Analytical Aptitude Previous Year Questions

Question 1.A and B together can do a piece of work in 9 days. If A does thrice the work of B in a given time, the time A alone will take to finish the work is

a. 4 days

b. 6 days

c. 8 days

d. 12 days

Ans. 12 days

Explanation: (A + B)'s efficiency= 100/9 (= 11.11%).

Suppose, the efficiency of B= x%; hence, the efficiency of A= 3x;

x + 3x= 100/9; x= (25/9)%. => The efficiency of A= (25/3)%.

A will do this work in = 100/(25/3) = 12 days;

Question 2.The diameters of two cylinders are in the ratio 3:2 and their volumes are equal. The ratio of their heights is

a. 2:3

b. 3:2

c. 9:4

d. 4:9

Ans. 4:9

Explanation: Volume1: Volume2 = (pi*$r_1^2h_1$): (pi* $r_2^2h_2$);

Since, volumes of both cylinders are equal;

$(r_1/r_2)^2=(h_2/h_1)$; => h_1/h_2 =4: 9;

Question 3.A trader sold a cycle at a loss of 10%. If the selling price had been increased by Rs. 200, there would have been a gain of 6%. The cost price of the cycle is

a. Rs.1200

b. Rs.1205

c. Rs.1250

d. Rs.1275

Ans. Rs.1250

Explanation: Suppose that the cost price of the cycle= Rs. x;

x -----(sold at a loss of -10%)----> 0.90x;

0.90x----------(Rs. 200 increase)------> 0.90x + 200;

As per the stated condition,

0.90x + 200 = 1.06x;

x = Rs. 1250;

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Question 4.In a city, 40% of the people are illiterate and 60% are poor. Among the rich, 10% are illiterate. The percentage of the illiterate poor population is

a. 36

b. 60

c. 40

d. 50

Ans. 60

Explanation: Let Total number of people =100;

Total poor people = 60% of 100 =(60*100)/100=60=(60*100)/100=60;

Therefore, rich people = 40% of 100 =(40*100)/100=40=40;

Total illiterate people = 40% of total people =(40*100)/100=40;

Among rich, 10% are illiterate = 10% of 40 =(10*100)/40=4;

The number of the illiterate poor population =40−4=36;

Therefore, illiterate poor =36, total population =100;

Required percentage =(36*100)/100=36%.

Question 5.In what time will a 100 metres long train running with a speed of 50 km/hr cross a pillar?

a. 7.0 sec

b. 72 sec

c. 7.2 sec

d. 70 sec

Ans. 7.2 sec

Explanation: Speed = Distance/Time;

Time= Distance/ Speed; => Time = 100/(50*5/18) = 7.2 sec.

Question 6.

If $\frac{2p}{p^2 - 2p + 1} = \frac{1}{4}$, then the value of $p + \frac{1}{p}$ will be

a. 8

b. 10

c. 12

d. None of these

Ans. 10

Explanation:

$$\frac{2p}{p^2 - 2p + 1} = \frac{1}{4};$$

$$\frac{2p}{p*(p - 2 + \frac{1}{p})} = \frac{1}{4};$$

$$p + \frac{1}{p} - 2 = 8;$$

$$p + \frac{1}{p} = 10;$$

Question 7.If l + m + n = 9 and $l^2 + m^2 + n^2 = 31$, then the value of lm + mn + nl will be

a. 22

b. 50

c. 25

d. -25

Ans. 25

Explanation: $(l + m + n)^2 = l^2 + m^2 + n^2 + 2(l*m + m*n + n*l)$;

Hence, $lm + mn + nl = 9^2 – 31 = 50/2 = 25$;

Question 8.The centroid of a triangle is the point where

a. the medians meet

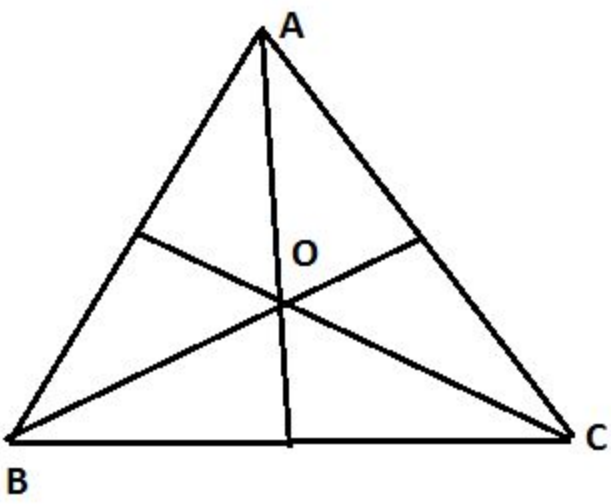
b. the altitudes meet

c. the right bisectors of the sides of the triangle meet

d. the bisectors of the angles of the triangle meet

Ans. the medians meet

Explanation: in the following figure, O is the centroid of the triangle.



Question 9.In a triangle PQR, the side QR is extended to S. ∠QPR = 72° and ∠PRS = 110°, then the value of ∠PQR is:

a. 38°

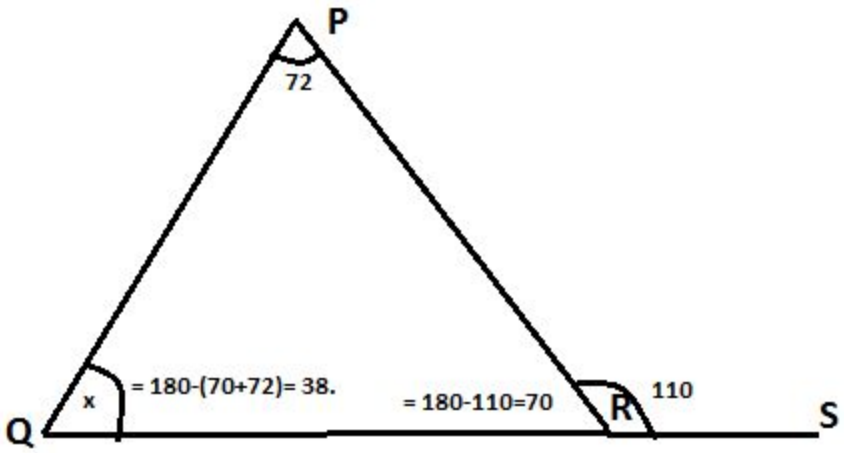
b. 32°

c. 25°

d. 29°

Ans. 38°

Explanation:



Question 10.In a trapezium ABCD, AB || CD, AB < CD, CD = 6 cm and distance between the parallel sides is 4 cm. If the area of ABCD is 16 cm^2, then AB is

a. 1 cm

b. 2 cm

c. 3 cm

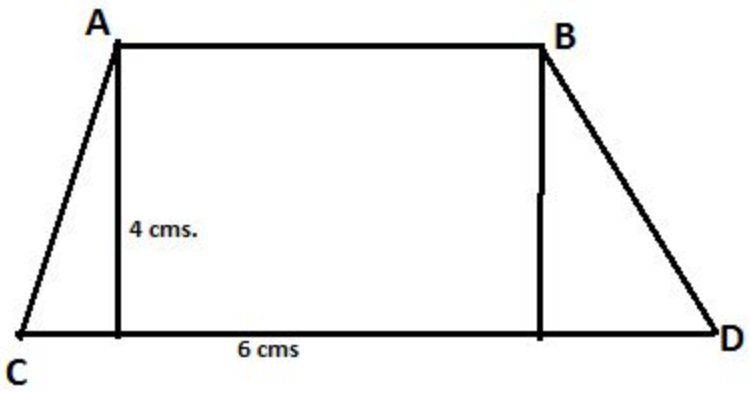
d. 8 cm

Ans. 2 cm

Explanation: The area of trapezium = ½ * Sum of the parallel sides* uniform altitude;

Let AB = x cm;

16 = ½ *(6 + x)* 4; => x = 2cm;



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Question 11.If tanθ + cotθ = 5, then the value of $\tan^2 \theta + \cot^2 \theta$ is

a. 22

b. 25

c. 23

d. 27

Ans. 23

Explanation: tanθ + cotθ = 5; (given)

https://www.freshersnow.com/previous-year-question-papers/

Square both sides-

$\tan^2 \theta + \cot^2 \theta + 2 = 25;$

$\tan^2 \theta + \cot^2 \theta = 23;$

Question 12.When a number is divided by 56, the remainder will be 29. If the same number is divided by 8, then the remainder will be

a. 6

b. 7

c. 5

d. 3

Ans. 5

Explanation: Let the dividend be x;

Then the number will be= 56x + 29;

When the above expression will be divided by 8, then the remainder will be equal to (29%8 = 5)

Question 13.If a shop keeper marks his goods for a certain amount so as to get 25% gain after allowing a discount of 20%, then his marked price is

a. Rs.156.25

b. Rs.146.25

c. Rs.166.67

d. Rs.150.25

Ans. Rs.166.67

Explanation: Let the Marked price = Rs. x;

The selling price = 0.80x;

So, the cost price = 0.75*0.80*x;

Let the cost price of the item is Rs. 100.

Hence, 0.75*0.80*x = 100;

x= 166.67;

Question 14.The average of marks of 17 students in an examination was calculated as 71. But it was later found that the mark of one student had been

wrongly entered as 65 instead of 56 and another as 24 instead of 50. The correct average is

a. 70

b. 71

c. 72

d. 73

Ans. 72

Explanation: The total marks obtained by the students= 71* 17= 1207;

After correction, The total marks obtained= 1207 – 65 + 56 -20 +50= 1228;

The average of marks obtained by the students= 1228/ 17 = 72.23;

Question 15.The simple interest on a sum for 5 years is two-fifth of the sum. The rate of interest per annum is

a. 0.1

b. 0.08

c. 0.06

d. 0.04

Ans. 0.08

Explanation: SI=PRT/100;

SI= 2/5 * P;

R= (2/5 * 100)/5 = 8%= 0.08.

Question 16.

If $(x+\frac{1}{x})^2 = 3$, then the value of $x^3 + \frac{1}{x^3}$ is

a. 0

b. 1

c. 2

d. -1

Ans. 0

Explanation:

$$x^2+\frac{1}{x^2}+2=3;$$

$$x^2+\frac{1}{x^2}=1;$$

$$x^3+\frac{1}{x^3}=(x+\frac{1}{x})(x^2+\frac{1}{x^2}-1);$$

$$Hence, x^3+\frac{1}{x^3}=0;$$

Question 17.If a - b = 3 and $a^2 + b^2 = 25$, then the value of ab is

a. 16

b. 8

c. 10

d. 15

Ans. 8

Explanation:

$$(a-b)^2 = a^2 + b^2 - 2ab;$$
$$3^2 = 25 - 2ab;$$
$$2ab = 25 - 9 = 16;$$
$$ab = 8;$$

Question 18.In ΔABC, ∠B = 70°and ∠C = 60°. The internal bisectors of the two smallest angles of ΔABC meet at O. The angle so formed at O is

a. 125°

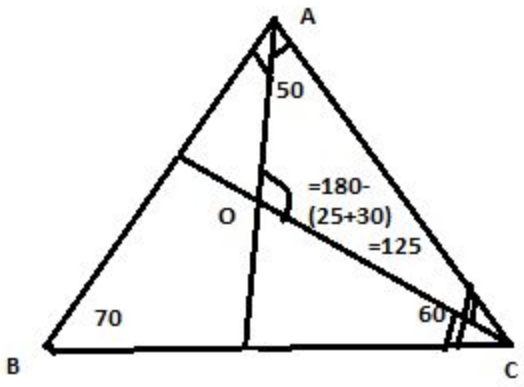
b. 120°

c. 115°

d. 110°

Ans. 125°

Explanation:



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Question 19.If θ be positive acute angle and 5cosθ + 12sinθ = 13, then the value of cosθ is

a. 12/13

b. 5/13

c. 5/12

d. 1/5

Ans. 5/13

Explanation: 5cosθ + 12sinθ = 13;

(5/13) * cosθ + (12/13) * sinθ = 1;

Suppose that the angle formed in the figure is ∅.

sin∅.cosθ+cos∅.sinθ= 1;

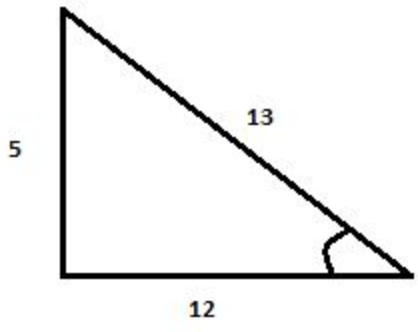
sin(θ + ∅)= sin90;

θ + ∅ = 90;

θ =90- ∅;

cos θ= cos(90- ∅);

cos θ=sin∅= 5/13;



Question 20.A cylinderical container of 32 cm height and 18 cm radius is filled with sand. Now all this sand is used to form a conical heap of sand. If the height of the conical heap is 24 cm, what is the radius of its base?

a. 12 cm

b. 24 cm

c. 36 cm

d. 48 cm

Ans. 36 cm

Explanation: The volume of both the shapes are same.

Pi* $(18)^2$* 32= 1/3 * pi* r^2* 24;

R= 36 cm.

Question 21.The angle of elevation of the top of a pillar from the foot and the top of a building 20 m high, are 60° and 30° respectively. The height of the pillar is

a. 10 m

b. 10√3m

c. 60 m

d. 30 m

Ans. 30 m

Explanation:

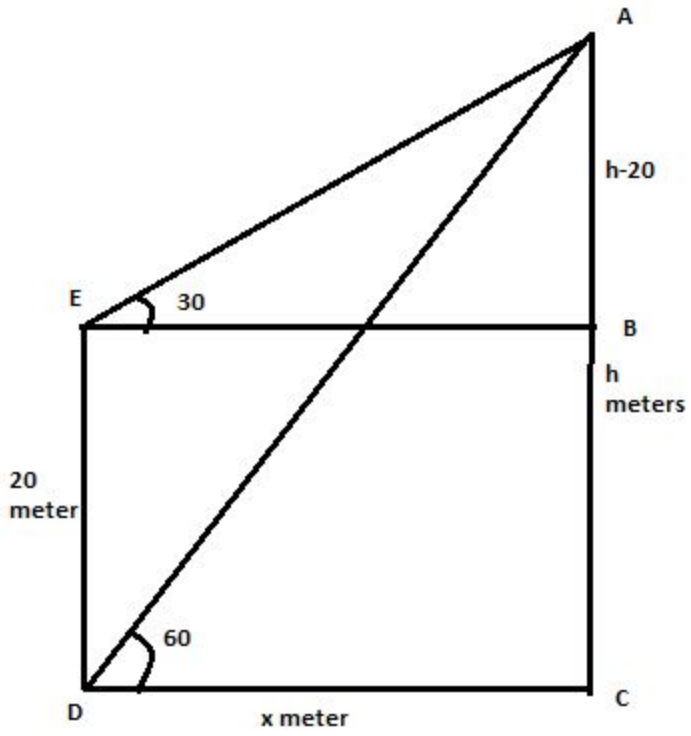
In Triangle ACD, tan60= h/x;

In Triangle ABE, tan30= (h-20)/x;

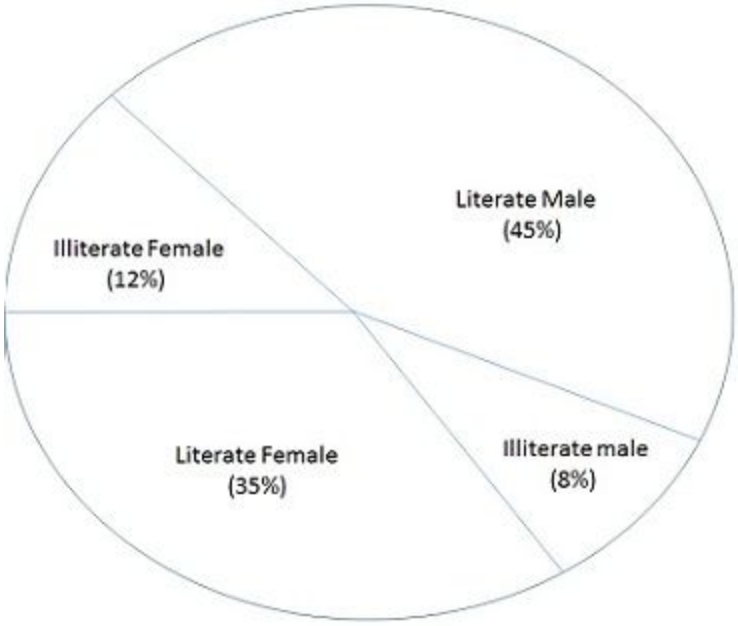
Divide both the expression,

tan60/tan30 = (h/x)/(h-20/x);

h/h-20= 3; => h= 30 m;



Question 22.The pie-chart shows the percentage of literate and illiterate male and female in a state. Study the diagram and answer the following questions.



If the total number is 35000, then the difference between the numbers of literate male and literate female is

a. 3500

b. 3700

c. 400

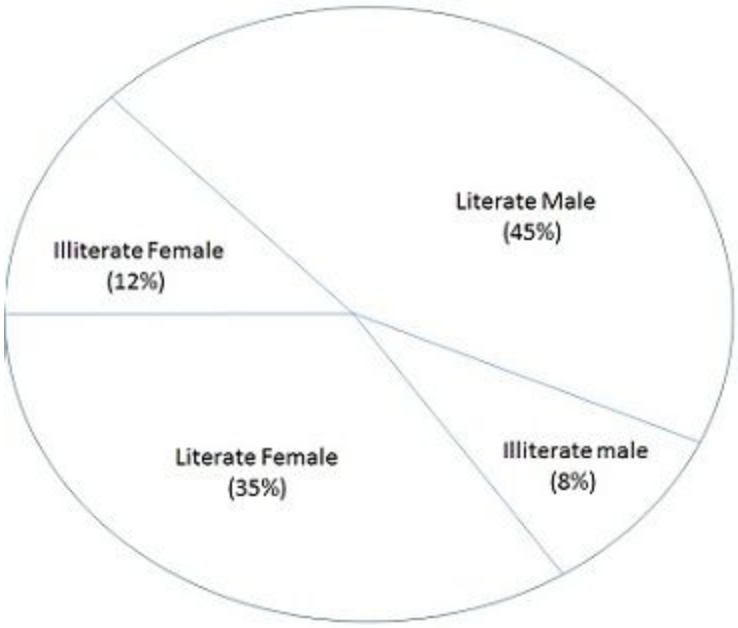
d. 4500

Ans. 3500

Explanation: Percentage change in literate male and female= 45 – 35 = 10%.

Hence, the required answer = 35000*10%= 3500.

Question 23.The pie-chart shows the percentage of literate and illiterate male and female in a state. Study the diagram and answer the following questions.



The difference of central angles corresponding to illiterate male and illiterate female is

a. 12.2°

b. 13.4°

c. 11.2°

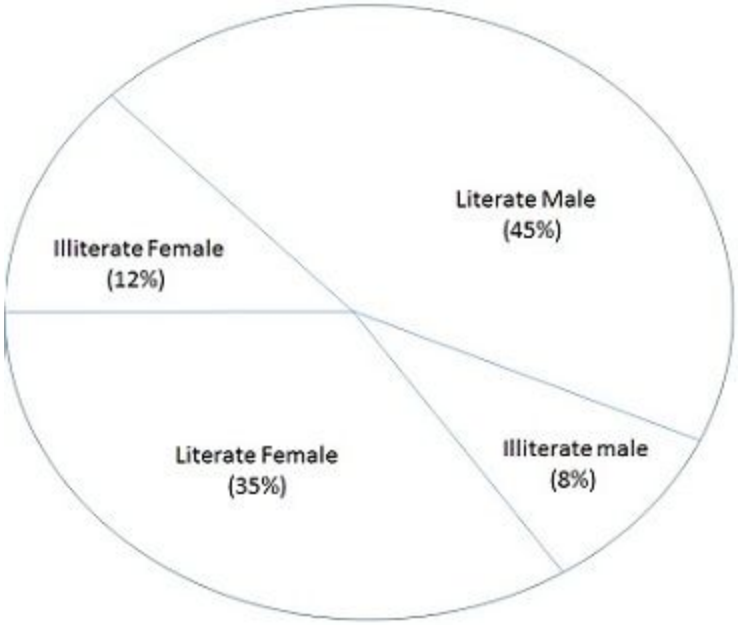
d. 14.4°

Ans. 14.4°

Explanation: Percentage change in illiterate male and female= 12 – 8 = 4%.

Hence the required angle= 360*4%= 14.4.

Question 24.The pie-chart shows the percentage of literate and illiterate male and female in a state. Study the diagram and answer the following questions.



If the difference between the two categories of people are represented by 36° in the diagram then these categories are

a. literate male and literate female

b. literate male and illiterate male

c. illiterate male and literate female

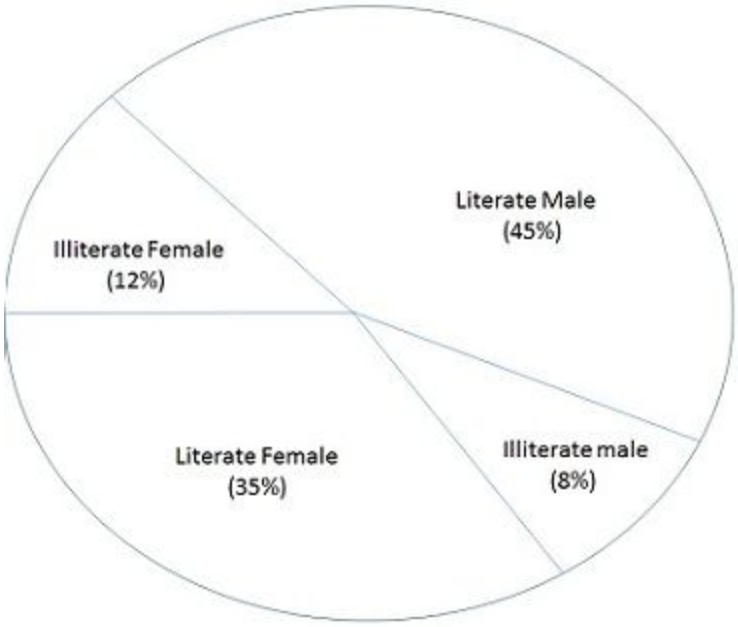
d. illiterate male and illiterate female

Ans. literate male and literate female

Explanation: for this angle, the difference should be= 10%.

By observation, Literate male and literate female have this difference accurately.

Question 25.The pie-chart shows the percentage of literate and illiterate male and female in a state. Study the diagram and answer the following questions.



If two categories together have a central angle of 169.2,then these categories are

a. literate female and illiterate female

b. literate male and illiterate female

c. illiterate male and illiterate female

d. illiterate male and literate female

Ans. literate female and illiterate female

Explanation: For this angle, required percentage = 169.2*100/360= 47%.

This would be the = sum of literate female and illiterate male;

Question 26. If the sum of a number and its reciprocal be 2, then the number is

a. 0

b. 1

c. -1

d. 2

Ans. 1

Explanation: Let the number is x. then-

$x + 1/x = 2$; => $x^2 – 2x + 1=0$;

$x= 1$;

Question 27.The price of a shirt after 15% discount, is Rs.119. What was the marked price of the shirt before discount

a. Rs.129

b. Rs.140

c. Rs.150

d. Rs.160

Ans. Rs.140

Explanation: Let the marked price of shirt= Rs. x;

85% of x = 119; => x= 119*100/85= 140.

Question 3. If $\frac{a}{q-r}+\frac{b}{r-p}=\frac{c}{p-q}$ **, then find the value of pa+qp+rc.**

a. 0
b. 1
c. 2
d. -1
Ans. 0

Question 28.The average of a,b,c is 20 and that of b,c,d is 25; if d=30, then the value of a is

a. 25

b. 45

c. 30

d. 15

Ans. 15

Explanation: a + b + c =60; ------ eq.(i)

b + c + d = 75; ---------- eq.(ii)

subtract eq.(i) from eq.(ii)-

a – d = -15; => a = 30-15=15;

Question 29.A store sells a watch for a profit of 25% of the cost. Then the percentage of profit against selling price is

a. 22%

b. 20%

c. 18%

d. 15%

Ans. 20%

Explanation: Let CP of watch= Rs. x;

SP = 1.25x;

% profit= (SP-CP)*100/SP = 0.25x*100/1.25x = 20%.

Question 30.If A is equal to 20% of B and B is equal to 25% of C; then what percent of C is equal to A?

a. 10

b. 15

c. 5

d. 20

Ans. 5

Explanation: A = 0.20B; B = 0.25C;

A= 0.20*0.25 C = 0.5 C; Hence, A is 5% of C.

Question 31.A gun is fired at a distance of 1.7 km from Ram and he hears the sound after 25 seconds. The speed of sound in meter per second is

a. 60

b. 62

c. 64

d. 68

Ans. 68

Explanation: Speed of sound= Distance traveled / traveling time of sound;

= 1.7*1000/25 = 68 seconds.

Question 32.A sum of ₹ 3000 yields an interest of ₹ 1080 at 12% per annum simple interest in how many years ?

a. 4 Years

b. 3 Years

c. 5 years

d. 2½ Years

Ans. 3 Years

Explanation: SI = PRT/100;

Hence, T = 100*SI/PR = 100*1080/3000*12 = 3 years.

Question 9.

The simplest value of $\frac{3\sqrt{8}-2\sqrt{12}+\sqrt{20}}{3\sqrt{18}-2\sqrt{27}+\sqrt{45}}$ is

a.

$\frac{3}{2}$

b. ⅔

c. ⅓

d. 2

Ans. ⅔

Explanation:

$$\frac{3\sqrt{8}-2\sqrt{12}+\sqrt{20}}{3\sqrt{18}-2\sqrt{27}+\sqrt{45}}=\frac{6\sqrt{2}-4\sqrt{3}+2\sqrt{5}}{9\sqrt{2}-6\sqrt{3}+3\sqrt{5}}$$

$$\frac{2\left(3\sqrt{2}-2\sqrt{3}+\sqrt{5}\right)}{3\left(3\sqrt{2}-2\sqrt{3}+\sqrt{5}\right)}=\frac{2}{3}$$

Question 10.

If $\left(a+\frac{1}{a}\right)^2=3$, the value of $a^3+\frac{1}{a^3}$ is

a. 0

b.

$3\left(a+\frac{1}{a}\right)$

c.

$3\left(a^2+\frac{1}{a^2}\right)$

d. 1

Ans. 0

Explanation: a + 1/a = √3;

Squaring both side, we get-

$a^2+ 1/a^2 = 3-2 = 1$;

$a^3 + 1/a^3 = (a + 1/a)(a^2+ 1/a^2 -1)$;

= √3*0 = 0.

Question 11.

If $\frac{a^2+b^2}{c^2} = \frac{b^2+c^2}{a^2} = \frac{c^2+a^2}{b^2} = \frac{1}{k}, (k \neq 0)$ then k =

a. 2
b. 1
c. 0
d. ½

Ans. ½

Explanation:

$$\frac{a^2+b^2}{c^2} = \frac{b^2+c^2}{a^2} = \frac{c^2+a^2}{b^2} = \frac{1}{k};$$

$$Add\ 1\ in\ each\ expression -$$

$$\frac{a^2+b^2}{c^2}+1 = \frac{b^2+c^2}{a^2}+1 = \frac{c^2+a^2}{b^2}+1;$$

$$\frac{a^2+b^2+c^2}{c^2} = \frac{a^2+b^2+c^2}{a^2} = \frac{a^2+b^2+c^2}{b^2};$$

$$\frac{1}{c^2} = \frac{1}{a^2} = \frac{1}{b^2};$$

$$a^2 = b^2 = c^2;$$

$$Hence, \frac{1}{k} = \frac{a^2+a^2}{a^2} = 2; \Rightarrow k = \frac{1}{2};$$

Question.The area of the largest triangle that can be inscribed in a semicircle of radius 6m is

a. 36 m^2

b. 72 m^2

c. 18 m^2

d. 12 m^2

Ans. 36 m2

Explanation: The maximum area of the inscribed triangle in semicircle= r*r = 6*6 = 36 sq. m.

Question 13.

The value of $\frac{\sin\theta}{1+\cos\theta}+\frac{\sin\theta}{1-\cos\theta}$ is

a. 2sinθ
b. 2cosθ
c. 2secθ
d. 2cosecθ
Ans. 2cosecθ
Explanation:

$$\frac{\sin\theta}{1+\cos\theta}+\frac{\sin\theta}{1-\cos\theta}=\frac{\sin\theta(1-\cos\theta)+\sin\theta(1+\cos\theta)}{1-\cos^2\theta};$$

$$=\frac{2\sin\theta}{\sin^2\theta}=2\cos ec\theta;$$

Question.Twenty women can do a work in sixteen days. Sixteen men can complete the same work in fifteen days. The ratio between the capacity of a man and a woman is

a. 3:4

b. 4:3

c. 5:3

d. 5:7

Ans. 4:3

Explanation: The efficiency of one women= 100/16*20= (5/16)%.

The efficiency of one man= 100/16*15 = (5/12)%;

Ratio (Man: Woman) = (5/12)/(5/16) = 4: 3.

Question 15.

If $2x+\frac{2}{9x}=4$, then the value of $27x^3+\frac{1}{27x^3}$ is

a. 180
b. 198
c. 234
d. 252

Ans. 198

Explanation:

$$2x+\frac{2}{9x}=4;$$

$$x+\frac{1}{9x}=2; \Rightarrow 3x+\frac{1}{3x}=6; --------eq.(i)$$

Squaring both sides –

$$9x^2+\frac{1}{9x^2}+2=36;$$

$$9x^2+\frac{1}{9x^2}-1=33;$$

$$(3x)^3+(\frac{1}{3x})^3=(3x+\frac{1}{3x})(9x^2+\frac{1}{9x^2}-1);$$

$$=6*33=198;$$

Question 16.In a cyclic quadrilateral ABCD, ∠BCD=120° and passes through the centre of the circle. Then ∠ABD = ?

a. 30°

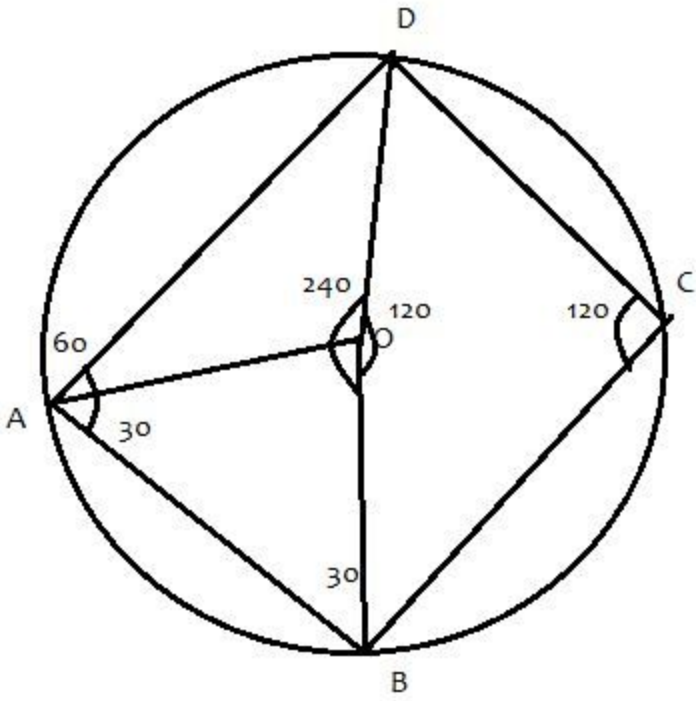
b. 40°

c. 50°

d. 60°

Ans. 30°

Explanation:



Question.The midpoints of AB and AC of a triangle ABC are X and Y respectively. If BC+XY=12 units, then BC-XY is

a. 10 units

b. 8 units

c. 6 units

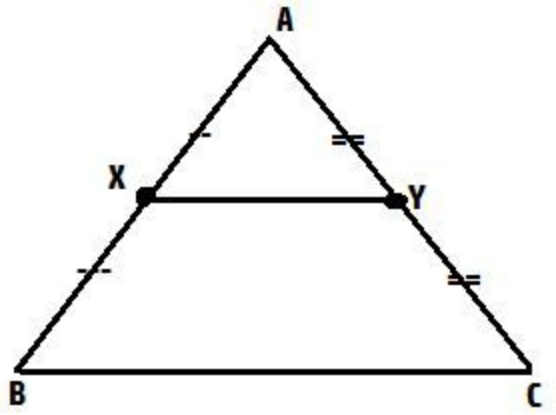
d. 4 units

Ans. 4 units

Explanation: If the mid points of two sides of a triangle is merged, then BC||XY and XY= ½ BC.

By putting this value in the given equation, BC + ½ BC=12; => BC= 8 units and XY = 4 units.

Hence, BC –XY = 8-4= 4 units.



Question.In an isosceles ΔABC, AD is the median to the unequal side meeting BC at D. DP is the angle disector of ∠ADB and PQ is drawn parallel to BC meeting AC at Q. Then the measure of ∠PDQ is

a. 130°

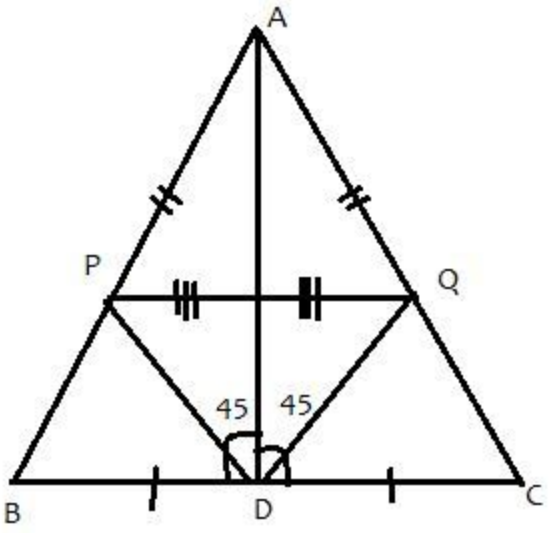
b. 90°

c. 180°

d. 45°

Ans. 90°

Explanation: Hence, ∠PDQ= 90 degrees.



Question.129 meter from the foot of a cliff on level of ground, the angle of elevation of the top of a cliff is 30°. The height of this cliff is

a. 50√3 metre

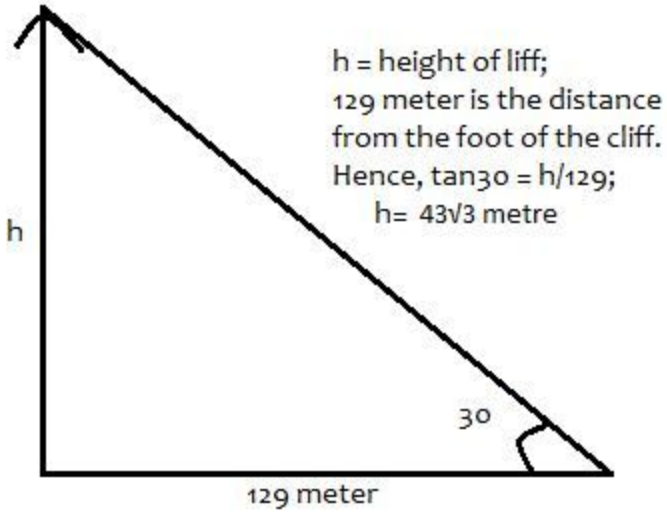
b. 45√3 metre

c. 43√3 metre

d. 47√3 metre

Ans. 43√3 metre

Explanation:



Question.The volume of metallic cylindrical pipe of uniform thickness is 748 c.c. Its length is 14 cm and its external radius is 9 cm. The thickness of the pipe is

a. 0.5 cm

b. 1.5 cm

c. 1 cm

d. 2 cm

Ans. 1 cm

Explanation: volume of hollow cylinder=pi*[(outer radius)^2- (inner radius)^2]* height;

748 = pi. [(9)^2-r^2]*14;

(9)^2-r^2= (748*7)/(14*22) = 17;

r= √81- 17= 8 cm.

Hence, thickness of pipe = 9-8 = 1 cm.

Question 21.

If $\tan\theta = \frac{8}{15}$, the value of $\frac{\sqrt{1-\sin\theta}}{\sqrt{1+\sin\theta}}$ is

a. ⅕
b. 2/5
c. ⅗
d. 0

Ans. ⅗

Explanation:

$$\frac{\sqrt{1-\sin\theta}}{\sqrt{1+\sin\theta}} = \frac{\sqrt{1-\sin\theta} * \sqrt{1-\sin\theta}}{\sqrt{1+\sin\theta} * \sqrt{1-\sin\theta}} = \frac{1-\sin\theta}{\cos\theta};$$

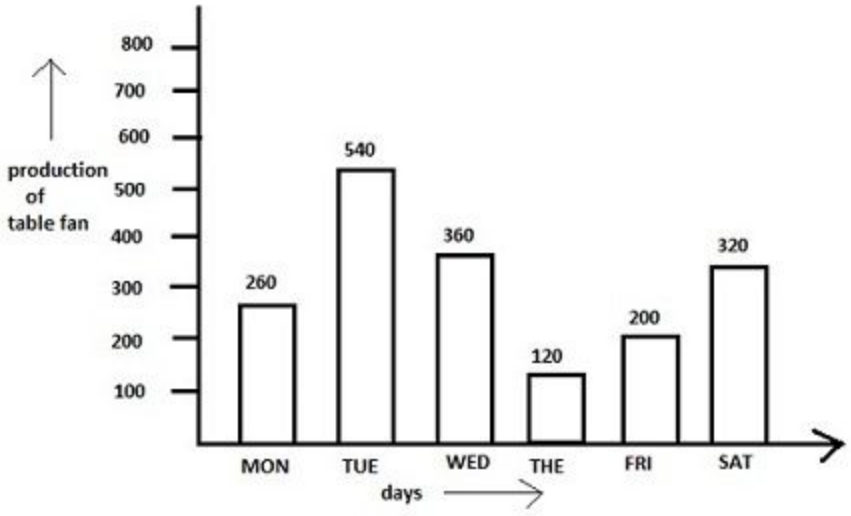
$$f\tan\theta = \frac{8}{15};$$

$$\sin\theta = \frac{8}{\sqrt{8^2+15^2}} = \frac{8}{17};$$

$$Similarly, \cos\theta = \frac{15}{\sqrt{8^2+15^2}} = \frac{15}{17};$$

$$\frac{1-\sin\theta}{\cos\theta} = \frac{1-\frac{8}{17}}{\frac{15}{17}} = \frac{\frac{9}{17}}{\frac{15}{17}} = \frac{9}{15} = \frac{3}{5};$$

The bar graph shows the production of table fans in a factory during one week. Study the bar graph and answer the question.



Question. The maximum production exceeds the minimum production by:

a. 400

b. 420

c. 500

d. 540

Ans. 420

Explanation: Difference between maximum & minimum production= 540 – 120 = 420.

Question . The average production of table fan in that week is

a. 370

b. 280

c. 300

d. 250

Ans. 300

Explanation: Average production of table fan= (260 + 540 + 360 + 120 + 200 + 320)/6= 1800/6=300;

Question. Ratio of the total production of table fans in the factory from Monday to Wednesday to that from Thursday to Saturday is

a. 19:26

b. 26:19

c. 29:16

d. 16:29

Ans. 29:16

Explanation: Table fan production from Monday to Wednesday= 260 + 540 + 360= 1160;

Table fan production from Thursday to Saturday = 1800 -1160 = 640;

Ratio = 1160/640 = 29: 16.

Question. The average production of table fans on Monday & Tuesdays exceeds the average production of table fans during the week by

a. 150 fans

b. 100 fans

c. 140 fans

d. 200 fans

Ans. 100 fans

Explanation: average production of table fan on Mondays and Tuesdays= (540 + 260)/2=400.

Average production of table fans through the week = 300.

Hence, difference= 400-300 = 100 fans.