The number of integral values of 'x' for which the function $f(x) = \frac{1}{\log|2-x|}$ is not defined is:

- 2
- 1
- 4
- 3 ✔

Congratulations, you got it correct!

Explanation:

$\frac{1}{\log|2-x|}$ is not defined for $|2-x| = 0$ or 1.

i.e., $2-x = 0$ or $2-x = \pm 1$

i.e., $x = 2$ or $x = 1, 3$

$\therefore \frac{1}{\log|2-x|}$ is not defined for $x = 1, 2, 3$.

Hence, [4].

Correct Answer:

Time taken by you: **67 secs**

Avg Time taken by all students: **31 secs**

Your Attempt: **Correct**

% Students got it correct: **35 %**

A cylindrical tank has two outlet pipes attached to it: Pipe A and Pipe B. Pipe A is permanently attached to the bottom of the tank while pipe B can be attached to the tank at any height. Pipe B can drain out water from the tank only as long as the level of water in the tank is above the height at which it has been attached to the tank, while pipe A can drain out water till the tank is emptied. If pipe B is attached to the tank at a height equal to one-fourth the height of the tank from the bottom, the tank is completely emptied in 19 hours and 48 minutes. On the other hand, if pipe B is attached to the tank at exactly half the height of the tank, the tank is completely emptied in 21 hours and 12 minutes. If pipe B is attached to the tank at the bottom of the tank, how much time will it take to completely empty the tank?

- 13 hours and 36 minutes
- 18 hours and 24 minutes
- 15 hours and 12 minutes
- More information is needed to answer the question

Explanation:

Let the height of the tank be '4h' and the area of the base be 'P'. Suppose pipe A and B drain out 'a' and 'b' cubic units of water every hour.

The time taken when both the pipes are operational = $\frac{4Ph}{a+b}$

When pipe B is attached at height 'h', for the last 'h', only pipe A is operational while for the first '3h' from the top, both pipes are operational. Therefore, we have

$\frac{3Ph}{a+b}+\frac{Ph}{a}=19\frac{4}{5}=\frac{99}{5}$ ..... (I)

When pipe B is attached at height '2h', for the bottom '2h', only pipe A is operational while for the top '2h', both pipes are operational. Therefore, we have

$\frac{2Ph}{a+b}+\frac{2Ph}{a}=21\frac{1}{5}=\frac{106}{5}$ ..... (II)

Multiplying equation (I) by 2, we get

$\frac{6Ph}{a+b}+\frac{2Ph}{a}=\frac{198}{5}$ ..... (III)

Subtracting equation (II) from equation (III), we get

$\frac{4Ph}{\quad}=\frac{92}{5}=18\frac{2}{5}$

Correct Answer:

Time taken by you: **2 secs**

Avg Time taken by all students: **146 secs**

Your Attempt: **Skipped**

% Students got it correct: **58 %**

A Mars rover has 8 tyres in use at any given time, and 3 spare tyres. All the tyres are interchangeable and can be changed as frequently as desired. Each tyre can traverse a total distance of exactly 600 km before it fails. What is the maximum distance, in km, the rover would be able to travel assuming optimum utilisation of the tyres?

Enter your response (as an integer) using the virtual keyboard in the box provided below.

Explanation:

At any given moment, 8 out of 11 tyres are in use. Another way of looking at this is that each tyre is used for exactly $\frac{8}{11}^{th}$ of the total time (and hence $\frac{8}{11}^{th}$ of the total distance). So, the maximum distance that can be covered is $600 \times \frac{11}{8} = 825$ km.

Therefore, the required answer is 825.

Alternatively

The maximum total distance that can be covered by 11 tyres is $11 \times 600 = 6600$.

Since at any point 8 of them are being used, the distance covered by the rover will be

$\frac{6600}{8} = 825$ km.

Correct Answer:

Time taken by you: **24 secs**

Avg Time taken by all students: **22 secs**

Your Attempt: **Skipped**

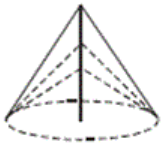
% Students got it correct: **17 %**

Three hollow cones with identical base are inserted in each other. The heights of these cones are in the ratio 2 : 3 : 5. Find the ratio of volume of trapped air between the largest and the second largest cone to the trapped air between the second largest and the smallest cone.

- 5 : 1
- 5 : 3
- 98 : 19
- 2 : 1 ✓

Congratulations, you solved the question correctly and took less than average time!

Explanation:



Let the heights be 2, 3 and 5 units and radius be r.
The volume of trapped air between the largest and the second largest cone is:
$= \frac{1}{3}\pi r^2(5-3) = \frac{2}{3}\pi r^2$
The volume of trapped air between the second largest and the smallest cone is
$= \frac{1}{3}\pi r^2(3-2) = \frac{1}{3}\pi r^2$
$\therefore$ The required ratio = 2 : 1.
Hence, [4].

Correct Answer:

Time taken by you: **74 secs**

Avg Time taken by all students: **112 secs**

Your Attempt: **Correct**

% Students got it correct: **89 %**

Two friends start driving in same direction from two different locations at the same time and met each other after 3 hours. After two hours, the distance between them was 50 km. If the two drove the entire distance with their respective constant speeds, find the original distance between the two.

- 50 km
- 100 km
- 150 km ✔
- 200 km

 Congratulations, you solved the question correctly and took less than average time!

Explanation:

The two met each other after 3 hours.

After 2 hours, the distance between them = 50 km

i.e., the two covered 50 km in one hour.

Therefore, the relative speed at which the two friends drove = 50 kmph

Therefore, the original distance = 3 × 50 = 150 km

Hence, [3].

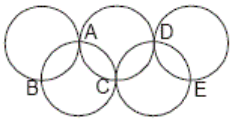
Correct Answer:

Time taken by you: **76 secs**

Avg Time taken by all students: **140 secs**

Your Attempt: **Correct**

% Students got it correct: **87 %**

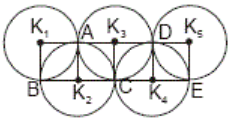


In the above figure, all the circles with radius R intersect each other as shown. The arcs AB, AC, CD and DE formed by intersection of any two circles subtend an angle of 90° at the centres of both the respective circles. Find the area of the figure.

- $(3\pi + 4)R^2$ sq. units
- $(5\pi - 3)R^2$ sq. units
- $(8\pi - 6)R^2$ sq. units
- $(3\pi + 8)R^2$ sq. units

Explanation:

Marking the centres for all the circles we can redraw the diagram as shown below.
K1, K2, K3, K4 and K5 are the centres of the circles.



Thus required area = 12 × area of quarter sector of circle + 4 area of squares with side R.

$= 12 \times \frac{1}{4}\pi R^2 + 4R^2 = (3\pi + 4)R^2$

Hence, [1].

Correct Answer:

Time taken by you: **90 secs**

Avg Time taken by all students: **150 secs**

Your Attempt: **Skipped**

% Students got it correct: **66 %**

What is the minimum value of the function $2^{x^2 - 8x + 20}$?

Enter your response (as an integer) using the virtual keyboard in the box provided below.

16

Congratulations, you solved the question correctly and took less than average time!

Explanation:

The minimum value of the function $2^{x^2-8x+20}$ is obtained when the power $x^2-8x+20$ is minimum.

We have, $x^2-8x+20 = x^2-8x+16+4$.

Therefore, the minimum value of the power $x^2-8x+20$ is 4.

Therefore the minimum value of the function $2^{x^2-8x+20} = 2^4 = 16$

Therefore, the required answer is 16.

Correct Answer:

Time taken by you: **51 secs**

Avg Time taken by all students: **79 secs**

Your Attempt: **Correct**

% Students got it correct: **67 %**

Archit, Bipin and Chistopher have 114 marbles. Average number of marbles with Bipin, Chistopher, Dany and Eshan is 44 and that with Bipin, Chistopher and Eshan is 45. If Eshan has 71 marbles, find the average number of marbles with Archit, Dany and Eshan.

Enter your response (as an integer) using the virtual keyboard in the box provided below.

54

Congratulations, you solved the question correctly and took less than average time!

Explanation:

Let marbles with Archit, Bipin, Chistopher, Dany and Eshan be a, b, c, d and e respectively.

$a + b + c = 114$, $b + c + d + e = 176$ and $b + c + e = 135$

As $e = 71$, $b + c = 64$ and hence, $a = 50$ and $d + e = 112$

$\frac{a + d + e}{3} = \frac{162}{3} = 54$

Therefore, the required answer is 54.

Correct Answer:

Time taken by you: **68 secs**

Avg Time taken by all students: **140 secs**

Your Attempt: **Correct**

% Students got it correct: **74 %**

15 dancers are selected to put on a show. Initially, they stand in a row, in increasing order of height. The shortest dancer stands on the extreme right. Each subsequent dancer is 3 cm taller than the one to his immediate right. In the next step of the dance, they split into two rows, with the tallest 7 dancers going to the back row. The total height of the dancers in each of the rows is found to be the same. What is the height of the shortest dancer?

Enter your response (as an integer) using the virtual keyboard in the box provided below.

cm

Explanation:

Let the height of the shortest dancer be ‘h’, and that of the other 14 dancers be (h + 3), (h + 6), … , (h + 42).

Then (h + h + 3 + h + 6 … + h + 21) = (h + 24 + h + 27 + … + h + 42)

So (8h + 84) = (7h + 231) which gives h = 147 cm.

Therefore, the required answer is 147.

Correct Answer:

Time taken by you: **31 secs**

Avg Time taken by all students: **135 secs**

Your Attempt: **Skipped**

% Students got it correct: **56 %**

How many even numbers between 100 and 200 (both inclusive) are divisible by exactly one out of 3, 5 and 7?

- 23
- 24
- 29 ✖
- 35

Oops, you got it wrong!

Explanation:

Finding even integers divisible by 3, 5, 7 is the same as finding the integers divisible by 6, 10 and 14. The number of integers between 100 and 200 (both inclusive) divisible:

(i) by $6 = \frac{198-102}{6} + 1 = 17$

(ii) by $10 = \frac{200-100}{10} + 1 = 11$

(iii) by $14 = \frac{196-112}{14} + 1 = 7$

(iv) by 6 and 10 i.e., by $30 = \frac{180-120}{30} + 1 = 3$

(v) by 10 and 14 i.e., by $70 = 1$ (only 140)

(vi) by 6 and 14 i.e., by $42 = \frac{168-126}{42} + 1 = 2$

(vii) by 6, 10 and 14 i.e., by $210 = 0$.

$\therefore$ The number of even integers divisible by exactly one out of 3, 5 and 7 lying between 100 and 200 (both inclusive) $= [17-(3+2)] + [11-(3+1)] + [7-(1+2)] = 12 + 7 + 4 = 23$.
Hence, [1].

Correct Answer:

Time taken by you: **434 secs**

Avg Time taken by all students: **67 secs**

Your Attempt: **Wrong**

% Students got it correct: **20 %**

If $3x + 4y + 5z = 20$, then what is the maximum possible value of x^2y^2z? (Given $x, y, z > 0$)

- 4^5
- $\frac{4^5}{45}$ ✓
- 450
- 125

Congratulations, you solved the question correctly and took less than average time!

Explanation:

Consider 5 numbers: $\frac{3x}{2}, \frac{3x}{2}, \frac{4y}{2}, \frac{4y}{2}, 5z$

We have AM $\geq$ GM therefore,

$$\frac{\frac{3x}{2}+\frac{3x}{2}+\frac{4y}{2}+\frac{4y}{2}+5z}{5} \geq \sqrt[5]{\frac{3x}{2} \times \frac{3x}{2} \times \frac{4y}{2} \times \frac{4y}{2} \times 5z}$$

$$4 \geq \sqrt[5]{\frac{9x^2 \times 16y^2 \times 5z}{16}}$$

$$\Rightarrow 4^5 \geq 45x^2y^2z$$

$$x^2y^2z \leq \frac{4^5}{45}$$

Therefore, value of $x^2y^2z \leq \frac{4^5}{45}$.
Hence, [2].

Correct Answer:

Time taken by you: **64 secs**

Avg Time taken by all students: **134 secs**

Your Attempt: **Correct**

% Students got it correct: **86 %**

A car showroom stocks 3 models of car, Audi, BMW and Citroen, each having a specific fixed price. In the third week of October, they sold 3 Audis, 5 BMWs and 7 Citroens, for a turnover of 78 lakhs. In the fourth week of October, it being Diwali, they achieved a turnover of 100 lakhs by selling 5 Audis, 9 BMWs and 3 Citroens. November was a relatively quiet month and they sold a total of 9 Audis, 16 BMWs and 8 Citroens. What was their turnover for the month of November?

- 196 lakhs
- 189 lakhs ✔
- 178 lakhs
- Cannot be determined

Congratulations, you got it correct!

Explanation:

Let the prices of Audi, BMW and Citroen be a, b, and c. Then, from the given information we can create the following equations:

3a + 5b + 7c = 78 … (I)

5a + 9b + 3c = 100 … (II)

Now we need to find (9a + 16b+ 8c). On doing a little trial and error, we will see that multiplying equation (II) by 3 and adding equation (I) gives us

3 × (5a + 9b + 3c) + (3a + 5b + 7c) = 3 × 100 + 78

18a + 32b + 16c = 378

But this is exactly double what we need; hence dividing throughout by 2, we get

9a + 16b+ 8c = 189

Hence, [2].

Correct Answer:

Time taken by you: **148 secs**

Avg Time taken by all students: **114 secs**

Your Attempt: **Correct**

% Students got it correct: **52 %**

For how many integer values of x, $x^2 - 12x + 20 < 0$?

- 5
- 6
- 7 ✔
- More than 7

Congratulations, you solved the question correctly and took less than average time!

Explanation:

$x^2 - 12x + 20 < 0$

$\therefore (x - 2)(x - 10) < 0$

The inequality is satisfied for all 'x' between x = 3 and x = 9 (both included). There are 7 such integers.

Hence, [3].

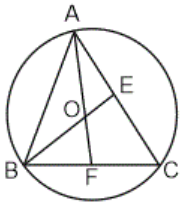
Correct Answer:

Time taken by you: **49 secs**

Avg Time taken by all students: **99 secs**

Your Attempt: **Correct**

% Students got it correct: **85 %**



In the figure, the radius of the circle with centre ‘O’ is 7 cm. If AC = BC and OE = 3 cm, then find the length of AF.

- 9 cm
- 8 cm
- 10 cm ✓
- 11 cm

Congratulations, you got it correct!

Explanation:

AC = BC

⇒ m∠CAB = m∠CBA

Also, OA = OB

⇒ m∠OAB = m∠OBA

∴ m∠OAC = m∠OBC

∴ ΔCAF ≅ ΔCBE (by ASA test)

∴ AF = BE = BO + OE = 7 + 3 = 10 cm

Hence, [3].

Correct Answer:

Time taken by you: **191 secs**

Avg Time taken by all students: **113 secs**

Your Attempt: **Correct**

% Students got it correct: **81 %**

In ΔPQR, ℓ(PQ) = 6 m, ℓ(QR) = 8 m and ℓ(PR) = 10 m. A semicircle is drawn with PQ as its diameter which intersects PR at T. Find ℓ(PT).

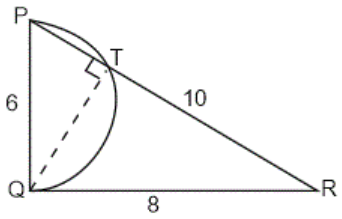
- 3.6 m
- 4.8 m ✗
- 5 m
- 5.5 m

Oops, you got it wrong!

Explanation:

Observe that PQ, QR and PR form a Pythagorean triplet.

$\therefore \ell(PR) = 10 \text{ m} \Rightarrow m\angle PQR = 90°$



Note that $m\angle PTQ = 90°$ ... (angle inscribed in a semicircle)

$\angle PQR \cong \angle PTQ$ and $\angle P$ is a common angle.

$\therefore \Delta PQR \sim \Delta PTQ$

$\therefore \frac{PQ}{PT} = \frac{PR}{PQ} \Rightarrow \frac{6}{PT} = \frac{10}{6} \Rightarrow PT = 3.6 \text{ m}$

Hence, [1].

Correct Answer:

Time taken by you: **123 secs**

Avg Time taken by all students: **123 secs**

Your Attempt: **Wrong**

% Students got it correct: **67 %**

A and B are the two milk-water solutions. The ratio of milk to water in solution A is 3 : 7 while that in solution B is 7 : 3. In what ratio should the two solutions A and B be mixed to get a third solution C with the ratio of milk to water 9 : 11?

- 5 : 4
- 5 : 3 ✓
- 5 : 2
- None of these

Congratulations, you solved the question correctly and took less than average time!

Explanation:

Solution A has 30% milk while solution B has 70% milk.
Desired concentration of solution C = 45%

$\therefore$ Required ratio of solutions A and B $= \frac{70-45}{45-30} = \frac{25}{15} = \frac{5}{3}$

Hence, [2].

Correct Answer:

Time taken by you: **50 secs**

Avg Time taken by all students: **112 secs**

Your Attempt: **Correct**

% Students got it correct: **88 %**

Shalaka has two telephone connections of BNL company. The company charges a certain fixed amount per call made (and there are no other charges except this) for the number of calls exceeding the allotted number of free calls. Last month Shalaka was billed Rs. 60 for phone 1 and Rs. 80 for phone 2 and the number of combined calls of both the phones was 130. If she had used only one phone, she would have been billed Rs. 200.

How many free calls does Shalaka get per connection in a month?

Enter your response (as an integer) using the virtual keyboard in the box provided below.

calls

Explanation:

Let f, c_1 and c_2 be the number of free calls, the number of calls made from phone 1 and the number of calls made from phone 2 respectively.

Let k be the charge per call for the excess calls.

$\therefore kc_1 = 60$ and $kc_2 = 80$

Combined number of calls

$= (f + c_1) + (f + c_2) = 130$

If only one phone is used then the bill would have been Rs. 200 and the chargeable calls would have been $(f + c_1 + f + c_2) - f = c_1 + c_2 + f$

$\therefore k(c_1 + c_2 + f) = 200$

$\therefore 60 + 80 + kf = 200$

$\Rightarrow kf = 60$

Also, $k[(f + c_1 + f + c_2) - f] = 200$

i.e., $k(130 - f) = 200$

i.e., $130k - 60 = 200$

Correct Answer:

Time taken by you: **271 secs**

Avg Time taken by all students: **110 secs**

Your Attempt: **Skipped**

% Students got it correct: **48 %**

Pipes A and B fill an empty tank in 105 minutes, B and C fill it in 84 minutes, while A and C fill in 70 minutes. Find the ratio of the volumes filled by A, B and C respectively in a minute.

- 5 : 3 : 7 ✓
- 5 : 3 : 6
- 6 : 3 : 7
- 10 : 6 : 7

Congratulations, you solved the question correctly and took less than average time!

Explanation:

Let A, B and C fill a, b and c units in 1 minute.

∴ 105(a + b) = 84(b + c) = 70(a + c)

LCM (105, 84, 70) = 420

Let capacity of the tank be 420w units.

∴ a + b = 4w, b + c = 5w and a + c = 6w

∴ a + b + c = 7.5w

∴ a = 2.5w, b = 1.5w, c = 3.5w

∴ a : b : c = 5 : 3 : 7

Hence, [1].

Correct Answer:

Time taken by you: **43 secs**

Avg Time taken by all students: **205 secs**

Your Attempt: **Correct**

% Students got it correct: **82 %**

Four friends, Manoj, Gaurav, Ramesh and Vijay went to an ice cream parlour. Out of the total bill, Manoj paid $\frac{1}{9}^{th}$ of the amount paid by the other three combined, Gaurav paid $\frac{1}{4}^{th}$ of the amount paid by the other three and Ramesh paid $\frac{3}{7}^{th}$ of the amount paid by the other three. If Vijay paid Rs.400, what was the total bill?

- Rs. 1000 ✓
- Rs. 1200
- Rs. 1500
- Rs. 2000

Congratulations, you got it correct!

Explanation:

If Manoj paid x, Gaurav + Ramesh + Vijay = 9x.

∴ Total amount = 10x.

As Gaurav paid $\frac{1}{4}^{th}$ of the amount paid by the other three,

Gaurav paid 2x and Manoj + Ramesh +Vijay = 8x.

As Ramesh paid $\frac{3}{7}^{th}$ of the amount paid by the other three,

Ramesh paid 3x and Manoj + Gaurav + Vijay = 7x.

∴ The amount paid by Vijay = 10x − (x + 2x + 3x) = 4x

∴ 4x = 400 or x = 100

∴ Total bill = Rs. 1000.

Hence, [1].

Correct Answer:

Time taken by you: **489 secs**

Avg Time taken by all students: **167 secs**

Your Attempt: **Correct**

% Students got it correct: **79 %**

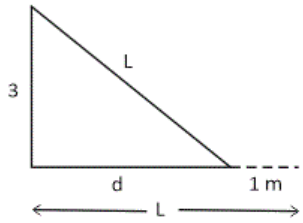
A ladder is placed such that its base is at some distance from the wall and its top is at 3 m from the ground. If the base of the ladder is moved away from the wall by 1 m, the ladder completely lies on the ground with its top just touching the wall. What is the length of the ladder?

Enter your response (as an integer) using the virtual keyboard in the box provided below.

5 m

Congratulations, you solved the question correctly and took less than average time!

Explanation:



We have, $d = L - 1$

Using Pythagoras theorem,

$L^2 = d^2 + 9$

$\therefore L^2 = (L-1)^2 + 9$

$\therefore L^2 = L^2 - 2L + 10$

$\therefore L = 5$

Therefore, the required answer is 5.

Correct Answer:

Time taken by you: **52 secs**

Avg Time taken by all students: **88 secs**

Your Attempt: **Correct**

% Students got it correct: **70 %**

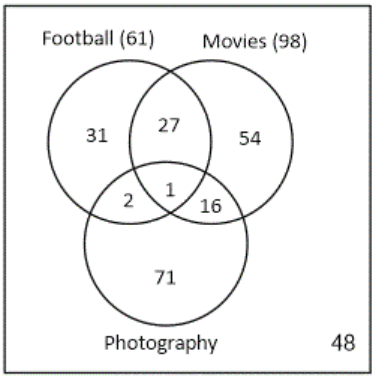
A survey of 250 people was conducted to find out their liking for Football, Movies and Photography. As per the survey, the number of people who like Football is 61, Movies and Football is 28, Movies is 98, only Movies is 54, Football and Photography is 3. People who like Movies but not Photography is 81 and those who do not like any of these three are 48. Find the number of people who like Photography and Movies.

- 3
- 16
- 17 ✔
- 28

Congratulations, you got it correct!

Explanation:

From the given conditions, we get the following Venn diagram.



∴ The number of people who like Photography and Movies is 17.

Hence, [3].

Correct Answer:

Time taken by you: **232 secs**

Avg Time taken by all students: **130 secs**

Your Attempt: **Correct**

% Students got it correct: **66 %**

What is the value of tan1° × tan3° × tan5° × tan7° × ... × tan 89°?

- 0
- $\frac{1}{\sqrt{3}}$
- $\frac{\sqrt{3}}{2}$
- 1 ✔

Congratulations, you solved the question correctly and took less than average time!

Explanation:

(tanx) × [tan(90 – x)] = 1

∴ tan1° × tan89° = 1, tan3° × tan87° = 1 and so on.

∴ tan1° × tan3° × tan5° × tan7° × ... × tan89° = 1

Hence, [4].

Correct Answer:

Time taken by you: **9 secs**

Avg Time taken by all students: **68 secs**

Your Attempt: **Correct**

% Students got it correct: **88 %**

A and B are positive real numbers such that when A is increased by x% we get a number that is equal to the number we would get if B is decreased by x%. On the other hand, if A is decreased by x%, we get a number that is equal to one-fourth of the number we would get if B is increased by x%. If x is a positive real number, calculate the ratio of B to A.

- 2 : 1
- 3 : 2
- 4 : 3
- The ratio depends on the value of x.

Explanation:

We have the following

$$A\left(\frac{100+x}{100}\right) = B\left(\frac{100-x}{100}\right) \quad \text{..... (I)}$$

$$B\left(\frac{100+x}{100}\right) = 4A\left(\frac{100-x}{100}\right) \quad \text{..... (II)}$$

Dividing (II) by (I), we get the following

$$\frac{B}{A} = \frac{4A}{B} \Rightarrow \frac{B^2}{A^2} = 4$$

As A and B are positive integers, B : A = 2 : 1

Hence, [1].

Correct Answer:

Time taken by you: **149 secs**

Avg Time taken by all students: **99 secs**

Your Attempt: **Skipped**

% Students got it correct: **60 %**

How many real roots does the equation $x^3 + 3x^2 + 6x - 10 = 0$ have?

- 0
- 1 ✓
- 2
- 3

Congratulations, you solved the question correctly and took less than average time!

Explanation:

The sum of the coefficients of $(x^3 + 3x^2 + 6x – 10)$ is 0. Therefore, x = 1 is definitely one root of the equation and the polynomial $(x^3 + 3x^2 + 6x – 10)$ is divisible by (x – 1).

Now, $x^3 + 3x^2 + 6x – 10 = (x – 1)(x^2 + 4x + 10) = 0$

The quadratic equation $x^2 + 4x + 10 = 0$ has no real roots because its discriminant < 0.

Therefore, the equation has only one real root.

Hence, [2].

Correct Answer:

Time taken by you: **46 secs**

Avg Time taken by all students: **85 secs**

Your Attempt: **Correct**

% Students got it correct: **81 %**

Dr. Stanley Louis from Stanford University is studying a culture of bacteria for his experiment. The number of bacteria in the culture double every minute. He has the required number of bacteria for his experiment at the end of 64 minutes. If he had half the required number of bacteria at the end of 'n' minutes, what is the value of n? (Write 0 if your answer is cannot be determined).

Enter your response (as an integer) using the virtual keyboard in the box provided below.

63

Congratulations, you solved the question correctly and took less than average time!

Explanation:

The required answer is 63.

Correct Answer:

Time taken by you: **42 secs**

Avg Time taken by all students: **63 secs**

Your Attempt: **Correct**

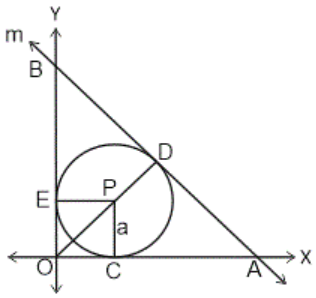
% Students got it correct: **74 %**

A line ‘m’ makes equal intercepts on co-ordinates axes, intersecting the X-axis and Y-axis at A and B respectively. A circle of radius 'a' units is inscribed in ΔAOB where O is origin. What is the length of the intercept made by the line on X-axis?

- $a(\sqrt{2}+1)$ units ✖
- $\sqrt{2}\,a$ units
- $a(2+\sqrt{2})$ units
- $\frac{a}{\sqrt{2}}$ units

Oops, you got it wrong!

Explanation:



We need to find length AC = AD

□ PCOE is square of length 'a' units.

$\therefore \ell(OP) = \sqrt{2}\,a$ units.

$\therefore \ell(OD) = \sqrt{2}a + a = a(\sqrt{2}+1)$ units.

∴ Line makes equal intercepts on X and Y axes.
⇒ ΔAOB is isosceles right angled triangle

$m\angle OAD = 45°$

Correct Answer:

Time taken by you: **135 secs**

Avg Time taken by all students: **119 secs**

Your Attempt: **Wrong**

% Students got it correct: **75 %**

A and B are running around a circular track in the same direction. They start from the same point at the same time. If the ratio of their speeds is 7 : 11, how many times do they meet before meeting for the first time at their starting point?

- 3 ✔
- 6
- 10
- More than 10

Congratulations, you solved the question correctly and took less than average time!

Explanation:

Since 7 and 11 are relatively prime numbers, A and B meet at the starting point when A completes 7 rounds and B completes 11 rounds. That means, B gains 4 rounds over A when they meet at the starting point for the first time. Therefore, B meets A (4 – 1 =) 3 times before they meet at the starting point for the first time.

Hence, [1].

Correct Answer:

Time taken by you: **22 secs**

Avg Time taken by all students: **55 secs**

Your Attempt: **Correct**

% Students got it correct: **71 %**

A group of 9 people in an elevator have a total weight equaling the elevator's limit of 567 kg. If none of the people individually exceeds 65 kg, then the lightest among them must weigh at least:

Enter your response (as an integer) using the virtual keyboard in the box provided below.

47 kg

 Congratulations, you solved the question correctly and took less than average time!

Explanation:

Given that the total weight of all the people is fixed, to find the least possible weight of the lightest person, we should consider that all the rest are as heavy as possible i.e. 65 kg. Now 8 people of weight 65 kg will add up to 520 kg, and hence the 9^{th} and lightest person must weigh at least 567 – 520 = 47 kg.

Therefore, the required answer is 47.

Alternatively,
The average weight of the 9 people is 567/9 = 63 kg. If 8 of them weigh 65 kg (i.e. 2 kg above average) then they will contribute 16 kg extra. To balance this, the last person must contribute 16 kg less to the average and must weigh 63 – 16 = 47 kg.

Correct Answer:

Time taken by you: **62 secs**

Avg Time taken by all students: **72 secs**

Your Attempt: **Correct**

% Students got it correct: **73 %**

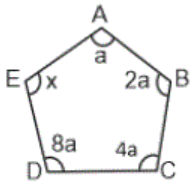
Four successive angles of a pentagon are in GP with a common ratio 2, while three successive angles of the same pentagon are in AP with a common difference of 80. What is the difference between the largest and the smallest angle of the pentagon?

Enter your response (as an integer) using the virtual keyboard in the box provided.

220 °

Congratulations, you solved the question correctly and took less than average time!

Explanation:



Let ABCDE be the pentagon.
∠EAB, ∠ABC, ∠BCD and ∠CDE are in GP.
Let m∠EAB = a° and ∠DEA = x°.
∴ m∠ABC = 2a°, m∠ BCD = 4a° and m∠ CDE = 8a°
Now, ∠DEA, ∠EAB and ∠ABC cannot be in AP because in that case m∠DEA = 0°
If m∠AED, m∠EDC and m∠DCB are in AP.

Then, $8a = \frac{4a + x}{2}$

∴ x = 12a
∴ 8a − 4a = 80° ∴ a = 20°
If m∠EAB, m∠DEA and m∠CDE are in AP.

Then $x = \frac{8a + a}{2} = \frac{9a}{2}$

x − a = 80 ... (1)

Correct Answer:

Time taken by you: **72 secs**

Avg Time taken by all students: **77 secs**

Your Attempt: **Correct**

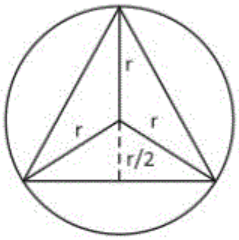
% Students got it correct: **47 %**

What is the ratio of the area of an equilateral triangle to the area of its circumcircle?

- $3\sqrt{3} : 2\pi$
- $3 : \pi$
- $3\sqrt{3} : 4\pi$ ✓
- $3 : 2\pi$

Congratulations, you solved the question correctly and took less than average time!

Explanation:



Suppose 'r' is the radius of the circumcircle.
The circumcentre of the equilateral triangle is also its centroid.

$\therefore$ Height of the equilateral triangle $= r + \frac{r}{2} = \frac{3}{2}r$.

If 's' is the side of the equilateral triangle, its height $= \frac{\sqrt{3}}{2}s$.

$\therefore \frac{\sqrt{3}}{2}s = \frac{3}{2}r$

$\therefore s = \sqrt{3}\,r$

$\therefore$ Area of the triangle $= \frac{\sqrt{3}}{4}s^2 = \frac{\sqrt{3}}{4} \times 3r^2 = \frac{3\sqrt{3}}{4}r^2$.

Correct Answer:

Time taken by you: **110 secs**

Avg Time taken by all students: **115 secs**

Your Attempt: **Correct**

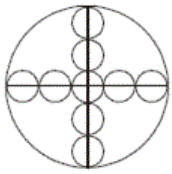
% Students got it correct: **89 %**

Along two perpendicular diameters of a circular disc of radius 5 cm, as many circular discs with diameters of 2 cm that can be cut are cut off . Find the ratio of the area of the original disc to the perforated disc.

- 25 : 16
- 25 : 9
- 5 : 3
- 5 : 4 ✖

Oops, you got it wrong!

Explanation:



9 such small discs can be cut out of the larger disc.

$\therefore$ Required ratio $= \frac{\text{Area of whole disc}}{\text{Area of perforated disc}} = \frac{\pi(5)^2}{\pi(5)^2 - 9\pi(1)^2}$

$= \frac{25}{25-9} = \frac{25}{16}$.

Hence, [1].

Correct Answer:

Time taken by you: **157 secs**

Avg Time taken by all students: **75 secs**

Your Attempt: **Wrong**

% Students got it correct: **59 %**

$P = \frac{999^3 - 998^3}{999^2 + 998^2}$. What can be said about the value of P?

- $P < 0.5$
- $1 < P < 1.5$
- $1.5 < P < 2.0$
- $0.5 < P < 1$

Explanation:

$$\frac{999^3 - 998^3}{999^2 + 998^2} = \frac{(999^2 + 998^2 + 999 \times 998)}{999^2 + 998^2} = 1 + \frac{999 \times 998}{999^2 + 998^2} < 1 + \frac{1}{2} = 1.5$$

[As $(999 - 998)^2 = 1$, $999^2 + 998^2 = 1 + 2 \times 999 \times 998 > 2 \times 999 \times 998$

$\therefore \frac{999 \times 998}{999^2 + 998^2} < \frac{1}{2}$]

Hence, $1 < P < 1.5$.

Hence, [2].

Correct Answer:

Time taken by you: **11 secs**

Avg Time taken by all students: **102 secs**

Your Attempt: **Skipped**

% Students got it correct: **71 %**

A group of 40 went for a picnic. Meena and Leena arranged sharbat for all. Sharbat in Meena's container was sufficient for 25 persons and that from Leena's was sufficient for exactly remaining persons. The two used curacao syrup and water for the sharbat. Meena used curacao syrup and water in the ratio 3 : 7. Sharbat from the two containers was mixed before serving. In the final sharbat, curacao syrup and water was in the ratio 1 : 3. What was the concentration of curacao syrup in the sharbat prepared by Leena?

- 16.67% ✓
- 20%
- 25%
- 30%

Congratulations, you got it correct!

Explanation:

In the final mixture, ratio in which sharbat from Meena's container was mixed with the sharbat from Leena's container = 25 : 15 = 5 : 3

Let Meena's container has (5x) litres and Leena's container has (3x) litres sharbat.

Let the ratio of curacao syrup to water in Leena's container = a : b

∴ By the given condition,

$$\frac{1}{4}=\frac{\frac{3}{10}\times 5x+\frac{a}{a+b}\times 3x}{8x}$$

Solving this, we get

$$\frac{a}{b}=\frac{1}{5}$$

∴ The concentration of curacao syrup in Leena's container = 16.67%

Hence, [1].

Correct Answer:

Time taken by you: **156 secs**

Avg Time taken by all students: **143 secs**

Your Attempt: **Correct**

% Students got it correct: **73 %**

All the chapters of a book have an equal number of sections such that the number of chapters and the number of sections in each chapter differ by 10. If Ram reads four sections per day, he can finish reading the book on the 14^{th} day. If he reads 2 sections per day, he can finish reading the book on the 28^{th} day and if he reads 3 sections per day, he can finish reading the book on the 19^{th} day. If Ram reads 3 sections per day, and no two sections of two different chapters on the same day, then find the minimum number of days he requires to finish reading the book.

Enter your response (as an integer) using the virtual keyboard in the box provided below.

Explanation:

Let the number of chapters be x and the number of sections per chapter be y.

If Ram reads 4 sections per day, he can finish reading the book on the 14^{th} day.

⇒ Total number of sections = xy = 53 or 54 or 55 or 56.

If Ram reads 2 sections per day, he can finish reading the book on the 28^{th} day.

⇒ Total number of sections = xy = 55 or 56

55 = 5 × 11 ? x = 5 or 11 and

56 = 2 × 28 = 4 × 14 = 8 × 7 ? x = 2 or 28 or 4 or 14 or 8 or 7

Since |x – y| = 10, x = 4 or 14

If x = 14, the number of days required = 14 × 2 = 28

If x = 4, the number of days required = 4 × 5 = 20

Therefore, the required answer is 20.

Correct Answer:

Time taken by you: **0 secs**

Avg Time taken by all students: **45 secs**

Your Attempt: **Skipped**

% Students got it correct: **21 %**