3\theta \cdot \tan 7\theta) = \tan 90;$$

$$\tan(3\theta + 7\theta) = \tan(90);$$

$$10\theta = 90; \Rightarrow \theta = 9;$$

$$\text{Hence, } \tan(9+36) = \tan 45 = 1;$$

**20.If the angle of elevation of a cloud from a point 200 m above a lake is 30 and the angle of depression of its reflection in the lake is 60. Then the height of the cloud above the lake is**

- a. 100 m
- b. 200 m
- c. 300 m
- d. 400 m

**Ans.** 400 m

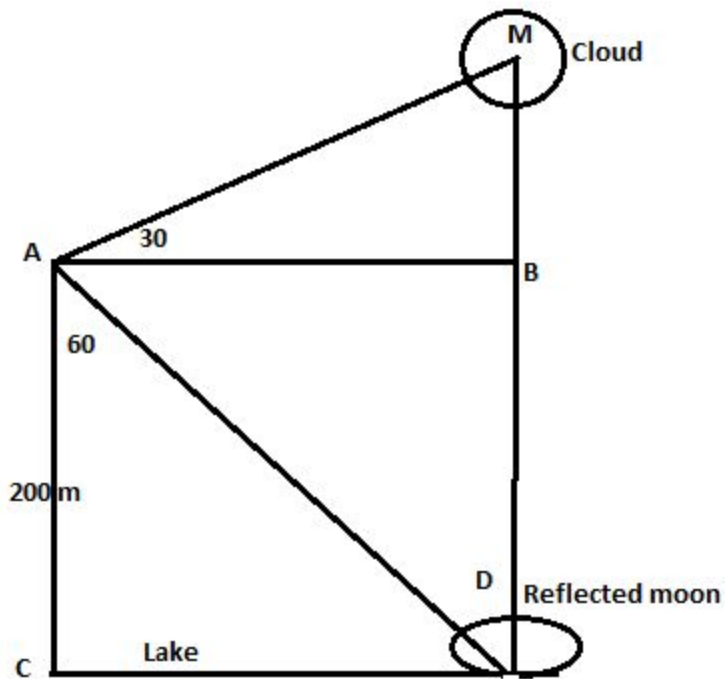
**Explanation:-** In triangle ACD,  $\tan 60 = \frac{CD}{AC}$ ;  $\Rightarrow CD = 200 \cdot \tan 60$ ;

Since,  $CD = AB$ ;

Hence,  $\tan 30 = \frac{MB}{AB}$ ;  $\Rightarrow MB = AB \cdot \tan 30$ ;

$MB = 200 \cdot \tan 60 \cdot \tan 30 = 200\text{m}$ .

The required height of cloud =  $MB + BD = 200 + 200 = 400\text{ m}$ .



21. The difference between the simple interest and compound interest (compounded annually) on Rs. 40,000 for 3 years at 8% per annum is

- a. Rs.684.32
- b. Rs.788.48
- c. Rs.784.58
- d. Rs.4000

**Ans.** Rs.788.48

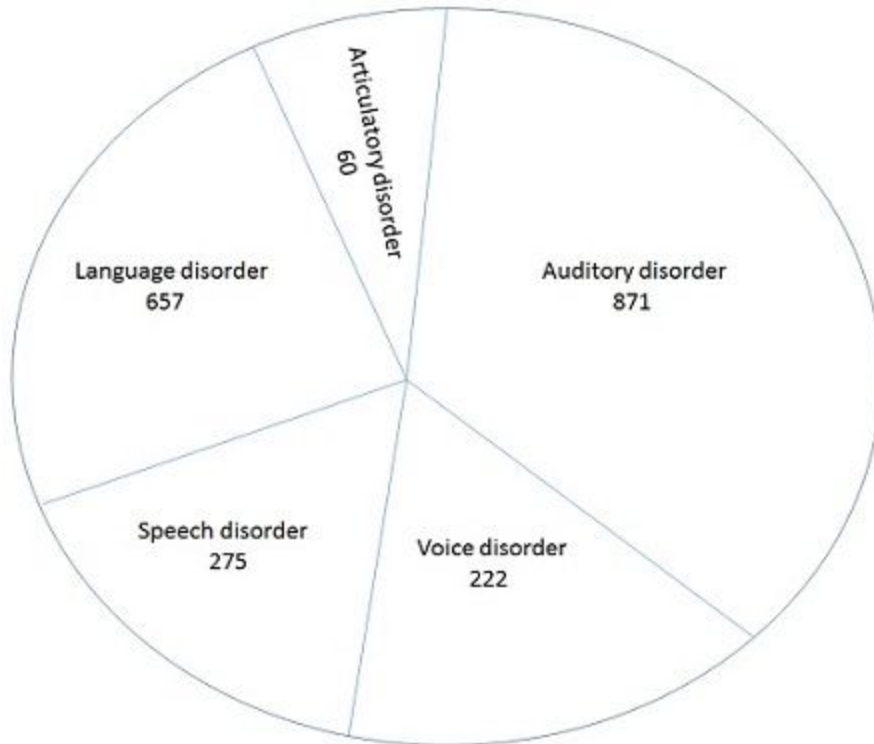
**Explanation:-**  $SI = \frac{PRT}{100}$ ;  $\Rightarrow SI = \frac{40000 \times 8 \times 3}{100} = \text{Rs. } 9600$ ;

$$CI = A[(1+r/100)^n - 1];$$

$$CI = 40000[(1+8/100)^3 - 1] = \text{Rs. } 10388.48;$$

Hence, the difference between the interests =  $10388.48 - 9600 = \text{Rs. } 788.48$ ;

The pie-chart shows Distribution of Special Children Population during the year 1994-96. Study the pie-chart and answer the following questions.



22. Find the approximate percentage distribution of children with auditory disorder.

- a. 43.7%
- b. 42.7%
- c. 41.7%
- d. 40.7%

**Ans.** 41.7%

**Explanation:-** Percentage of children with auditory disorder =  $871 \times 100 / (871 + 222 + 275 + 657 + 60) = 87100 / 2085 = 41.77\%$ ;

**23. What is the average number of cases in different types of special children during the year 1994-96.**

- a. 417
- b. 413
- c. 433
- d. 465

**Ans. 417**

**Explanation:-**Average types of special children= total number of children/no. of categories;

$$= (871+222+275+657+60)/5=2085/5=417.$$

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**24. Find the ratio between articulatory disorder and speech disorder cases.**

- a. 21:55
- b. 55:21
- c. 55:12
- d. 12:55

**Ans. 12:55**

**Explanation:-** Ratio =  $60/275 = 12: 55$ ;

**25. What is the ratio between language disorder and the average of the remaining disorder cases.**

- a. 219:119



b. 119:219

c. 919:419

d. 729:529

**Ans. 219:119**

**Explanation:-** Required Ratio=  $657/(2085-657)=657/1428= 219: 119$ ;