Answer the questions independently of each other.

An Arab flying on his magic carpet finds that the speed with which his carpet moves varies directly as the carpet's altitude and inversely as the amount of gold on it. At a certain altitude and with a certain amount of gold on the carpet, the speed is 50 m/s. What will be the speed of the carpet, if the Arab halves the altitude and doubles the weight of gold on the carpet?

○   25 m/s

◉   12.5 m/s ✔

○   50 m/s

○   37.5 m/s

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

⌄

Explanation: ⌄

Let 's' be the speed of the carpet 'a' be the carpet's altitude and 'g' be the amount of the gold on the carpet.

$$\therefore \ s \ \alpha \ \frac{a}{g} \Rightarrow s = k \times \frac{a}{g} = 50 \ \text{m/s.}$$

$$\text{Now, } k \times \frac{a}{2} \times \frac{1}{2g} = \frac{1}{4} \times k \times \frac{a}{g}$$

$$= \frac{1}{4} \times 50 = 12.5 \ \text{m/s. Hence, [2].}$$

Correct Answer: ❯

Time taken by you: **49 secs**

Avg Time taken by all students: **104 secs**

Your Attempt: **Correct**

% Students got it correct: **83 %**

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Change Section here ▼

Answer the questions independently of each other.

A survey was conducted among 95 students who visited the college canteen everyday. The number of students who preferred tea, coffee or a fruit juice in the break was as follows: coffee : 28; tea and fruit juice : 6; only tea : 35; all three : 4; coffee and fruit juice : 10; tea and coffee : 7; none : 7.
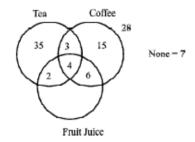
How many preferred only fruit juice?

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

23

😄 Congratulations, you got it correct!

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Explanation:

From the given data

∴ The number of students who prefer only fruit juice in the break
= 95 − 7 − (35 + 15 + 15)
= 95 − 7 − 65 = 23.

Therefore, the required answer is 23.

Correct Answer: ❯

Time taken by you: **129 secs**

Avg Time taken by all students: **69 secs**

Your Attempt: **Correct**

% Students got it correct: **40 %**

Previous   Next   Exit Review

Answer the questions independently of each other.

$(x - 2)(x - 4)(x - 6)(x - 8)$ ... $(x - 20) \leq 0$. How many integer values of x satisfy the given equation?

- ○ 10

- ◉ 15 ✔

- ○ 20

- ○ Cannot be determined

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

Explanation: ⌄

x = 2, 4, 6, 8, ... , 20 satisfy
(x − 2)(x − 4)(x − 6) ... (x − 20) = 0.
Also, for (x − 2)(x − 4)(x − 6) ... (x − 20) < 0, odd number of terms should be negative.

For x > 20 and x < 2 all terms will be positive.

For x = 19, x − 20 < 0, while all other terms are positive.
Thus, x = 19 is one of the solutions.
For x = 17, x − 20 < 0 and x − 18 < 0, while all other terms are positive.
But then (x − 2)(x − 4) ... (x − 20) > 0, hence x = 17 is not the solution.
For x = 15, three terms are negative.
Hence, x = 15 is one of the solutions.
Similarly, x = 11, 7, 3 are the other solutions.
∴ The required number of solutions = 10 + 5 = 15.
Hence, [2].

Correct Answer: ❯

Time taken by you: **41 secs**

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

Your Attempt: **Correct**

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

Answer the questions independently of each other.

Given that $t_0 = \dfrac{6}{7}$ and $t_{n+1} = \left\{ [2(t_n)] \text{ for } t_n < \dfrac{1}{2} \text{ and } [2(t_n) - 1] \text{ for } t_n \geq \dfrac{1}{2} \right\}$

What is the value of $7(t_{2009})$?

- ◉ 5 ✖
- ○ 6
- ○ 3
- ○ None of these

😞 Oops, you got it wrong!

Previous   Next   Exit Review

Explanation: ⌄

Calculating the first few t_i, we get that, $t_1 = \dfrac{5}{7}$, $t_2 = \dfrac{3}{7}$, $t_3 = \dfrac{6}{7} = t_0$,

Thus, this sequence repeats every three terms or $t_{2007} = \dfrac{6}{7}$ and $t_{2009} = \dfrac{3}{7}$

$\therefore 7 \times t_{2009} = 3$.

Hence, [3].

Correct Answer: ❯

Time taken by you: **121 secs**

Avg Time taken by all students: **94 secs**

Your Attempt: **Wrong**

% Students got it correct: **51 %**

Previous   Next   Exit Review

Answer the questions independently of each other.

Three flexible pipes that can serve as inlet as well as outlet pipes have been attached to a tank. The rates of filling or emptying the tank by these three pipes are in the ratio 1 : 2 : 4. The largest pipe can alone fill the empty tank in 7 hours. Initially the tank is full and the three pipes were used as outlet pipes for 'M' hours. After the tank is emptied, later the smallest pipe alone filled the entire tank in 28 hours. Find the value of 'M'.

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

40

😣 Oops, you got it wrong!

Explanation:

Let the capacity of the three pipes be x, 2x and 4x litres per hour.

As the largest pipe fills the empty tank in 7 hours, capacity of the tank = 7 × 4x = 28x

The smallest pipe took 28 hours to fill the tank. Therefore, it has filled the empty tank.

i.e., the three pipes must have emptied the tank.

$$\text{Time taken to empty the tank} = \frac{28x}{x + 2x + 4x} = 4 \text{ hours}$$

Therefore, the required answer is 4.

Correct Answer:

Time taken by you: **215 secs**

Avg Time taken by all students: **137 secs**

Your Attempt: **Wrong**
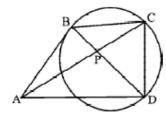
% Students got it correct: **78 %**

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Answer the questions independently of each other.
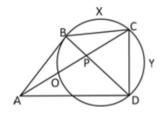
ABCD is a trapezium with AD parallel to BC. AB is tangent to the circle at B. m∠BDC = 40° and m∠ABP = 80°. Find m∠BAD.

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

[   ] o

Previous   Next   Exit Review

Explanation:

$m\angle ABD = 80°$

$\Rightarrow m(arc\ BOD) = 160°$

$m\angle BDC = 40°$

$\Rightarrow m(arc\ BXC) = 80°$

$\therefore\ m(arc\ CYD) = 360-160-80\ = 120°$

$\Rightarrow m\angle CBD = 60°$

$BC \parallel AD \Rightarrow m\angle BDA = m\angle CBD = 60° \Rightarrow m\angle BAD = 40°$

Therefore, the required answer is 40.

Correct Answer: ❯

Time taken by you: **133 secs**

Avg Time taken by all students: **40 secs**

Your Attempt: **Skipped**

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

Previous   Next   Exit Review

Refer to the data below and answer the question that follows.

A cricket team of 16 players won a cash prize, in an inter-college cricket tournament, which they settled as follows:

i.   10% of the cash was donated to Siddhi orphanage.
ii. From the remaining, 5% of the cash was given to the college sports club.
iii. Rs.100 was spent on snacks.

Of what remained, the 17th part was equally distributed between captain and vice-captain. The remaining money was then equally distributed among all the players. If everybody got only Rs.100 notes, the total cash prize could have been:

○   Rs. 18,000

○   Rs. 19,000

◉   Rs. 20,000 ✔

○   Rs. 12,000

🙂   Congratulations, you got it correct!

Explanation:

Let the cash price be Rs.x and Rs.k be the 17th part that was equally distributed between the captain and the vice-captain.

Then, we get,

$$x - \frac{x}{10} - \frac{5}{100} \times \frac{9x}{10} - 100 = 17k$$

$$\Rightarrow x - \frac{145x}{1000} - 100 = 17k$$

$$\Rightarrow \frac{855x}{1000} - 100 = 17k.$$

For the captain to get an amount which is a multiple of 100, k should be an even multiple of 100, i.e., k should be a multiple of 200.

Option [1]:

$$17k = \frac{855 \times 18000}{1000} - 100 = 15290$$

$\Rightarrow$ k is not a multiple of 100.

Option [2]:

$$17k = \frac{855 \times 19000}{1000} - 100 = 855 \times 19 - 100$$

$\Rightarrow$ k is not a multiple of 100

Option [3]:

$$17k = \frac{855 \times 20000}{1000} - 100 = 17000$$

Correct Answer: ⟩

Time taken by you: **369 secs**

Avg Time taken by all students: **227 secs**

Your Attempt: **Correct**

% Students got it correct: **72 %**
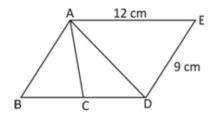
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Answer the questions independently of each other.

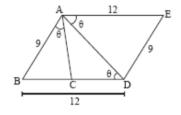▱ABDE is a parallelogram. Also, ∠CAB ≅ ∠ADB. Find CD.

○   6.75 cm

◉   5.25 cm ✔

○   10 cm

○   9.67 cm

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

Explanation: ▾

In $\triangle ABC$ and $\triangle DBA$

$\angle CAB \cong \angle ADB$

$\angle ABC \cong \angle DBA$

$\therefore \triangle ABC \sim \triangle DBA$ (by A-A test)

$\therefore \dfrac{AB}{DB} = \dfrac{BC}{BA} \Rightarrow \dfrac{9}{12} = \dfrac{BC}{9} \Rightarrow BC = \dfrac{81}{12}$

$\therefore CD = DB - BC = 12 - \dfrac{81}{12} = 5.25$ cm.

Hence, [2].

Correct Answer: ❯

Time taken by you: **107 secs**

Avg Time taken by all students: **136 secs**

Your Attempt: **Correct**

% Students got it correct: **63 %**

Previous   Next   Exit Review

Answer the questions independently of each other.

Which among $6^{\frac{1}{4}} - 2^{\frac{1}{2}}$, $5^{\frac{1}{3}} - 6^{\frac{1}{6}}$, $3^{\frac{1}{3}} - 2^{\frac{1}{2}}$, $7^{\frac{1}{4}} - 4^{\frac{1}{4}}$ is the largest?

○ $7^{\frac{1}{4}} - 4^{\frac{1}{4}}$

○ $6^{\frac{1}{4}} - 2^{\frac{1}{2}}$

○ $5^{\frac{1}{3}} - 6^{\frac{1}{6}}$

○ $3^{\frac{1}{3}} - 2^{\frac{1}{2}}$

Explanation: ▾

The L.C.M. of the denominators of indices, i.e., the L.C.M. of 2, 3, 4 and 6, is 12.
Thus, we express all the terms with common index $\frac{1}{12}$ as follows:

$$7^{\frac{1}{4}} - 4^{\frac{1}{4}} = 343^{\frac{1}{12}} - 64^{\frac{1}{12}}$$

$$6^{\frac{1}{4}} - 2^{\frac{1}{2}} = 216^{\frac{1}{12}} - 64^{\frac{1}{12}};$$

$$5^{\frac{1}{3}} - 6^{\frac{1}{6}} = 625^{\frac{1}{12}} - 36^{\frac{1}{12}} > 625^{\frac{1}{12}} - 64^{\frac{1}{12}} \text{ and}$$

$$3^{\frac{1}{3}} - 2^{\frac{1}{2}} = 81^{\frac{1}{12}} - 64^{\frac{1}{12}}$$

Comparing the above expressions, $5^{\frac{1}{3}} - 6^{\frac{1}{6}}$ is the largest. Hence, [3].

Correct Answer: ➤

Time taken by you: **6 secs**

Avg Time taken by all students: **96 secs**

Your Attempt: **Skipped**

% Students got it correct: **51 %**

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Answer the questions independently of each other.

Some men and women participate in a tennis tournament. In the first round every man has to play every other man; in the second round every woman has to play every other woman. Then, in the next round every man has to play every woman; how many matches are possible in this round if there were 120 and 91 matches in the first and second rounds (respectively)?

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

224

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

Previous   Next   Exit Review

02:43

Explanation:

Let x be number of women players.
Let y be number of men players.
$\therefore {}^{x}C_2 = 91$

$\dfrac{x!}{2!\,(x-2)!} = 91$

$x(x-1) = 182 \Rightarrow x^2 - x - 182 = 0$
$(x-14)(x+13) = 0$
$\therefore x = 14.$ There are 14 women players.
${}^{y}C_2 = 120$

$\dfrac{y!}{2!\,(y-2)!} = 120$

$\therefore y^2 - y - 240 = 0$
$(y-16)(y+15) = 0$
$\therefore y = 16.$ There are 16 men players.
Number of matches played between a
man and a woman $= {}^{14}C_1 \times {}^{16}C_1 = 14$
$\times\ 16 = 224.$

Therefore, the required answer is 224.

Correct Answer:

Time taken by you: **66 secs**

Avg Time taken by all students: **93 secs**

Your Attempt: **Correct**

% Students got it correct: **41 %**

Previous   Next   Exit Review

Answer the questions independently of each other.

There are four machines that make gears for a factory. The fastest machine can make one gear in two hours. The slowest machine makes one gear in 3 hours. Which of the following cannot be the value of the average time taken by the four machines to make a gear?

○   2.2 hours

○   2.3 hours

◉   2.6 hours ✖

○   2.68 hours

😔 Oops, you got it wrong!

Explanation: ⌄

Fastest machine takes 2 hours.
Slowest machine takes 3 hours.
Let all the other machines take as much time as the fastest machine.

Average time = $\dfrac{2 + 2 + 2 + 3}{4}$ = 2.25 hours.

This corresponds to the minimum possible averagetime.
Similarly, maximum average time =

$\dfrac{2 + 3 + 3 + 3}{4}$ = 2.75 hours.

The only value that does not lie between the above range is 2.2 hours.
Hence, [1].

Correct Answer: ❯

Time taken by you: **62 secs**

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

Your Attempt: **Wrong**

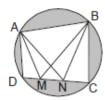% Students got it correct: **70 %**

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Answer the questions independently of each other.
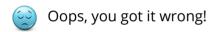
In the above figure, □ABCD is a parallelogram. Radius, r = 7 cm and A(△ ABM) = 36 cm²

If A(△ AMD) : A(△ ANB) = 7 : 12, then what is the area of △ BMC?

Specify your answer in cm²

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

41

😟 Oops, you got it wrong!

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Explanation:

$A(\triangle ANB) = A(\triangle ABM) = 36$ cm^2 (Same base and height)

$\therefore A(\triangle AMD) = \dfrac{7}{12} \times 36 = 21$ cm^2

$\Rightarrow AD \times DM = 42$ ... (i)

Also, $A(\triangle ANB) = \dfrac{1}{2} \times AD \times AB = 36$

$\Rightarrow AD \times (DM + CM) = 72$

$\Rightarrow 42 + AD \times CM = 72$ ...(from (i))

$\Rightarrow \dfrac{1}{2} \times AD \times CM = \dfrac{30}{2} = 15$

$\therefore A(\triangle BMC) = 15$ cm^2.

Therefore, the required answer is 15.

Correct Answer:

Time taken by you: **114 secs**

Avg Time taken by all students: **62 secs**

Your Attempt: **Wrong**

% Students got it correct: **32 %**

Answer the questions independently of each other.

$(1 + \log_4 x)\,[1 + (\log_4 x)^2 + (\log_4 x)^4 + ...] = 2$. Find x. Given $(x < 4)$.

○ $\dfrac{3}{2}$

○ $\dfrac{1}{4}$

○ $\dfrac{1}{2}$

○ 2

Explanation: ⌄

$(1 + \log_4 x)[1 + (\log_4 x)^2 + (\log_4 x)^4 + ...]$
$= 2$

$\therefore 1 + \log_4 x + (\log_4 x)^2 + (\log_4 x)^3 + (\log_4 x)^4$
$+ ... = 2$

$\therefore \log_4 x + (\log_4 x)^2 + ... = 1$

$a = \log_4 x$ and $r = \log_4 x$

$\therefore \dfrac{\log_4 x}{1 - \log_4 x} = 1$ [For infinite G.P. series

$\text{sum} = \dfrac{a}{1-r}]$

$\therefore \log_4 x = 1 - \log_4 x$

$\therefore 2\log_4 x = 1$

$\therefore \log_4 x = \dfrac{1}{2}$

$\therefore x = 4^{\frac{1}{2}}$

$\therefore x = 2$

Hence, [4].

Correct Answer: ❯

Time taken by you: **102 secs**

Avg Time taken by all students: **104 secs**

Your Attempt: **Skipped**

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

Previous   Next   Exit Review

Answer the questions independently of each other.

An immiscible mixture contains three different types of liquids A, B and C. The ratio of liquids A and B is 1 : 2 and the volume of liquid C is 20 litres. 5 litres of C and 2 litres of A are replaced by equal volumes of liquid B. The ratio of liquids A and B becomes 1 : 3. Find the volume of the mixture (in litres).

○   63

○   61

◉   59 ✔

○   65

Congratulations, you got it correct!

Previous   Next   Exit Review

Explanation:

Let the initial volume of liquids A and B be x and 2x.

Total volume of mixture = x + 2x + 20 = 3x + 20

Final volume of liquid A = x − 2

Final volume of liquid B = 2x + 7

Final volume of liquid C = 15

Therefore, 3(x − 2) = (2x + 7)

Or, x = 13

Volume of the mixture = 3x + 20 = 59 litres.

Hence, [3].

Correct Answer:

Time taken by you: **318 secs**

Avg Time taken by all students: **149 secs**

Your Attempt: **Correct**

% Students got it correct: **84 %**

Previous   Next   Exit Review

Answer the questions independently of each other.

Find the perimeter of the region bounded by the graph of
$|2x + 3| + |2y - 3| = 6$.

○   18 units

○ $9\sqrt{3}$ units

○   12 units

◉ $12\sqrt{2}$ units ✔

Congratulations, you got it correct!

Explanation:

From $|2x + 3| + |2y - 3| = 6$, we get four linear equations as follows:

$2x + 3 + 2y - 3 = 6 \Rightarrow x + y = 3$ --- (i)
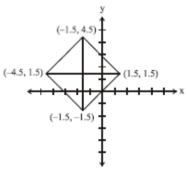
$2x + 3 - 2y + 3 = 6 \Rightarrow y - x = 0$

i.e., $x = y$ --- (ii)

$-2x - 3 + 2y - 3 = 6 \Rightarrow y - x = 6$ --- (iii)

$-2x - 3 - 2y + 3 = 6 \Rightarrow x + y = -3$ --- (iv)

We can see that the lines $x + y = 3$ and $x + y = -3$ are parallel to each other and lines $x = y$ and $y - x = 6$ are parallel to each other.

Also, $x + y = 3$ and $x + y = -3$ are perpendicular to the lines $x = y$ and $y - x = 6$.

Thus, the region bounded by the given graph is a rectangle. So it is enough to find two adjacent sides of this rectangle to find its perimeter.

We find the points of intersection of the four lines. Solving,

Correct Answer:

Time taken by you: **98 secs**

Avg Time taken by all students: **70 secs**

Your Attempt: **Correct**

% Students got it correct: **36 %**

Previous   Next   Exit Review

Answer the questions independently of each other.

Two trains A and B having speeds S_1 m/s and S_2 m/s are running in opposite directions on two parallel tracks. A man is with speed 'm' m/s is walking inside train A in the opposite direction to that of train A. The length of the trains A and B are ' ℓ_1 ' m and ' ℓ_2 ' m respectively. Find the time taken by train B (in seconds) to overtake the man in train A.

○ $\dfrac{(\ell_1 + \ell_2)}{S_1 + S_2 - m}$ sec

○ $\dfrac{(\ell_1 + \ell_2)}{S_1 - S_2 + m}$ sec

○ $\dfrac{\ell_1}{S_1 + S_2 - m}$ sec

◉ $\dfrac{\ell_2}{S_1 + S_2 - m}$ sec ✔

😛 Congratulations, you got it correct!

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Explanation:

The relative speed of the man and the train B is $S_1 + S_2 - m$ and the length of the train B is ℓ_2

Hence, the time taken by train B to cross the man is $\dfrac{\ell_2}{S_1 + S_2 - m}$ seconds.

Hence, [4].

Correct Answer: ❯

Time taken by you: **90 secs**

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

Your Attempt: **Correct**

% Students got it correct: **42 %**

Previous   Next   Exit Review

Answer the questions independently of each other.

If f(x) = x − a, then f(f(f(x))) is:

○ $x^3 - a^3$

⦿   x − 3a ✔

○   3x − 3a

○   3x − a

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

Answer the questions independently of each other.

If f(x) = x − a, then f(f(f(x))) is:

○ $x^3 - a^3$

○   x − 3a

○   3x − 3a

○   3x − a

Previous   Next   Exit Review

Explanation: ⌄

$f(x) = x - a$
$\therefore f(f(x)) = x - a - a = x - 2a;$
$\therefore f(f(f(x))) = x - 2a - a = x - 3a.$

Hence, [2].

Correct Answer: ❯

Time taken by you: **33 secs**

Avg Time taken by all students: **83 secs**

Your Attempt: **Correct**

% Students got it correct: **91 %**

Previous   Next   Exit Review

Answer the questions independently of each other.

A mixture of liquids P, Q and R, contains the three in the ratio 2 : 4 : 7 respectively. P and Q are added till the ratio becomes 7 : 4 : 2. Find the ratio of the amounts of P and Q added.

○   49 : 16

◉   9 : 4 ✔

○   5 : 2

○   7 : 4

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

Previous   Next   Exit Review

Explanation: ▾

Suppose the initial quantities of P, Q and R were 2x, 4x and 7x units respectively. At the end R is still 7x.

Hence $Q = 4x \times \left(\dfrac{7}{2}\right) = 14x$ and $P = 7 \times \left(\dfrac{7}{2}\right)x = 24.5x$.

Hence, the increase in P = 22.5x. The increase in Q = 10x.

The required ratio = 22.5x : 10x = 9 : 4.

Hence, [2].

Correct Answer: ❯

Time taken by you: **99 secs**

Avg Time taken by all students: **108 secs**

Your Attempt: **Correct**

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

Previous   Next   Exit Review

Change Section here ▼

Answer the questions independently of each other.

There are 100 bottles of a drink, out of which only one bottle is poisoned. Anyone who tastes the drink from the poisoned bottle would die in one hour. However, there is no harm if the drink from other bottles is tasted. A test is to be conducted using rats to identify the poisoned bottle. What is the minimum number of rats needed for the test if the poisoned bottle is to be identified in exactly one hour time? Assume that the time taken by the rats to drink the contents of the bottle is negligible and that rats can drink the contents of as many bottles as we make them to drink.

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

Explanation: ⌄

If we look at the binary representation of the bottles numbered 1 to 100, all numbers till 100 can be represented using 7 digits.

Now, let us arrange the 7 mice in a row and number them 1 to 7. A mouse is to take a sip from a bottle if the digit corresponding to its position is 1.

For example, is a number is 1011010, mice numbered 1, 3, 4 and 6 will take a sip from this bottle. This way we will be able to identify the combination of 1s for the bottle that contains poison.

So, in general the no. of mice needed to identify a poisoned bottle would be n such that the number of bottles $\le 2^n$ & n is the least such integer.

As $100 < 2^7$, n = 7

Therefore, the required answer is 7.

Correct Answer: 〉

Time taken by you: **87 secs**

Avg Time taken by all students: **9 secs**

Your Attempt: **Skipped**
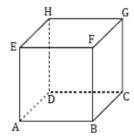
% Students got it correct: **8 %**

Previous   Next   Exit Review

Answer the questions independently of each other.

An ant can travel only along the edges of a cube (which is shown below). It travels along the longest path from A to F at 2 cm/s and travels back to A at 1 cm/s taking the shortest route. It does not cross any vertex more than once and completes the journey in 120 seconds. What is the length of each side of the cube?

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

30   cm

☹ Oops, you got it wrong!

Explanation:

The shortest path from F to A will comprise of two edges eg. F – B – A
Thus, the longest path should not contain the vertex B. There are several paths possible,
but the longest path comprises of 6 edges eg. A – E – H – D – C – G – F. (observe
that it does not contain the vertex B).
Let x be the length of each edge of the cube.

$$\therefore \quad \frac{6x}{2} + \frac{2x}{1} = 120 \qquad \therefore \quad 5x = 120$$
$$\therefore \quad x = 24 \text{ cm}$$

Therefore, the required answer is 24.

Correct Answer:

Time taken by you: **225 secs**

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

Your Attempt: **Wrong**

% Students got it correct: **37 %**

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Answer the questions independently of each other.

A group of 10 workers can plough a field in 20 days. This group starts the work and after every 2 days, 2 additional workers join the group. The efficiency of each worker is the same. **On which day workers finish ploughing the field?**

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

| 8 | days |

😞 Oops, you got it wrong!

Explanation:

10 workers can complete the work in 20 days.
Let the total work be 10 × 20 = 200 units.
∴ Work completed by 1 worker in 1 day

$= \frac{200}{10 \times 20}$ = 1 unit.

On the first two days, (10 + 10) units of work is done.
Next 2 days (12 + 12) units of work is done.
Next 2 days (14 + 14) units of work is done.
Next 2 days (16 + 16) units of work is done.
Next 2 days (18 + 18) units of work is done.
Next 2 days (20 + 20) units of work is done.
∴ Total work done in 12 days
= 20 + 24 + 28 + 32 + 36 + 40 = 180 units.
On the 13th day, 22 units of work can be done.
Work will be completed in 13 days

Correct Answer: ❯

Time taken by you: **49 secs**

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

Your Attempt: **Wrong**

% Students got it correct: **30 %**

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Answer the questions independently of each other.

Ishaan Awasthi, a student of class X wrote a computer program to generate 15 integers. The integers generated by the program were as follows:

1, 0, 2, −2, 6, −10, 22, ... and so on

Find the average of the 15 integers generated by the computer program.

○   245

○   3651

○   243.4

○   None of these

Explanation:

The integers generated are:

```
1      0     2     -2     6
-10    22    -42   86    -170   342   -682   1366   -2730  5462.
```

The terms of the above series follows the pattern :

$T(n) = T(n - 1)(-2) + 2, n \geq 2$

∴ The average of the 15 integers

$$\frac{1 + 0 + 2 + (-2) + 6 + (-10) + 22 + (-42) + 86 + (-170) + 342 + (-682) + 1366 + (-2730) + 5462}{15}$$

$$= \frac{3651}{15} = 243.4$$

Hence, [3].

Correct Answer:

Time taken by you: **57 secs**

Avg Time taken by all students: **120 secs**

Your Attempt: **Skipped**

% Students got it correct: **42 %**

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Answer the questions independently of each other.

The weightages given to two subjects – Physics and Math, in calculating the grade point average is 25% and 75%. The grade point average of A is 20% more than B. The marks obtained by A in Physics is 25% more than B, but that obtained in Math is 20% less. By what percentage is marks obtained by B in Physics more than that obtained by him in Math?

Grade Point Average is given by the following formula

$$\frac{\text{Weightage for Physics} \times \text{Marks in Physics} + \text{Weightage for Math} \times \text{Marks in Math}}{\text{Weightage for Physics} + \text{Weightage for Math}}$$

- ○ 2300%

- ○ 2400%

- ○ 2500%

- ○ 2600%

Explanation:

Let the grade point average of A and B be 1.2x and x respectively.

Let the marks obtained by A and B in Physics be 1.25y and y respectively.

Let the marks obtained by A and B in Math be 0.8z and z respectively.

$$\therefore \frac{1.2x}{x} = \frac{0.25 \times 1.25y + 0.75 \times 0.8z}{0.25 \times y + 0.75 \times z}$$

$\therefore$ 0.3y + 0.9z = 0.3125y + 0.6z

$\therefore$ 0.3z = 0.0125y

$\therefore$ 24z = y

Therefore, the required percent is 2300%.

Hence, [1].

Correct Answer: ❯

Time taken by you: **108 secs**

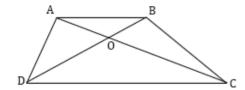Avg Time taken by all students: **134 secs**

Your Attempt: **Skipped**

% Students got it correct: **49 %**

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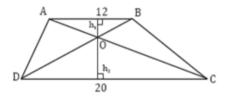**Answer the questions independently of each other.**

A trapezium ABCD has diagonals intersecting at O. Area of the trapezium is 256 sq. units, length of AB = 12 units and that of CD = 20 units. Find area of triangle BOC.

○ 120 sq. units

○ 80 sq. units

○ 60 sq. units

○ 75 sq. units

Explanation:

We have,

$$256 = \frac{1}{2} \times h \times (12 + 20)$$

$$256 = h \times \frac{32}{2}$$

$$h = 16$$

Now, in $\triangle AOB$ and $\triangle COD$,

$\angle AOB = \angle COD$

$\angle BAO = \angle OCD$

Hence, $\triangle AOB \sim \triangle COD$

Hence, $\dfrac{AB}{CD} = \dfrac{h_1}{h_2}$

Where h_1 and h_2 are heights of $\triangle AOB$ and $\triangle COD$ respectively.

Hence,

Correct Answer: ❯

Time taken by you: **57 secs**

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

Your Attempt: **Skipped**

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

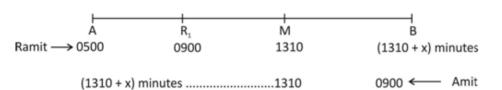Previous   Next   Exit Review

Answer the questions independently of each other.

Ramit and Amit travel with uniform speed from A to B and B to A respectively, via the same route. Ramit starts at 5:00 am while Amit starts four hours later. They meet, on the way, at 1:10 pm. At what time do they reach their destinations, if both of them reach at the same time?

- ○ 7 pm

- ○ 8 pm

- ○ 6:30 pm

- ○ 7:30 pm

03:38

Explanation:

Ramit ⟶ 0500 — A; R₁ — 0900; M — 1310; B — (1310 + x) minutes

(1310 + x) minutes 1310   0900 ⟵ Amit

Ramit starts from A at 0500 hours and reaches R1 at 0900 hours. Amit starts from B at 0900 hours. They meet at point M at 1310 hours. Suppose they have 'x' minutes to reach their destinations after they meet.

Now we have,

Ramit covers distance AM in 490 minutes and Amit covers it in 'x' minutes. Ramit covers distance MB in x minutes and Amit covers it in 250 minutes.

$$\therefore \frac{490}{x} = \frac{x}{250}$$

$$\therefore x = \sqrt{250 \times 490} = 350$$

∴ They reach their respective destinations 350 minutes after 1.10 pm or at 7.00 pm. Hence, [1].

Correct Answer: ❯

Time taken by you: **81 secs**

Avg Time taken by all students: **93 secs**

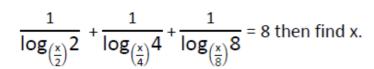Your Attempt: **Skipped**

% Students got it correct: **37 %**

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Answer the questions independently of each other.

$$\frac{1}{\log_{\left(\frac{x}{2}\right)}2} + \frac{1}{\log_{\left(\frac{x}{4}\right)}4} + \frac{1}{\log_{\left(\frac{x}{8}\right)}8} = 8 \text{ then find x.}$$

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

5

🙁 Oops, you got it wrong!

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Explanation:

$$\frac{1}{\log_{\frac{x}{2}} 2} + \frac{1}{\log_{\frac{x}{4}} 4} + \frac{1}{\log_{\frac{x}{8}} 8} = 8$$

$$\therefore \frac{\log \frac{x}{2}}{\log 2} + \frac{\log \frac{x}{4}}{\log 4} + \frac{\log \frac{x}{8}}{\log 8} = 8$$

$\therefore$

$$\frac{\log x - \log 2}{\log 2} + \frac{\log x - \log 4}{\log 4} + \frac{\log x - \log 8}{\log 8}$$
$$= 8$$

$$\therefore \frac{\log x}{\log 2} - 1 + \frac{\log x}{2\log 2} - 1 + \frac{\log x}{3\log 2} - 1 = 8$$

$$\therefore \frac{\log x}{\log 2}\left(1 + \frac{1}{2} + \frac{1}{3}\right) - 3 = 8$$

$$\frac{11}{6} \times \log_2 x = 11$$

$\therefore \log_2 x = 6$

Correct Answer: ❯

Time taken by you: **146 secs**

Avg Time taken by all students: **155 secs**

Your Attempt: **Wrong**
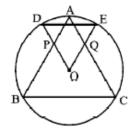
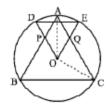% Students got it correct: **56 %**

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Answer the questions independently of each other.

Δ ABC and Δ ODE are equilateral triangles with BC || DE. If O is the centre of the circle, then find AQ : QC.

○   1 : 2

○   1 : 3

○   1 : $\sqrt{3}$

○ $\sqrt{3}$: 2

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Explanation:

Let r be the radius of the circle.
Δ ABC is an equilateral triangle inscribed

in the circle. ∴ ℓ (AC) = $\dfrac{2}{\sqrt{3}} \times \dfrac{3}{2} \times r = \sqrt{3}r$

Now, m∠QOC = m∠AOC − m∠AOE
= 120° − 30° = 90°
Also, m∠QCO = 30°
∴ Δ QOC is 30°-60°-90° triangle.

∴ ℓ (QC) = $\dfrac{2}{\sqrt{3}} \times \ell(\text{OC}) = \dfrac{2r}{\sqrt{3}}$

∴ ℓ (AQ) : ℓ (QC) = (ℓ (AC) − ℓ (QC))
: ℓ (QC)

= $\left(\sqrt{3}r - \dfrac{2r}{\sqrt{3}} \right) : \dfrac{2r}{\sqrt{3}}$ = $\dfrac{r}{\sqrt{3}} : \dfrac{2r}{\sqrt{3}}$ = 1 : 2.

Hence, [1].

Correct Answer:

⌄ ❯

Time taken by you: **75 secs**

Avg Time taken by all students: **50 secs**

Your Attempt: **Skipped**

% Students got it correct: **32 %**

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Answer the questions independently of each other.

Of the 'x' students who appeared for an examination, 48% of the boys and 74% of the girls passed in all the three subjects. If the total percentage of students who passed in all the three subjects is 61%, then the ratio of the number of boys to the number of girls who appeared for the examination is:

○   2 : 1

◉   1 : 1 ✔

○   1 : 2

○   48 : 74

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

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Explanation: ⌄

Using the alligation rule,

Boys   Girls

48   74

61

13   13
1   :   1

Hence, [2].

Correct Answer: ❯

Time taken by you: **43 secs**

Avg Time taken by all students: **155 secs**

Your Attempt: **Correct**

% Students got it correct: **77 %**

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Answer the questions independently of each other.

There are 19 identical marbles placed in a line. In how many ways can you mark 7 of these marbles so that there are an odd number of marbles between any two of the marbles you marked?

- ○ 120

- ○ 144

- ○ 156

- ○ 168

Explanation: ⌄

Number the marbles 1 through 19 in order.

We note that the condition is equivalent to stipulating that the marbles have either all odd numbers or all even numbers.

There are $^{10}C_7$ ways to choose 7 odd-numbered marbles, and $^9C_7$ ways to choose all even-numbered marbles, so the total number of ways to pick the marbles is $^{10}C_7 + {}^9C_7 = 120 + 36 = 156$

Hence, [3].

Correct Answer: ❯

Time taken by you: **23 secs**

Avg Time taken by all students: **41 secs**

Your Attempt: **Skipped**

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

Answer the questions independently of each other.

If $T = \displaystyle\sum_{n=0}^{20} n!\,[(n + 1)(n + 2) - 1]$, find the remainder when T is divided by 294.

- ○ 3

- ○ 0

- ○ 20

- ○ None of these

Explanation: ∨

T = 0!(1 × 2 − 1) + 1!(2 × 3 − 1) + 2!(3 × 4 − 1) + ... + 20!(21 × 22 − 1)

= 1 + (3! − 1!) + (4! − 2!) + (5! − 3!) + (6! − 4!) + ... + (22! − 20!)

= 1 − 1! − 2! + 21! + 22!

Now, 294 = 2 × 3 × 7^2

⇒ 294 divides 21! and 22!

T = 294m − 2, for some integer m.

The remainder = 294 − 2 = 292

Hence, [4].

Correct Answer: ❯

Time taken by you: **127 secs**

Avg Time taken by all students: **50 secs**

Your Attempt: **Skipped**

% Students got it correct: **28 %**

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Answer the questions independently of each other.

The average of *n* numbers decreases by 1.5 when three-fourth of the numbers are reduced by 5 each and one-fourth of the numbers are increased by *m*. Find the value of *m.*

○   6

◉   7 ❌

○   8

○   9

😞 Oops, you got it wrong!

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Explanation: ⌄

Let the sum of the n numbers be S.

New Sum = S − 0.75n× 5 + 0.25n× m = S − 3.75n + 0.25mn

New Average = $\dfrac{S - 3.75n + 0.25mn}{n}$

As per the question: 3.75 − 0.25m = 1.5 or m = $\dfrac{2.25}{0.25}$ = 9

Hence, [4].

Correct Answer: ❯

Time taken by you: **62 secs**

Avg Time taken by all students: **138 secs**

Your Attempt: **Wrong**

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

Previous   Next   Exit Review

Answer the questions independently of each other.

How many pairs of integers (x, y) exist such that $x^2 + 4y^2 \leq 100$?

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

Explanation:

Both x^2 and $4y^2$ are non-negative and hence the maximum value each of them can take is 100. Now consider $4y^2 \leq 100$. Hence y can range from -5 to +5:
For y = 0, $x^2 \leq 100$ i.e x can range from -10 to +10 (21 values)
For y = ±1, $x^2 \leq 96$ i.e x can range from -9 to +9 (19 values)
For y = ±2, $x^2 \leq 84$ i.e x can range from -9 to +9 (19 values)
For y = ±3, $x^2 \leq 64$ i.e x can range from -8 to +8 (17 values)
For y = ±4, $x^2 \leq 36$ i.e x can range from -6 to +6 (13 values)
For y = ±5, $x^2 \leq 0$ i.e x can take only the value 0 (1 value)
Thus, overall we can have 21 + (19 ×2) + (19×2) + (17×2) + (13×2) + (1×2) = 159 combinations.

Therefore, the required answer is 159.

Correct Answer: ❯

Time taken by you: **75 secs**

Avg Time taken by all students: **37 secs**

Your Attempt: **Skipped**

% Students got it correct: **3 %**

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Answer the questions independently of each other.

A grain merchant purchases two varieties of rice; the price of the first kind being twice that of the second. He mixes the two varieties and sells for Rs.28 per kg making a profit of 25%. If the ratio of the quantity of the first to the second kind of rice is 2 : 3 in the mixture, then the cost of costlier variety is:

○   Rs.8/kg

○   Rs.16/kg

◉   Rs.32/kg✔

○   Rs.64/kg

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

Explanation:

As merchant makes profit of 25%, cost price of mixture = $\dfrac{28}{1.25}$ = Rs.22.4.

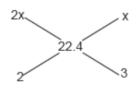As ratio of first kind to the second kind of rice is 2 : 3, in 1 kg. of mixture the quantities

of first and second kind are $\dfrac{2}{5}$ kg and $\dfrac{3}{5}$ kg respectively.

Let P be the price of the costlier rice.

$\therefore$ P $\times \dfrac{2}{5} + \dfrac{P}{2} \times \dfrac{3}{5}$ = 22.4; $\Rightarrow$ P = Rs.32.

Hence, [3].

Alternatively,

Let 2x and x be the cost prices of first kind and second kind of rice respectively.

2x   x

22.4

2   3

$\therefore \dfrac{2x - 22.4}{22.4 - x} = \dfrac{3}{2} \Rightarrow x = 16$

$\therefore$ The costlier variety costed Rs.32.

Correct Answer: ❯

Time taken by you: **95 secs**

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

Your Attempt: **Correct**

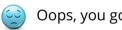% Students got it correct: **73 %**

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Answer the questions independently of each other.

Three trains leave a station at intervals of half an hour in the same direction. The third train after travelling for 1 hour, meets the second train but this was half an hour after it meets the first train. Calculate the speed of the second train(in kmph) relative to the first, if the distance between these meeting points is 30 km.

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

10   kmph

😴 Oops, you got it wrong!

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Explanation:

Distance travelled by the first train in $1\frac{1}{2}$ hours

= Distance travelled by the third train in $\frac{1}{2}$ hour   ... (ii)

The third train covers 30 km in $\frac{1}{2}$ hour.

∴ Speed of the third train = 60 kmph.

Using (i), the second train covers 60 km in $1\frac{1}{2}$ hour.

∴ Speed of the second train = $\frac{60}{1.5}$ = 40 kmph.

Using (ii), the first train covers 30 km in $1\frac{1}{2}$ hour.

∴ Speed of the first train = $\frac{30}{1.5}$ = 20 kmph.

Relative speed of the second train = 40 − 20 = 20 kmph.

Therefore, the required answer is 20.

Correct Answer: ❯

Time taken by you: **138 secs**

Avg Time taken by all students: **57 secs**

Your Attempt: **Wrong**

% Students got it correct: **19 %**

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