Ssc Cgl Tier II Previous Year Question Paper Overview

Here, you can solve all the questions asked in Ssc Cgl Tier II Previous Year Question Paper on 2018-03-09 in the Morning exam. The detailed solutions are also provided for every previous year question and some of these questions can be asked again in your Ssc Cgl Tier II exam. There are 100 questions in the exam and 120 minutes are provided for the Ssc Cgl Tier II exam. The Cutoff of the exam was 150 marks hence you should try to score at least 160 marks.

Ssc Cgl Tier II Previous Year Question Paper : Questions and Solutions

Question 1 :

If then what is the value of ?

Difficulty : Moderate **Average Time : 41 Seconds**

Options :

1. 1143 + 1
2. 1342
3. 1422 + 3
4. 1402

Solution :

The correct option is 4.

$$(\sin 4x)^{4}$$

or, $$(\sin 4x)^{4}$$

or, $$(\sin 4x)^{4}$$

or, $$(\sin 4x)^{4}$$

$$\frac{(\sin 4x)}{4}$$

or,

$$\frac{(\sin 4x)}{4}$$

or,

$$\frac{(\sin 4x)}{4}$$

or, ... (1)

Now,

$$\frac{(\sin 4x)}{4}$$

or, x^2 2x 1 = 2

$$x = \frac{(\sin 4x)}{4}$$

or,

Lets consider positive root value for x.

$$\frac{(\sin 4x)}{4}$$

And,

$$\frac{(\sin 4x)}{4}$$

So,

Now,

$$\frac{(\sin 4x)}{4}$$

$$\frac{(\sin 4x)}{4}$$

or,

$$\frac{(\sin 4x)}{4}$$

or,

$$\frac{(\sin 4x)}{4}$$

or,

D is correct choice.

Question 2 :

How many two digit prime numbers are there between 10 to 100 which remains prime numbers when the order of their

digits is reversed?

Difficulty : Moderate **Average Time : 124 Seconds**

Options :

1. 8
2. 9
3. 10
4. 12

Solution :

The correct option is 2.

9 such prime numbers are there in between 10 and 100.

Those are : 11,13,17,31,37,71,73,79 & 97.

Question 3 :

How many perfect cubes are there between 1 and 100000 which are divisible by 7?

Difficulty : Moderate **Average Time : 31 Seconds**

Options :

1. 5
2. 6
3. 7
4. 15

Solution :

The correct option is 2.

A perfect cube that is divisible by 7 ,when that number contain a cube of 7 or a perfect multiple of 7's cube in following form, $N = 7^3 \times k^3$ (where, k = 1, 2, 3.....)

If we, put k = 6 ,then the number become, $N = 7^3 \times 6^3 = 74088$.

But, if we put k = 7, then the number become, $N = 7^3 \times 7^3 = 117649$.

117649 exceeds 100000, So there are only 6 numbers (when, k =1,2,....,6) present between 1 and 100000 which are divisible by 7.

Question 4 :

If A = 0.142857142857 and B = 0.16666 ....., then what is the value of ?

Difficulty : Moderate

Average Time : 50 Seconds

Options :

1. 10
2. 11
3. 12
4. 13

Solution :

The correct option is 4.

A = 0.142857142857

or, 1000000A = 142857 + 0.142857

or, 1000000A = 142857 + A

$$\text{or, } \frac{(\sin 4x)}{4}$$

$$\text{or, } \frac{(\sin 4x)}{4}$$

Now,

B = 0.16666.....

or, 100B = 16 + 0.6666.....

or, 100B = 16 + P (let say, P = 0.6666....)

So, 10P = 6 + 0.66666.....

or, 10P = 6 + P.

$$\text{or, } \frac{(\sin 4x)}{4}$$

$$\text{So, } 100B = \frac{(\sin 4x)}{4}$$

or,

$\frac{(\sin 4x)}{4}$

$\frac{(\sin 4x)}{4}$

So, .

Question 5 :

If A = 0.abcabc ....., then by what number A should be multiplied so as to get an integeral value?

Difficulty : Moderate **Average Time : 74 Seconds**

Options :

1. 2997
2. 1000
3. 1998
4. Both 2997 and 1998

Solution :

The correct option is 4.

A = 0.abcabc.....

So, 1000A = (abc + 0.abc.....)

or, 1000A = (abc + A)

or, 999A = (abc)

or, $\frac{(\sin 4x)}{4}$.

So, To get an integral value ,we should multiply A by a number which is a multiple of 999.

From choice 2997 and 1998 both are multiple of 999.

Question 6 :

What is the sum of ..... upto 20 terms?

Difficulty : Moderate **Average Time : 46 Seconds**

Options :

$\frac{(\sin 4x)}{4}$

2. $\frac{(\sin 4x)}{4}$

3. $\frac{(\sin 4x)}{4}$

4. $\frac{(\sin 4x)}{4}$

Solution :

The correct option is 1.

$\frac{(\sin 4x)}{4}$ ..... upto 20 terms.

Or, we can rewrite it as :

(1 + 4 + 7 + 10 + ... + 58) + $\frac{(\sin 4x)}{4}$

$= \frac{(\sin 4x)}{4}$

$= \frac{(\sin 4x)}{4}$

$= 590 + \frac{(\sin 4x)}{4}$.

$= 590 + \frac{(\sin 4x)}{4}$.

$= \frac{(\sin 4x)}{4}$.

Question 7 :

If , then what is the value of ?

Difficulty : Moderate | **Average Time : 85 Seconds**

Options :

$\frac{(\sin 4x)}{4}$

2. $\frac{(\sin 4x)}{4}$

3. $\frac{(\sin 4x)}{4}$

4. $\frac{(\sin 4x)}{4}$

Solution :

The correct option is 2.

$\frac{(\sin 4x)}{4}$

$\frac{(\sin 4x)}{4}$

or, $\frac{(\sin 4x)}{4}$

or, k = $\frac{(\sin 4x)}{4}$

or, k = $\frac{(\sin 4x)}{4}$

Question 8 :

Which of the following statement(s) is/are TRUE? I. II.

Difficulty : Moderate **Average Time : 70 Seconds**

Options :

1. only I
2. only II
3. Niether I nor II
4. Both I and II

Solution :

The correct option is 1.

$$\frac{(\sin 4x)}{4}$$

$$= \frac{(\sin 4x)}{4}$$

$$= \frac{(\sin 4x)}{4}$$

= 98.6

(I) is correct choice.

$$\frac{(\sin 4x)}{4}$$

$$= \frac{(\sin 4x)}{4}$$

$$= \frac{(\sin 4x)}{4}$$

= 5.

So, (II) is not correct choice.

A is correct choice.

Question 9 :

Which of the following statement(s) is/are TRUE? I. Highest common factor of (32002 – 1) and (32002 + 1) is 4 II. (484 1) is exactly divisible by 5

Difficulty : Moderate

Average Time : 72 Seconds

Options :

1. only I
2. only II
3. Niether I nor II
4. Both I and II

Solution :

The correct option is 2.

$(3^{2002} - 1)$ gives a lowest factor of $(3 - 1) = 2$.

And $(3^{2002} + 1)$ gives a lowest factor of $(3 + 1) = 4$.

So, they both have HCF of 2.

So, (I) is not correct.

Now,

$\frac{(\sin 4x)}{4}$

So, $\frac{(\sin 4x)}{4}$ = reminder of $(1)^{84}$ = reminder of 1.

So, $\frac{(\sin 4x)}{4}$, it will give a reminder of (1-1) = 0.

So, (II) is correct .

Question 10 :

Which of the following statement(s) is/are TRUE? I. 199 + 299 + 399 + 499 + 599 is exactly divisible by 5 II. 3111 > 1714

Difficulty : Moderate **Average Time : 65 Seconds**

Options :

1. only I
2. only II
3. Niether I nor II
4. Both I and II

Solution :

The correct option is 1.

$\frac{(\sin 4x)}{4}$ = reminder of (1) .

$\frac{(\sin 4x)}{4}$ = reminder of $((1)^{49} \times 2)$ reminder of 3.

$\frac{(\sin 4x)}{4}$ = reminder of (3) = reminder of 2.

$\frac{(\sin 4x)}{4}$ = reminder of 4.

And, $\frac{(\sin 4x)}{4}$ = reminder of 0.

So, reminder of $\frac{(\sin 4x)}{4}$ = 0.

So, (I) is true.

Now, we can say that :

$34^{11} > 31^{11}$.

or, $(2 \times 17)^{11} > 31^{11}$.

or, $17^{11} \times 2^4 \times 2^4 \times 2^3 > 31^{11}$.

Now, $17^{11} \times 17 \times 17 \times 17 > 17^{11} \times 2^4 \times 2^4 \times 2^3$.

So, $17^{11} \times 17 \times 17 \times 17 > 31^{11}$.

or, $17^{14} > 31^{11}$.

So, (II) is not correct.

A is correct choice.

Question 11 :

N = 248 1 and N are exactly divisible by two numbers between 60 and 70. What is the sum of those two numbers?

Difficulty : Moderate

Average Time : 99 Seconds

Options :

1. 128
2. 256
3. 64
4. 512

Solution :

The correct option is 1.

2^{48} 1

= $(2^{24} + 1)$ $(2^{24}$ 1)

= $(2^{24} + 1)$ $(2^{12} + 1)$ $(2^{12}$ 1).

= $(2^{24} + 1)$ $(2^{12} + 1)$ $(2^{6} + 1)$ $(2^{6}$ 1) .

So, Those two numbers are $(2^{6} + 1)$ and $(2^{6}$ 1).

or, 65 and 63.

Sum of these numbers = 65 + 63 = 128.

A is correct choice.

Question 12 :

Which of the following statement(s) is/are TRUE? I. II.

Difficulty : Moderate **Average Time : 44 Seconds**

Options :

1. only I
2. only II
3. Niether I nor II
4. Both I and II

Solution :

The correct option is 2.

$(\sin 4x)$
4

= 25 + 6 + 32

= 63.

So, (I) is not correct.

$(\sin 4x)$
4

$\frac{(\sin 4x)}{4}$

= 3 + 2.

= 5.

So, (II) is correct choice.

B is correct choice.

Question 13 :

Which of the following statement(s) is/are TRUE? I. 1 + 2 + 3 + 4 + 5 + 6 > 10 II. (10) + (12) + (14) > 3(12)

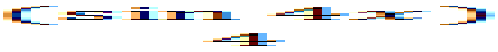
Difficulty : Moderate **Average Time : 54 Seconds**

Options :

1. only I
2. only II
3. Niether I nor II
4. Both I and II

Solution :

The correct option is 1.



it means that (I) is correct.

And, $\frac{(\sin 4x)}{4}$

but, $\frac{(\sin 4x)}{4}$

So, (II) is not correct.

So, A is correct choice.

Question 14 :

If y2 = y + 7, then what is the value of y3 ?

Difficulty : Moderate **Average Time : 53 Seconds**

Options :

8y + 7

2. y + 14
3. y + 2
4. 4y + 7

Solution :

The correct option is 1.

$y^2 = y + 7$.

or, $y^3 = y (y + 7)$.

or, $y^3 = (y^2 + 7y)$.

Now, given that $y^2 = y + 7$.

So, $y^3 = y + 7 + 7y$.

or, $y^3 = 7 + 8y$.

A is correct choice.

Question 15 :

If f(x) = (x 2)(x2 + Px + 4) and (x 3) is a factor of f(x), then what is the value of P?

Difficulty : Moderate | **Average Time : 46 Seconds**

Options :

1. 4
2. -4
3. $-\frac{(\sin 4x)}{4}$
4. $\frac{(\sin 4x)}{4}$

Solution :

The correct option is 3.

If f(x) = (x 2) (x^2 + Px + 4) and (x 3) is a factor of f(x) Let say, (x-m) is another factor of f(x).

So, (x 3) (x m) = x^2 + Px + 4

or, $(x^2 \ 3x \ mx + 3m) = (x^2 + Px + 4)$

or, $x(3 + m) + 3m = Px + 4$.

So, by comparing both side , we can say that :

$(3 + m) = P$ and $3m = 4$.

or, $m = \frac{4}{3}$

So, $P = \frac{(\sin 4x)}{4}$

C is correct choice.

Question 16 :

x, y and z all are positive number. If $3x > 9y$ and $2y > 4z$, then which of the following is TRUE?

Difficulty : Moderate **Average Time : 78 Seconds**

Options :

1. $x > y > z$
2. $x > z > y$
3. $z > y > x$
4. $y > x > z$

Solution :

The correct option is 1.

if we consider : $3^x > 9^y$, then x must greater than y and x must greater than 2.

Let say, $x = 7$ and $y = 3$, it implies that $3^5 = 243 > 9^2 = 81$.

again, if we consider : $2^y > 4^z$ then y must greater than z and y must greater than 2.

Let say, z=1, So, y=3 is greater than z.

So, it must be : $x > y > z$.

A is correct choice.

Question 17 :

If x = , which of the following has the largest values?

Difficulty : Moderate

Average Time : 57 Seconds

Options :

1. $\frac{(\sin 4x)}{4}$
2. x^2
3. $\frac{(\sin 4x)}{4}$
4. $\frac{(\sin 4x)}{4}$

Solution :

The correct option is 4.

$x = \frac{(\sin 4x)}{4}$

So,

$\frac{(\sin 4x)}{4} = 0.0625$

$x^2 = \frac{(\sin 4x)}{4} = 0.015625$

0.015625

$\frac{(\sin 4x)}{4} = 0.3535$

$\frac{(\sin 4x)}{4} = 8$

So $\frac{(\sin 4x)}{4}$ is largest

D is correct choice.

Question 18 :

If and , then which of the following can be the value of X + Y.

Difficulty : Moderate

Average Time : 78 Seconds

Options :

$(\sin 4x)^4$

2. $(\sin 4x)^4$

3. $(\sin 4x)^4$

4. $(\sin 4x)^4$

Solution :

The correct option is 2.

$(\sin 4x)^4$

or, $(\sin 4x)^4$

or, X (2 + X) = 1 + X.

or, $2X + X^2 = 1 + X$.

or, $X^2 + X\ \ 1 = 0$.

or, $(\sin 4x)^4$

And,

$(\sin 4x)^4$

or, $(\sin 4x)^4$

or, Y (3 + 2Y) = 2 + 2Y

or, $3Y + 2Y^2 = 2 + Y$.

or, $2Y^2 + Y\ \ 2 = 0$

or, $(\sin 4x)^4$

So, X + Y = $\frac{(\sin 4x)}{4}$.(by taking positive roots.)

B is correct choice.

Question 19 :

If P = 229 × 321 × 58, Q = 227 × 321 × 58, R = 226 × 322 × 58 and S = 225 × 322 × 59, then which of the following is TRUE?

Difficulty : Moderate **Average Time : 100 Seconds**

Options :

1. P > S > R > Q
2. S > P > R > Q
3. P > R > S > Q
4. S > P > Q > R

Solution :

The correct option is 1.

Let say, M = $2^{25} \times 3^{21} \times 5^{8}$

So, by rearranging above equation ,we can say that :

P = $2^4 \times M = 16M$.

Q = $2^2 \times M = 4M$.

R = 2 × 3 × M = 6M.

S = 3 × 5 × M = 15M.

So, P > S > R > Q.

A is correct choice.

Question 20 :

If A = 125 and B = 8, then what is the value of (A + B)3 (A B)3 6B(A2 B2) ?

Difficulty : Moderate **Average Time : 56 Seconds**

Options :

1. 4096
2. 4608
3. 4224
4. 3456

Solution :

The correct option is 1.

$(A + B)^3$ $(A\ B)^3$ $6B(A^2\ B^2)$

$= (A + B\ \ A + B)^3 + 3\ (A + B)\ (A\ \ B)\ (A + B\ \ A + B)\ \ 6B\ (A^2\ \ B2).$

$= (2B)^3 + 6\ (A2\ \ B2)^B\ \ 6B\ (A^2\ \ B^2).$

$= (2 \times 8)^3 = 4096.$

A is correct choice.

Question 21 :

If Xyz = 1, Yzz = 125 and Zyz = 243 (X, Y and Z are natural numbers), then what is the value of 9X + 10Y 18Z?

Difficulty : Moderate | **Average Time : 51 Seconds**

Options :

1. 18
2. 15
3. 12
4. 5

Solution :

The correct option is 4.

$Xy^Z = 1$ this equation derives that 1 to the power of any thing is always 1.

So, X = 1.

Now,

$Yz^X = x\ 125$ implies that $Y^Z = 5^3$

And,

$Z^Y = 243$ implies that $Z^Y = 3^5$.

So, Y = 5 and Z = 3.

So, 9X + 10Y 18Z = 9 × 1 + 10 × 5 18 × 3 = 59 54 = 5.

D is correct choice.

Question 22 :

If 3x + 6y + 9z = , 6x + 9y + 3z = and 18x + 27y z = , then what is the value of 75x + 113y?

Difficulty : Moderate **Average Time : 53 Seconds**

Options :

1. $\frac{(\sin 4x)}{4}$
2. $\frac{(\sin 4x)}{4}$
3. $\frac{(\sin 4x)}{4}$
4. $\frac{(\sin 4x)}{4}$

Solution :

The correct option is 1.

3x + 6y + 9z = $\frac{(\sin 4x)}{4}$.

or, x + 2y + 3z = $\frac{(\sin 4x)}{4}$ ..... (1)

6x + 9y + 3z = $\frac{(\sin 4x)}{4}$

or, 2x + 3y + z = $\frac{(\sin 4x)}{4}$ ..... (2)

18x + 27y z = $\frac{(\sin 4x)}{4}$

or, 72x + 108y 4z =

$(\sin 4x)$
4 ..... (3)

By adding (1), (2) & (3) :

75x + 113y = $(\sin 4x)$
4

A is correct choice.

Question 23 :

If sides of a triangle are 12 cm, 15 cm and 21 cm, then what is the in radius (in cm) of the triangle?

Difficulty : Moderate **Average Time : 88 Seconds**

Options :

1. $(\sin 4x)$
4
2. $(\sin 4x)$
4
3. $(\sin 4x)$
4
4. $(\sin 4x)$
4

Solution :

The correct answer is Option 3 i.e. $(\sin 4x)$
4

Semi perimeter, $(\sin 4x)$
4

Area,

So,

Inradius, $(\sin 4x)$
4

Question 24 :

In a triangle ABC, AB = 12, BC = 18 and AC = 15. The medians AX and BY intersect sides BC and AC at X and Y respectively. If AX and BX intersect each other at O, then what is the value of OX?

Difficulty : Moderate

Average Time : 69 Seconds

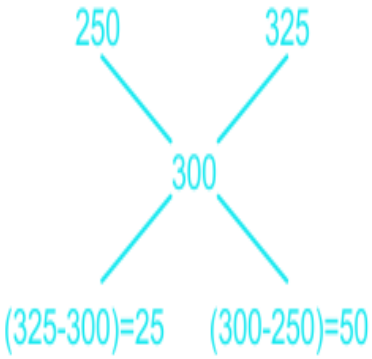
Options :

1. $\frac{(\sin 4x)}{4}$
2. $\frac{(\sin 4x)}{4}$
3. $\frac{(\sin 4x)}{4}$
4. $\frac{(\sin 4x)}{4}$

Solution :

The correct answer is Option 4 i.e. 23/2

Application



Length of median AX

$= 1/2 \times [2 \times (AB^2 + AC^2) - BC^2]$

$= 1/2 \times [2 \times (12^2 + 15^2) - 18^2]$

$= 1/2 \times [2 \times 369 - 324]$

$= 1/2 \times 414$

$= 3/2 \times 23$

We know that O is the centroid of the triangle and it divides the median in the ratio 2 : 1

Hence,

$OX = 1/3 \times AX = 1/3 \times 3/2 \times 23 = 23/2$

Question 25 :

In a triangle PQR, PX bisects QR. PX is the angle bisector of angle P. If PQ =12 cm and QX = 3 cm, then what is the area (in cm) of triangle PQR?

Difficulty : Moderate

Average Time : 160 Seconds

Options :

1. $\frac{(\sin 4x)}{4}$
2. $\frac{(\sin 4x)}{4}$

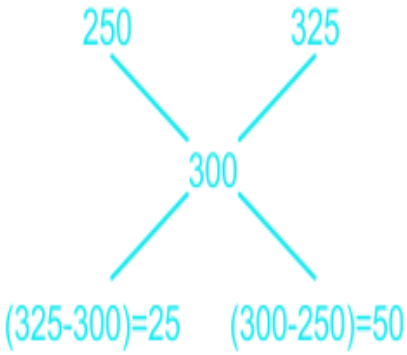
$\frac{(\sin 4x)}{4}$

4. $\frac{(\sin 4x)}{4}$

Solution :

The correct answer is **option 3** i.e. **915**

Application



PX bisects QR. PX is the angle bisector of angle P.

So,

PR will be equal PQ.

So,

PR = PQ = 12 cm

Hence,

PQ = 12 cm, PR = 12 cm and QR = 6 cm

So,

s = [12 + 12 + 6]/2 = 15

Area of the triangle

= [15 × (15 – 12) × (15 – 12) × (15 – 6)]

= [15 × 3 × 3 × 9]

= 915 cm

Question 26 :

In the given figure PT : TS : SR = 2 : 1 : 1 and SU is parallel to TQ. If RU = 10 cm. RS = 8 cm and SU = 6 cm, then what is the value (in cm) of PQ?

Difficulty : Moderate

Average Time : 101 Seconds

Options :

12

2. 10
3. 20
4. 30

Solution :

The correct answer is **Option 3** i.e. **20**

By BPT theorem:

RU/QU = RS/ST

10/QU = 1/1

QU = 10 cm

QR = QU + UR = 20 cm

RT = SR + ST = 8 + 8 = 16 cm [âˆµ ST = SR = 8 cm]

By BPT theorem, RS/RT = SU/TQ

½ = 6/TQ

TQ = 12 cm

In triangle TQR, TQ = 12 cm, QR = 20 cm and TR = 16 cm

QTR = 90° [âˆµ The sides forms Pythagorean triplet]

Triangle PQT is a right triangle

QT = 12 cm and PT = 2 × SR = 16 cm

PQ = $(QT^2 + PT^2)$ = 20 cm

Question 27 :

PQ and RS are two chords of a circle. PQ = 20 cm, RS = 48 cm and PQ is parallel to RS. If the distance between PQ and RS is 34 cm, then what is the area (in cm) of the circle?

Difficulty : Moderate | **Average Time : 63 Seconds**

Options :

1. 729

900

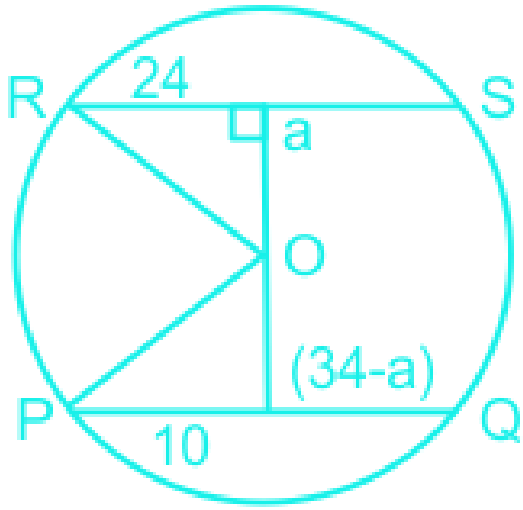
3. 676

4. 784

Solution :

The correct answer is **Option 3** i.e. **676**

Application



In the figure:

RO = PO (Radius of circle)

$(24^2 + a^2) = [10^2 + (34 - a)^2]$

$576 + a^2 = 100 + (34 - a)^2$

$576 + a^2 = 100 + 1156 + a^2 - 68a$

$68a = 680$

$a = 10$

Hence,

Radius = $(24^2 + 10^2) = 26$ cm

And

Area of the circle = $\times (26)^2 = 676$

Question 28 :

Centre of two concentric circles is O. The areas of two circles is 616 cm2 and 154 cm2 respectively. A tangent is drawn through point A on the larger circle to the smaller circle. This tangent touches small circle at B and intersects larger circle at C. What is the length (in cm) of AC?

Difficulty : Moderate

Average Time : 88 Seconds

Options :

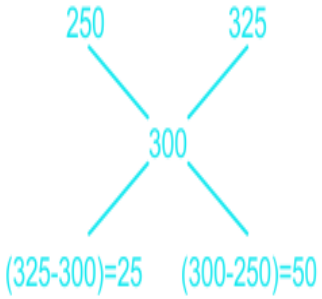
123

2. 143
3. 106
4. 182

Solution :

The correct answer is **option 2** i.e. **143**

Application



The areas of two circles is 616 cm^2 and 154 cm^2 respectively.

Radius of two circles are AO and OB.

So,

$22/7 \times (AO)^2 = 616$

AO = 14 cm

And

$22/7 \times (BO)^2 = 154$

BO = 7 cm

Triangle ABO is a right angle triangle (Since AB is the tangent to the circle);

$(AO)^2 = AB^2 + OB^2$

$AB^2 = 14^2 - 7^2$

$AB^2 = 147$

AB = 73 cm

And

AC = 2AB = 143 cm

Question 29 :

PA and PB are two tangents drawn to two circles of radius 3 cm and 5 cm respectively. PA touches the smaller and larger circles at points X and Y respectively. PB touches the smaller and large circle at point U and V respectively. The centres of the smaller and larger circles O and N respectively. If ON =12 cm, then what is the value (in cm) of PY?

Difficulty : Moderate

Average Time : 103 Seconds

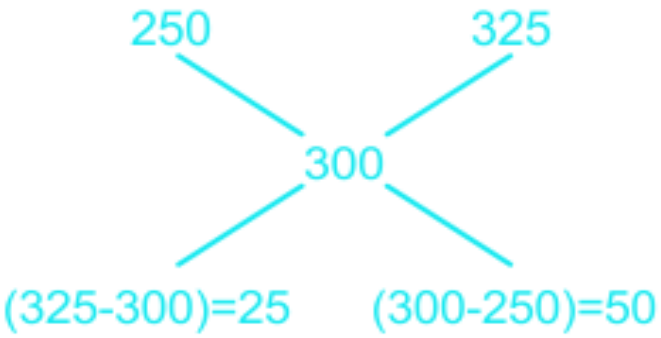
Options :

1. 535
2. 715
3. 915
4. 125

Solution :

The correct answer is Option 1 i.e. 535

Application



In the figure;

Let PO = a cm

Triangle POX and triangle PNY are similar.

PO/PN = XO/YN

a/(a + 12) = 3/5

5a = 3a + 36

a = 18

PN = 18 + 12 = 30 cm

Triangle PNY is a right angle triangle (Since PY is the tangent to the circle);

$(PN)^2 = PY^2 + YN^2$

$PY^2 = 30^2 – 5^2$

$PY^2 = 875$

PY = 535 cm

Question 30 :

XR is a tangent to the circle. O is the centre of the circle. If XRP = 120º, then what is the value (in degrees) of QOR?

Difficulty : Moderate

Average Time : 160 Seconds

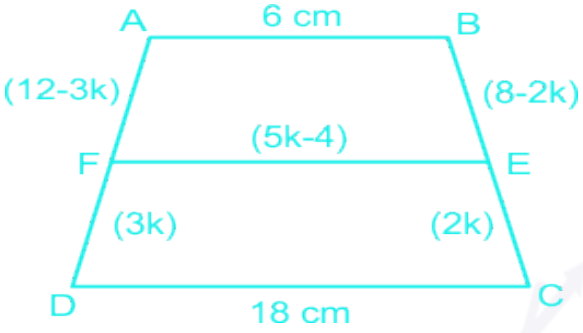
Options :

80°

2. 70°
3. 60°
4. 40°

Solution :

The correct answer is **Option 3** i.e. **60**



XRO = 90°

ORP = XRP – XRO

= 120 – 90 = 30°

In triangle ORP

OR = OP = radius of the circle

OPR = ORP = 30°

QOR = OPR + ORP (Exterior angle = Sum of other two interior angles)

= 30 + 30 = 60°

Question 31 :

O is the centre of the circle. A tangent is drawn which touches the circle at C. If AOC = 80º, then what is the value (in degrees) of BCX?

Difficulty : Moderate | **Average Time : 58 Seconds**

Options :

1. 80

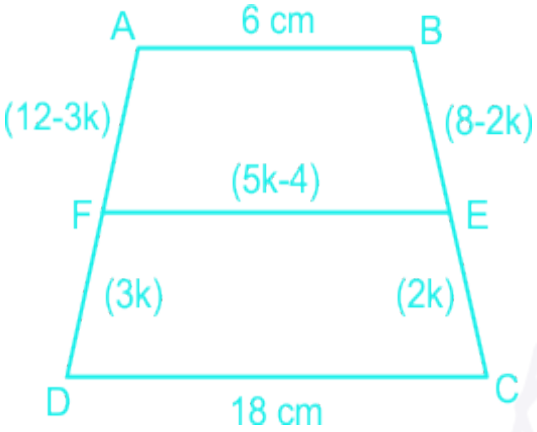
30

3. 40

4. 50

Solution :

The correct answer is **Option 4** i.e. **50**



AOC = 80° [Given]

AC is a chord to the circle:

ABC = 1/2 × AOC = 1/2 × 80 = 40°

In triangle OBC:

OB = OC = radius of the circle

OBC = OCB = 40°

XCO = 90° [Tangent is perpendicular to the radius]

BCX = XCO – OCB = 90 – 40 = 50°

Question 32 :

The distance between the centres of two circles is 24 cm. If the radius of the two circles are 4 cm and 8 cm, then what is the sum of the lengths (in cm) of the direct common tangent and the transverse common tangent?

Difficulty : Moderate | **Average Time : 62 Seconds**

Options :

1. 4(3 + 335)

4(435 + 33)

3. 4(35 + 33)
4. 43(35 + 33)

Solution :

The correct answer is **Option 3** i.e. **4(35 + 33)**

Length of the direct common tangent

$= [d^2 – (r_1 – r_2)^2]$

$= [24^2 – (8 – 4)^2]$

$= [576 – 16]$

$= 560$

$= 435$ cm

and Length of the transverse common tangent

$= [d^2 – (r_1 + r_2)^2]$

$= [24^2 – (8 + 4)^2]$

$= [576 – 144]$

$= 432$

$= 123$ cm

Hence, Sum = 435 + 123

= 4(35 + 33) cm

Question 33 :

ABC is triangle. AB = 10 cm and BC = 16 cm. AD = 8 cm and is perpendicular to side BC. What is the length (in cm) of side AC?

Difficulty : Moderate

Average Time : 61 Seconds

Options :

1. 441
2. 241

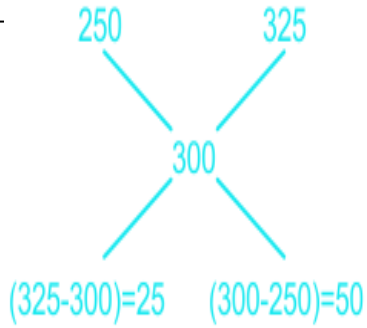
282

4. 482

Solution :

The correct answer is **option 2** i.e. **241**

Application



In the figure:

$10^2 = x^2 + 8^2$

$100 = x^2 + 64$

$x^2 = 36$

$x = 6$

And

$a^2 = (16 – x)^2 + 64$

$a^2 = 100 + 64$

$a = 241$ cm

Question 34 :

An equilateral triangle of side 12 cm is drawn. What is the area (in cm2) of the largest square which can be drawn inside it?

Difficulty : Moderate

Average Time : 140 Seconds

Options :

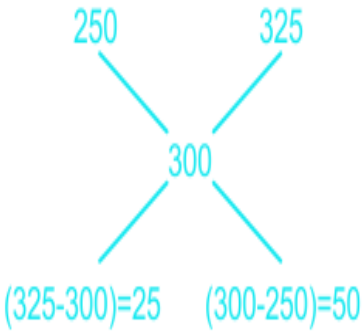
1512 8643

2. 3024 17283
3. 3024 + 17283
4. 1512 + 8643

Solution :

The correct answer is **option 2** i.e. **3024 17283**

Application



Side of the equilateral triangle ABC = 12 cm

In the figure:

ACB = 60°

So,

RC = 2/3 × a

So,

AC = AR + RC = a + 2a/3

a(1 + 2/3) = 12

a(3 + 2) = 123

a = 123/(2 + 3)

a = 123 (2 – 3) = (243 – 36) cm

Hence,

Area of the square = $(243 – 36)^2$

= 1728 + 1296 – 17283

= 3024 17283

Question 35 :

PQRS is a rectangle. The ratio of the sides PQ and QR is 3 :1. If the length of the diagonal PR is 10 cm, then what is the area (in cm2) of the rectangle?

Difficulty : Moderate

Average Time : 108 Seconds

Options :

15

2. 30

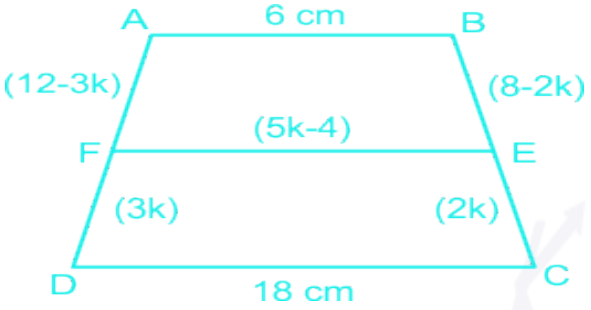
3. 75

4. 20

Solution :

The correct answer is Option 3 i.e. 75

Let say, PQ = 3k and QR = k.



So,

$(3k)^2 + k^2 = 10^2$

$k^2 = 5^2$

$k = 5$

So, PQ = 15 cm and QR = 5 cm.

So,

Area = PQ × QR = 15 × 5 = 75 cm^2

Question 36 :

ABCDEF is a regular hexagon. What is the ratio of the area of triangle ACE and area of triangle AEF?

Difficulty : Moderate

Average Time : 59 Seconds

Options :

1. 6 : 1

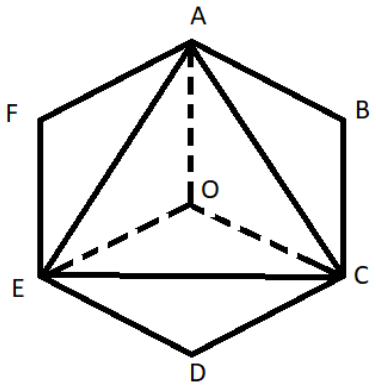
2. 4 : 1

3 : 1

4. 5 : 1

Solution :

The correct answer is **Option 3** i.e. **3 : 1**

Understanding	Application
ABCDEF is a regular hexagon. We know that: In a regular hexagon, there are 6 equilateral triangles.	 As shown in the figure: Area of triangle AEC = 3 × Area of triangle AOE And Area of triangle AOE = Area of triangle AEF Now, Area of triangle AEC = 3 × Area of triangle AEF So, Area of triangle AEC : Area of triangle AEF = 3 : 1

Question 37 :

ABCD is a trapezium. Sides AB and CD are parallel to each other. AB = 6 cm, CD = 18 cm, BC = 8 cm and AD = 12 cm. A line parallel to AB divides the trapezium in two parts of equal perimeter. This line cuts BC at E and AD at F. If BE/EC = AF/FD then what is the value of BE/EC?

Difficulty : Moderate

Average Time : 163 Seconds

Options :

1. $\frac{(\sin 4x)}{4}$
2. 2
3. 4
4. $\frac{(\sin 4x)}{4}$

Solution :

The correct answer is Option 3 i.e. 4

Given,

BE/EC = AF/FD

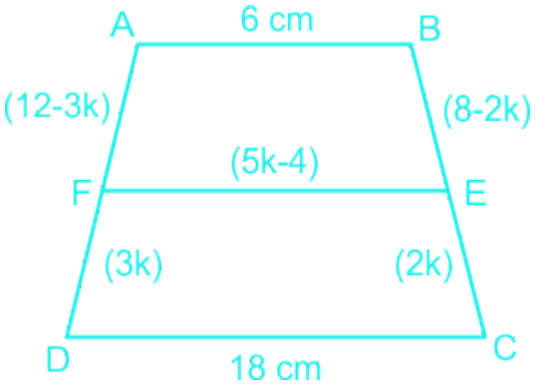
So,

(8 - EC)/EC = (12 - FD)FD (Given, BC = 8 and AD = 12)

So,

EC/FD = 8/12 = 2/3

Let say, EC = 2k and FD = 3k.



So, AF = (12 - 3k) and BE = (8 - 2k) .

According to question :

Perimeter of ABEF = Perimeter of FECD = (6 + 8 + 18 + 12)/2 = 22 cm.

So,

FE + 3k + 2k + 18 = 22.

FE + 12 3k + 8 2k + 6 = 22.

FE = (5k 4).

Again,

FE + CD + FD + EC = 22.

3k + 2k + 18 + 5k 4 = 22.

10k = 8.

k = 8/10 = 4/5

So,

BE/EC = (8 - 2k)/2k = (8 - 8/5)/(8/5) = 4

Question 38 :

A rectangular sheet of length 42 cm and breadth 14 cm is cut from a circular sheet. What is the minimum area (in cm2) of circular sheet?

Difficulty : Moderate | **Average Time : 83 Seconds**

Options :

1. 3080
2. 1540
3. 770
4. 1030

Solution :

The correct answer is Option 2 i.e. 1540

Let ABCD is a rectangular sheet of paper which has cut from a circular sheet of paper.

AB = CD = 42 cms. and BC = AD = 14 cms.

Thus, diagonal AC or BD will be the diameter of the circle.

In right angled triangle ABC :-

$AC^2 = AB^2 + BC^2$

$(2r)^2 = (42)^2 + (14)^2$

$4r^2 = (14^2)(3^2) + (14^2)$.

$4r^2 = (14^2)(9 + 1) = 196 \times 10$.

$r^2 = 49 \times 10 = 490$ ..... (1)

Minimum area of circular sheet of paper = r^2

$= (22/7) \times 490 = 1540\ cm^2$

Question 39 :

An equilateral triangle ABC is inscribed in a circle as shown in figure. A square of largest possible area is made inside this triangle as shown. Another circle made inscribing the square. What is the ratio of area of large circle and the small circle?

Difficulty : Moderate **Average Time : 75 Seconds**

Options :

1. (15 123) : 1
2. (63 363) : 4
3. (7 43) : 8
4. (18 3) : 2

Solution :

The correct answer is **Option 2** i.e. **(63 363) : 4**

Let the side of the equilateral triangle be A unit, and the radius of the bigger circle be R

Let the side of the square be 'a' unit, then the radius of the inner circle will be a/2 units (As DECG is a square)

Now, in DBG,

tan60° = DG/BG

3 = a/BG,

BG = a/3

Similarly the side FC = a/3

Now the side of the equilateral triangle(A) will be given by the sum of BG + GF + FC

Side A = a/3 + a/3 + a

(3a + 2a)/3 ----(1)

Now by using the above-mentioned formula:

The value of the circumradius of the ABC is = A/3

The radius of the bigger circle R

(3a + 2a)/3 × 3 = (3a + 2a)/3 ----(2)

Now by using the above-mentioned formula:

The area of the bigger circle is R^2 and of the smaller is $(a/2)^2$

The ratio of areas of both the circles:

$R^2 : (a/2)^2$

$4R^2 : a^2 = 4\{a(3 + 2)/3\}^2/a^2 = 4(7 + 43)/9$

By rationalising:

{(7 + 43)(7 – 43) × 4}/9(7 – 43) = 4/(63 – 363)

Question 40 :

A prism has a regular hexagonal base whose side is 12 cm. The height of the prism is 24 cm. It is cut into 4 equal parts by 2 perpendicular cuts as shown in figure. What is the sum of the total surface area of the four parts ?

Difficulty : Moderate **Average Time : 107 Seconds**

Options :

1. 1728 + 4323
2. 2880 + 10083
3. 2880 + 4323
4. 1728 + 10083

Solution :

The correct option is 2.

Question 41 :

Four identical cones each of radius 10.5 cm and height 14 cm are cut from a cuboid of dimensions 30cm × 32cm × 40cm

(base of each cone lies on the surface of cuboid). What is the total surface area (in cm) of the remaining solid?

Difficulty : Moderate **Average Time : 37 Seconds**

Options :

1. 6528
2. 7804
3. 5926
4. 6824

Solution :

The correct option is 2.

The surface S_{cone} of a cone can be divided into two parts, the slanting surface S_{slant} and the base disc surface S_{disc}.

$S_{cone} = S_{slant} + S_{cone}$.

When you cut out a cone from a cuboid, assuming you cut it out such that the base disc of the cone coincides with one of the surfaces of the cuboid, the surface of the cuboid loses the area coinciding with the base disc, but gains the slanting area. If you do this four times, the final surface area of the remaining solid is

$S_{cuboid} + 4S_{slant}$ $4S_{disc}$.

So, $4S_{slant}$ = .

And, $4S_{disc}$ = = $4r^2 = 4 \times \frac{(\sin 4x)}{4} \times 10.5^2 = 1386$.

And, $S_{coboid} = 2 (lb + lh + bh) = 2 (30 \times 40 + 30 \times 32 + 32 \times 40) = 6880$.

So, required surface area = 6880 + 2310 1386 = 7804 cm^2.

B is correct choice.

Question 42 :

A hollow cylinder of thickness 0.7 cm and height 15 cm is made of iron. If inner radius of cylinder is 3.5 cm, then what is the total surface area (in cm2) of the hollow cylinder?

Difficulty : Moderate **Average Time : 92 Seconds**

Options :

1. 812.12

768.42

3. 759.88

4. 828.42

Solution :

The correct answer is **option 3** i.e. **759.88**

inner radius, r2 = 3.5 cm. and outer radius, r1 = (0.7 + 3.5) cm = 4.2 cm.

Later surface area = 2h (r1 + r2).

Total surface area = 2h (r1 + r2) + 2 $\dfrac{(\sin 4x)}{4}$

= 2 × \(\dfrac{22}{7}\) 15 (3.5 + 4.2) + 2 × \(\dfrac{22}{7}\) (4.2^2 3.5^2).

= 726 + 33.88

= 759.88 cm.

C is correct choice.

Short Trick:

In this question answer will be multiple of 11. So check the option which will be divisible by 11.

Only option 3 is divisible by 11.

Question 43 :

A hollow cylinder has height 90 cm and the outer curved surface area is 11880 cm2. It can hold 55440 cm3 of air inside it. What is the thickness (in cm) of this cylinder?

Difficulty : Moderate

Average Time : 68 Seconds

Options :

1. 10.5

2. 14

3. 7

4. 3.5

Solution :

The correct answer is **option 3** i.e. **7**

Let say, radius of inside of cylinder = r cm.

So, $r^2h = 55440$.

or, r = 14. (h = 90 cm)

Let say, Curved surface area = 2h (R + r)

So, 2h (R + r) = 11880.

or, (R + r) = $\frac{(\sin 4x)}{4} = \frac{(\sin 4x)}{4} = 21$

So, R = 21 r = 21 14 = 7.

Thickness of cylinder is 7 cm.

C is correct choice.

Question 44 :

A hollow sphere is melted to form small identical! hollow spheres. Inner and outer radius of the bigger sphere are 4 cm and 6 cm respectively. If inner and outer radii of the smaller sphere are 2 cm and 3 cm respectively, then how many smaller spheres can be formed?

Difficulty : Moderate

Average Time : 69 Seconds

Options :

1. 4
2. 8
3. 6
4. 12

Solution :

The correct answer is **option 2** i.e. **8**

Let say, n number of sphere can be made.

So, According to question,

\(\dfrac{4}{3\pi}\)($R^3 - r^3$) = n ×\(\dfrac{4}{3\pi}\)\((R^3_1 - r^3_1)\)

or, \(\dfrac{4}{3\pi}\)($6^3 - 4^3$) = n × \(\dfrac{4}{3\pi}\)($3^3 - 2^3$)

or, (216 64) = n × (27 8).

or, n = \(\dfrac{152}{19}\) = 8.

Question 45 :

A hemispherical dome is open from its base and is made of iron. Thickness of dome is 3.5 meter. Total cost of painting domes outer curved surface is Rs 2464. If the rate of painting is Rs 8 per meter2, then what is the volume (in meter3) of iron used in making dome?

Difficulty : Moderate

Average Time : 64 Seconds

Options :

1. 656.42
2. 614.21
3. 524.46
4. 628.83

Solution :

The correct option is 4.

Total cost of painting domes outer curved surface is Rs 2464.

And the rate of painting is Rs 8 per meter^2.

So, Total curved surface area = $\frac{(\sin 4x)}{4}$ m^2 = 308 m^2.

So, 2r^2 = 308.

or, r^2 = $\frac{(\sin 4x)}{4}$ = 49.0197.

or, r = 7.0014.

So, Total Volume = $\frac{(\sin 4x)}{4}$ r^3 = $\frac{(\sin 4x)}{4}$ × 7.0014^3 = 718.8086 m^3.

Volume of inside = $\frac{(\sin 4x)}{4}$ × 3.5^3 = 89.7971 m^3.

So, Volume of iron = (718.80 89.7971) m3 â‰ƒ 629 m3.

Question 46 :

A solid cuboid has dimensions 14cm × 18cm × 24cm. A hemisphere of radius 3.5 cm is cut from the centre of each face of cuboid. What is the total surface area (in cm2) of the remaining solid?

Difficulty : Moderate

Average Time : 84 Seconds

Options :

1. 1902
2. 1809
3. 1706
4. 2271

Solution :

The correct option is 4.

Total surface area of the remaining solid = Total surface area of cuboid + 6 × CSA of hemisphere - 6 × Area of the circular base

$2(lb + bh + lh) + 6 \times 2R^2 \;\; 6 \times \;\; R^2 = 2(lb + bh + lh) + 6 \times R^2$.

$2 \times (14 \times 18 + 18 \times 24 + 24 \times 14) + 6 \times 22/7 \times 3.5 \times 3.5$

$2 \times 12 \times (7 \times 3 + 18 \times 2 + 2 \times 14) + 6 \times 22 \times 0.5 \times 3.5$

$24 \times 85 + 231 = 2271 cm^2$

Question 47 :

A right pyramid with square base has side of base 12 cm and height 40 cm. It is kept on its base. It is cut into 4 parts of equal heights by 3 cuts parallel to its base. What is the ratio of volume of the four parts?

Difficulty : Moderate

Average Time : 56 Seconds

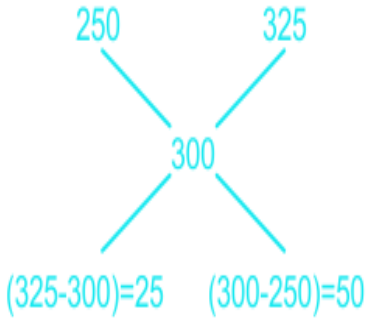
Options :

1. 1 : 8 : 27 : 70
2. 1 : 7 : 19 : 47
3. 1 : 7 : 19 : 37
4. 1 : 8 : 27 : 64

Solution :

The correct answer is Option 3 i.e. 1 : 7 : 19 : 37

Application



The ratio of volumes of 4 different pyramids AXY, APQ, AST and ALM will be proportional to the cube of heights

$= 3^3 : 6^3 : 9^3 : 12^3$

$= 1 : 8 : 27 : 64$

Hence,

Ratio of volumes of 4 parts

$= 1 : (8 – 1) : (27 – 8) : (64 – 27)$

$= 1 : 7 : 19 : 37$

Question 48 :

What is the value of $2 \sin 15^\circ \cos 15^\circ – 4 \sin^3 15^\circ \cos 15^\circ$?

Difficulty : Moderate

Average Time : 107 Seconds

Options :

1. 3/3
2. 3/2
3. 3/4
4. 1/2

Solution :

The correct answer is **Option 3** i.e. **3/4**

Application

$2 \sin 15° \cos 15° - 4 \sin^3 15° \cos 15°$

$= \sin 30° - 2\sin 30° \sin^2 15°$

$= \sin 30° (1 - 2\sin^2 15°)$

$= \sin 30° \cos 30°$

$= 1/2 \times 3/2$

$= 3/4$

Question 49 :

If sin x = 1/2 and sin y = 2/3, then what is the value of

Difficulty : Moderate **Average Time : 116 Seconds**

Options :

1. $\frac{(\sin 4x)}{4}$
2. $\frac{(\sin 4x)}{4}$
3. $\frac{(\sin 4x)}{4}$
4. $\frac{(\sin 4x)}{4}$

Solution :

The correct answer is Option 1 i.e. 27/20

Understanding	Application
sin x = 1/2 and sin y = 2/3	So, cos x = 3/2 and cos y = 5/3

	Now, $[(6\cos^2 x - 4\cos^4 x)/(18\cos^2 y - 27\cos^4 y)]$ $= [(6 \times 3/4 - 4 \times 9/16)/(18 \times 5/9 - 27 \times 25/91)]$ $= [(9/2 - 9/4)/(10 - 25/3)]$ $= [9/4]/[5/3]$ $= 27/20$

Question 50 :

What is the value of cos 15° + cos 105°?

Difficulty : Moderate **Average Time : 156 Seconds**

Options :

1. 3
2. 1/2
3. 3/2
4. 1/3

Solution :

The correct answer is **option 2** i.e. **1/2.**

cos 15° + cos 105°

= cos 15° + cos (90 + 15)°

= cos 15° - sin 15°

= cos (45° – 30°) – sin (45° – 30°)

= [cos45° cos30° + sin45° sin30°] – [sin45° cos30° – cos45° sin30°]

= [1/2 × 3/2 + 1/2 × 1/2] – [1/2 × 3/2 – 1/2 × 1/2]

= 1/22 + 1/22

= 1/2

Question 51 :

If sin(A B) = 1/2 and cos(A + B) = 1/2, then what is the value of sin A cos A + sin2 A sin B cos B + cos3 A cos B tan A?

Difficulty : Moderate **Average Time : 56 Seconds**

Options :

1. 1/2
2. 3/4
3. 1/4
4. None of these

Solution :

The correct answer is **option 4** i.e. **None of these**

Understanding	Application
sin(A B) = 1/2 and cos(A + B) = 1/2 So, A – B = 30° And A + B = 60° So, A = 45° and B = 15°	sin A cos A + $\sin^2$ A sin B cos B + $\cos^3$ A cos B tan A = 1/2 sin2A + 1/2 $\sin^2$ A sin2B + $\cos^3$ A cos B tan A Putting the values of A and B: = 1/2 sin90° + 1/2 $\sin^2$45° sin30° + $\cos^3$45° cos15° tan45° = 1/2 × 1 + 1/2 × 1/2 × 1/2 + 1/22 × (3 + 1)/22 × 1 = 1/2 + 1/8 + (3 + 1)/8 = (4 + 1 + 3 + 1)/8 = (6 + 3)/8

Question 52 :

What is the value of cot (90º + 75º)?

Difficulty : Moderate **Average Time : 105 Seconds**

Options :

1. 2 + 3

2 3

3. 3 + 1

4. 3 1

Solution :

The correct answer is **option 2** i.e. **-2 - 3.**

cot (90° + 75°)

= - tan 75°

= - tan(45° + 30°)

= -(tan 45° + tan 30°)/(1 - tan 45° tan 30°)

= -[(3 + 1)/(3 - 1)]

Rationalising,

= -[(3 + 1)(3 + 1)/(3 - 1)(3 + 1)]

= -[4 + 23]/2

= -2 - 3

Question 53 :

If (A + B + C) = 90º, then what is the value of ?

Difficulty : Moderate

Average Time : 48 Seconds

Options :

1. $\frac{(\sin 4x)}{4}$

2. 1

3. $\frac{(\sin 4x)}{4}$

4. $\frac{(\sin 4x)}{4}$

Solution :

The correct answer is Option 3 i.e. 1/2

Application
Given: (A + B + C) = 90º Sin (A/2) Sin [(180 – B – C)/2] + Cos (A/2) Sin (B + C)/2 Put B = C = 0 then A = 90 So Sin (90/2) Sin [(180 – 0] + Cos (90/2) Sin 0 = 1/2 × 0 + 1/2 = 1/2

Question 54 :

What is the value of cot(90 x) sin4(90 x) + cot(180 x) sin4(180 x) ?

Difficulty : Moderate **Average Time : 116 Seconds**

Options :

1. $\frac{(\sin 4x)}{4}$
2. $\frac{(\sin 4x)}{4}$
3. $\frac{(\sin 4x)}{4}$
4. $\frac{(\sin 4x)}{4}$

Solution :

The correct answer is Option 4 i.e. 1/4 × Sin4x

Application

$\cot(90 - x)\sin^4(90 - x) + \cot(180 - x)\sin^4(180 - x)$

$= \text{Tan } x \cos^4 x - \text{Cot } x \sin^4 x$

$= (\text{Sin } x/\text{Cos } x)\cos^4 x - (\text{Cos } x/\text{Sin } x)\sin^4 x$

$= \text{Sin } x \cos^3 x - \text{Cos } x \sin^3 x$

$= \text{Sinx Cos } x (\cos^2 x - \sin^2 x)$

$= 1/2 \times \text{Sin2x} \times \text{Cos2x}$

$= 1/4 \times \text{Sin4x}$

Question 55 :

A flag of height 4 metres is standing on the top of a building. The angle of elevation of the top of the flag from a point X is 45° and the angle of elevation of the top of building from X is 30°. Point X is on the ground level. What is the height (in metres) of the building?

Difficulty : Moderate **Average Time : 141 Seconds**

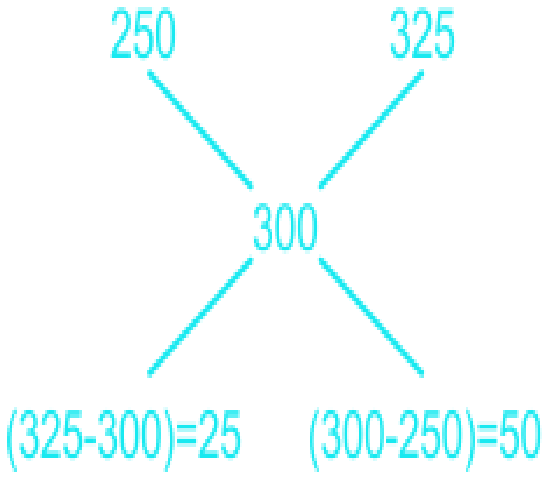
Options :

1. 3 + 2
2. 2(3 + 1)
3. 4(3 + 1)
4. (3 + 1)

Solution :

The correct answer is **Option 2** i.e. **2(3 + 1)**

Application



Suppose the height of the building = H meter

So,

Tan45 = (H + 4)/XY

XY = H + 4

And

Tan30 = H/XY

1/3 = H/XY

XY = H3

So,

(H + 4) = H3

H = 4/(3 – 1) = 2(3 + 1) meters

Question 56 :

Height of a tower is 120 metres. The angle of elevation of the top of tower from a point B is 75°. Point B is on the ground level. What is the distance (in metres) of point B from the base of tower?

Difficulty : Moderate

Average Time : 146 Seconds

Options :

1. 120(2 3)

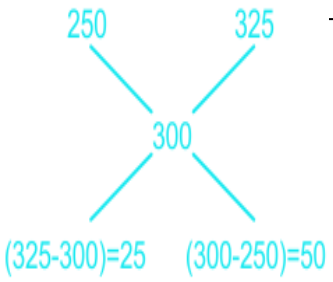
180(3 3)

3. 180(3 1)
4. 150(3 1)

Solution :

The correct answer is **Option 1** i.e. **120(2 3)**

Application



From the figure:

Tan75 = 120/Base

Base = 120/Tan75

= 120/[(3 + 1)/(3 – 1)]

= 120 × [(4 – 23)/(3 – 1)]

= 120(2 – 3)

Question 57 :

Mohit is standing at some distance from a 60 meters tall building. Mohit is 1.8 meters tall. When Mohit walks towards the building, then the angle of elevation from his head becomes 60° from 45°. How much distance (in metres) Mohit covered towards the building?

Difficulty : Moderate

Average Time : 109 Seconds

Options :

1. 18.6(4 3)

58.2 24.63

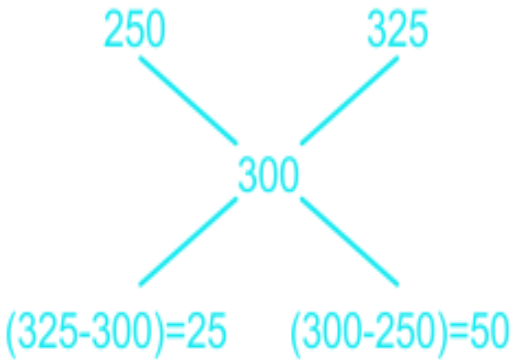
3. 19.4(3 + 1)

4. 19.4(3 3)

Solution :

The correct answer is **option 4** i.e. **19.4(3 3)**

Application



Suppose ‘x’ is the distance covered by Mohit towards the building.

So,

Tan45° = 58.2/(x + y)

(x + y) = 58.2

And

Tan60° = 58.2/y

3 = 58.2/y

y = 19.43

Hence,

x = 58.2 – 19.43 = 19.4(3 3)

Comprehension :

Instructions: The table given below shows the ratio of cars and Bikes manufactured by 5 different companies. The table also shows the ratio of three different types of cars C1, C2 and C3 and three different types of bikes B1, B2 and B3

manufactured by these 5 different companies. Total numbers of car and bikes together manufactured by D, E, F, G and H are 300000, 280000, 320000, 400000 and 480000 respectively. Company Car : Bike C1 : C2 : C3 B1 : B2 : B3 D 1 : 02 2 : 03 : 05 2 : 02 : 01 E 3 : 01 1 : 01 : 01 2 : 03 : 02 F 1 : 01 2 : 01 : 01 1 : 01 : 02 G 3 : 01 2 : 03 : 01 1 : 02 : 02 H 1 : 02 1 : 02 : 01 2 : 01 : 05

Question 58 :

Total number of bikes manufactured by company D is what percentage of total number of cars of type C1 manufacture by company G?

Difficulty : Moderate **Average Time : 116 Seconds**

Options :

1. 50
2. 100
3. 200
4. 150

Solution :

The correct answer is **option 3** i.e. **200%**

Application
Total number of bikes manufactured by company D = 300000 × 2/3 = 200000 And Total number of cars of type C1 manufacture by company G = 400000 × 3/4 × 2/6 = 100000 Hence, Required percentage = [200000/100000] × 100 = 200%

Comprehension :

Instructions: The table given below shows the ratio of cars and Bikes manufactured by 5 different companies. The table also shows the ratio of three different types of cars C1, C2 and C3 and three different types of bikes B1, B2 and B3 manufactured by these 5 different companies. Total numbers of car and bikes together manufactured by D, E, F, G and H are 300000, 280000, 320000, 400000 and 480000 respectively. Company Car : Bike C1 : C2 : C3 B1 : B2 : B3 D 1 : 02 2 : 03 : 05 2 : 02 : 01 E 3 : 01 1 : 01 : 01 2 : 03 : 02 F 1 : 01 2 : 01 : 01 1 : 01 : 02 G 3 : 01 2 : 03 : 01 1 : 02 : 02 H 1 : 02 1 : 02

: 01 2 : 01 : 05

Question 59 :

What is the average of the total number of cars of type C1 manufactured by the given 5 companies?

Difficulty : Moderate **Average Time : 86 Seconds**

Options :

1. 58000
2. 60000
3. 56000
4. 62000

Solution :

The correct answer is **option 4** i.e. **62000**

Application
Total number of cars of type C1 manufactured by the given 5 companies = 300000 × 1/3 × 2/10 + 280000 × 3/4 × 1/3 + 320000 × 1/2 × 2/4 + 400000 × 3/4 × 2/6 + 480000 × 1/3 × 1/4 = 20000 + 70000 + 80000 + 100000 + 40000 = 310000 Hence, Average = 310000/5 = 62000

Comprehension :

Instructions: The table given below shows the ratio of cars and Bikes manufactured by 5 different companies. The table also shows the ratio of three different types of cars C1, C2 and C3 and three different types of bikes B1, B2 and B3 manufactured by these 5 different companies. Total numbers of car and bikes together manufactured by D, E, F, G and H are 300000, 280000, 320000, 400000 and 480000 respectively. Company Car : Bike C1 : C2 : C3 B1 : B2 : B3 D 1 : 02 2 : 03 : 05 2 : 02 : 01 E 3 : 01 1 : 01 : 01 2 : 03 : 02 F 1 : 01 2 : 01 : 01 1 : 01 : 02 G 3 : 01 2 : 03 : 01 1 : 02 : 02 H 1 : 02 1 : 02 : 01 2 : 01 : 05

Question 60 :

What is the difference between the total number of C3 type car manufactured by company E and G together and the

number of bikes of type B1 manufactured by company H?

Difficulty : Moderate **Average Time : 89 Seconds**

Options :

1. 44000
2. 40000
3. 48000
4. 42000

Solution :

The correct answer is **option 2** i.e. **40000**

Application
Total number of C3 type car manufactured by company E and G together = 280000 × 3/4 × 1/3 + 400000 × 3/4 × 1/6 = 70000 + 50000 = 120000 And Number of bikes of type B1 manufactured by company H = 480000 × 2/3 × 2/8 = 80000 Hence, Difference = 120000 – 80000 = 40000

Comprehension :

Instructions: The table given below shows the ratio of cars and Bikes manufactured by 5 different companies. The table also shows the ratio of three different types of cars C1, C2 and C3 and three different types of bikes B1, B2 and B3 manufactured by these 5 different companies. Total numbers of car and bikes together manufactured by D, E, F, G and H are 300000, 280000, 320000, 400000 and 480000 respectively. Company Car : Bike C1 : C2 : C3 B1 : B2 : B3 D 1 : 02 2 : 03 : 05 2 : 02 : 01 E 3 : 01 1 : 01 : 01 2 : 03 : 02 F 1 : 01 2 : 01 : 01 1 : 01 : 02 G 3 : 01 2 : 03 : 01 1 : 02 : 02 H 1 : 02 1 : 02 : 01 2 : 01 : 05

Question 61 :

H = Total number of B2 type bike manufactured by all the companies. R = Total number of C1 type car manufactured by

company F, G and D together. What is the value of H/R?

Difficulty : Moderate **Average Time : 93 Seconds**

Options :

1. 0.625
2. 1.35
3. 1.15
4. None of these

Solution :

The correct answer is **option 3** i.e. **1.15**

Application
H = Total number of B2 type bike manufactured by all the companies = 300000 × 2/3 × 2/5 + 280000 × 1/4 × 3/7 + 320000 × 1/2 × 1/4 + 400000 × 1/4 × 2/5 + 480000 × 2/3 × 1/8 = 80000 + 30000 + 40000 + 40000 + 40000 = 230000 And R = Total number of C1 type car manufactured by company F, G and D together = 300000 × 1/3 × 2/10 + 320000 × 1/2 × 2/4 + 400000 × 3/4 × 2/6 = 20000 + 80000 + 100000 = 200000 Hence, H/R = 230000/200000 = 1.15

Comprehension :

Instructions: The table given below shows the ratio of cars and Bikes manufactured by 5 different companies. The table also shows the ratio of three different types of cars C1, C2 and C3 and three different types of bikes B1, B2 and B3 manufactured by these 5 different companies. Total numbers of car and bikes together manufactured by D, E, F, G and H

are 300000, 280000, 320000, 400000 and 480000 respectively. Company Car : Bike C1 : C2 : C3 B1 : B2 : B3 D 1 : 02 2 : 03 : 05 2 : 02 : 01 E 3 : 01 1 : 01 : 01 2 : 03 : 02 F 1 : 01 2 : 01 : 01 1 : 01 : 02 G 3 : 01 2 : 03 : 01 1 : 02 : 02 H 1 : 02 1 : 02 : 01 2 : 01 : 05

Question 62 :

A = Total number of cars manufactured by all the companies. K = Difference between the number of C3 type cars manufactured by company H and the number of B3 type bike manufactured by company E. What is the value of A : K?

Difficulty : Moderate **Average Time : 101 Seconds**

Options :

1. 91 : 2
2. 93 : 2
3. 181 : 4
4. 185 : 4

Solution :

The correct answer is **option 2** i.e. **93 : 2**

Application
A = Total number of cars manufactured by all the companies = 300000 × 1/3 + 280000 × 3/4 + 320000 × 1/2 + 400000 × 3/4 + 480000 × 1/3 = 100000 + 210000 + 160000 + 300000 + 160000 = 930000 K = Difference between the number of C3 type cars manufactured by company H and the number of B3 type bike manufactured by company E = 480000 × 1/3 × 1/4 – 280000 × 1/4 × 2/7 = 40000 – 20000 = 20000 Hence, A : K = 93 : 2

Comprehension :

Instructions The table given below shows the ratio of cars and Bikes manufactured by 5 different companies. The table also shows the ratio of three different types of cars Cl, C2 and C3 and three different types of bikes al, B2 and B3 manufactured by these 5 different companies. Total numbers of car and bikes together manufactured by D, E, F, G and H are 300000, 280000, 320000, 400000 and 480000 respectively. Company Car : Bike C1 : C2 : C3 B1 : B2 : B3 D 1 : 02 2 : 03 : 05 2 : 02 : 01 E 3 : 01 1 : 01 : 01 2 : 03 : 02 F 1 : 01 2 : 01 : 01 1 : 01 : 02 G 3 : 01 2 : 03 : 01 1 : 02 : 02 H 1 : 02 1 : 02 : 01 2 : 01 : 05

Question 63 :

How many liters of water should be added to a 7.5 liter mixture of acid and water containing acid and water in the ratio of 1 : 2 such that the resultant mixture will have 20% acid in it?

Difficulty : Moderate

Average Time : 98 Seconds

Options :

1. 10
2. 2.5
3. 7.5
4. 5

Solution :

The correct answer is **Option 4** i.e. **5**

Application

Amount of acid in 7.5 litres of mixture = 7.5 × 1/3 = 2.5 litres

And

Amount of water in 7.5 litres of mixture = 7.5 × 2/3 = 5 litres

Suppose 'x' litres of water should be added.

So,

2.5/(7.5 + x) = 0.2

2.5 = 1.5 + 0.2x

0.2x = 1

x = 5

Hence, 5 litres of water should be added.

Comprehension :

Instructions The table given below shows the ratio of cars and Bikes manufactured by 5 different companies. The table also shows the ratio of three different types of cars Cl, C2 and C3 and three different types of bikes al, B2 and B3 manufactured by these 5 different companies. Total numbers of car and bikes together manufactured by D, E, F, G and H are 300000, 280000, 320000, 400000 and 480000 respectively. Company Car : Bike C1 : C2 : C3 B1 : B2 : B3 D 1 : 02 2 : 03 : 05 2 : 02 : 01 E 3 : 01 1 : 01 : 01 2 : 03 : 02 F 1 : 01 2 : 01 : 01 1 : 01 : 02 G 3 : 01 2 : 03 : 01 1 : 02 : 02 H 1 : 02 1 : 02 : 01 2 : 01 : 05

Question 64 :

In what ratio should cement costing Rs 250 per bag be mixed with cement costing Rs 325 per bag so that the cost of the mixture is Rs 300 per bag. (A bag of cement is 50 kg).

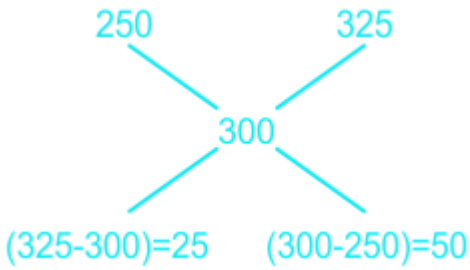
Difficulty : Moderate **Average Time : 78 Seconds**

Options :

1. 1 : 2
2. 2 : 1
3. 3 : 2
4. 2 : 3

Solution :

The correct answer is Option 1 i.e. 1 : 2

Application
Using the allegation method:    Required ratio = 25 : 50 = 1 : 2

Comprehension :

Instructions The table given below shows the ratio of cars and Bikes manufactured by 5 different companies. The table also shows the ratio of three different types of cars Cl, C2 and C3 and three different types of bikes al, B2 and B3 manufactured by these 5 different companies. Total numbers of car and bikes together manufactured by D, E, F, G and H are 300000, 280000, 320000, 400000 and 480000 respectively. Company Car : Bike C1 : C2 : C3 B1 : B2 : B3 D 1 : 02 2 : 03 : 05 2 : 02 : 01 E 3 : 01 1 : 01 : 01 2 : 03 : 02 F 1 : 01 2 : 01 : 01 1 : 01 : 02 G 3 : 01 2 : 03 : 01 1 : 02 : 02 H 1 : 02 1 : 02 : 01 2 : 01 : 05

Question 65 :

A started a trading firm by investing Rs. 10 lakhs. After 4 months, B joined the business by investing Rs. 15 lakhs then 2 months after B, C too joined them by investing Rs. 20 lakhs. 1 year after A started the business, they made Rs. 6,00,000 in profit. What is C's share of the profit (in Rs)?

Difficulty : Moderate **Average Time : 103 Seconds**

Options :

1. 2,00,000
2. 1,00,000
3. 1,50,000
4. 3,00,000

Solution :

The correct answer is **Option 1** i.e. **Rs. 200000**

Application
A started a trading firm by investing Rs. 10 lakhs. After 4 months, B joined the business by investing Rs. 15 lakhs then 2 months after B joined, C too joined them by investing Rs. 20 lakhs. So, Ratio in which the profit will be shared = (1000000 × 12) : (1500000 × 8) : (2000000 × 6) = 120 : 120 : 120 = 1 : 1 : 1 So, C's share of the profit = 600000 × 1/3 = Rs. 200000

Comprehension :

Instructions The table given below shows the ratio of cars and Bikes manufactured by 5 different companies. The table also shows the ratio of three different types of cars Cl, C2 and C3 and three different types of bikes al, B2 and B3 manufactured by these 5 different companies. Total numbers of car and bikes together manufactured by D, E, F, G and H are 300000, 280000, 320000, 400000 and 480000 respectively. Company Car : Bike C1 : C2 : C3 B1 : B2 : B3 D 1 : 02 2 : 03 : 05 2 : 02 : 01 E 3 : 01 1 : 01 : 01 2 : 03 : 02 F 1 : 01 2 : 01 : 01 1 : 01 : 02 G 3 : 01 2 : 03 : 01 1 : 02 : 02 H 1 : 02 1 : 02 : 01 2 : 01 : 05

Question 66 :

A and B started a partnership business investing in the ratio of 2 : 5. C joined them after 3 months with an amount equal to 4/5th of B. What was their profit (in Rs) at the end of the year if A got Rs 16,800 as his share?

Difficulty : Moderate

Average Time : 138 Seconds

Options :

1. 56000
2. 100800
3. 84000
4. 117600

Solution :

The correct answer is Option 3 i.e. 84000

Application
A and B started a partnership business investing in the ratio of 2 : 5. C joined them after 3 months with an amount equal to 4/5th of B. So, Ratio in which the profit will be shared = (2 × 12) : (5 × 12) : (5 × 4/5 × 9) = 24 : 60 : 36 = 2 : 5 : 3 A got Rs. 16,800 as his share. So, Total profit = 16800 × 10/2 = Rs. 84000

Question 67 :

Working alone A can do a work in 72 days and B in 90 days. If they work on it together for 10 days, then what fraction of work is left?

Difficulty : Moderate **Average Time : 115 Seconds**

Options :

1. 1/4
2. 3/5
3. 1/5
4. 3/4

Solution :

The correct answer is **option 4** i.e. **3/4**

Understanding	Application
Working alone A can do a work in 72 days and B in 90 days.	Suppose total work = 360 units (LCM of 72 and 90) So, Efficiency of A = 360/72 = 5 Efficiency of B = 360/90 = 4 Hence, Time in which A and B together can finish the whole work = 360/(5 + 4) = 40 days Hence, Fraction of work done in 10 days = 10/40 = 1/4 So, Work left = 1 – 1/4 = 3/4

Question 68 :

A, B and C together can build a wall in 12 days. C is four times as productive as B and A alone can build the wall in 48 days. In how many days A and B working together can build the wall?

Difficulty : Moderate **Average Time : 94 Seconds**

Options :

1. 20
2. 30
3. 80
4. 40

Solution :

The correct answer is **option 2** i.e. **30**

Understanding	Application

A, B and C together can build a wall in 12 days. C is four times as productive as B and A alone can build the wall in 48 days.	Suppose total units of work = 48 units (LCM of 12 and 48) So, Efficiency of A = 48/48 = 1 Efficiency of (A + B + C) = 48/12 = 4 So, Efficiency of (B + C) = 4 – 1 = 3 And Efficiency of C = 4 × Efficiency of B Suppose efficiency of B = x So, x + 4x = 3 x = 0.6 Hence, Efficiency of B = 0.6 Hence, Number of days A and B working together can build the wall = 48/(1 + 0.6) = 30

Question 69 :

Working together A and B can do a job in 36 days, B and C in 10 days and all three together in 9 days. In how many days can B alone do the job?

Difficulty : Moderate

Average Time : 105 Seconds

Options :

1. 90
2. 30
3. 24

60

Solution :

The correct answer is **option 4** i.e. **60**

Understanding	Application
Working together A and B can do a job in 36 days, B and C in 10 days and all three together in 9 days.	Suppose total work = 180 units (LCM of 36, 10 and 9) So, Efficiency of (A + B) = 180/36 = 5 Efficiency of (B + C) = 180/10 = 18 Efficiency of (A + B + C) = 180/9 = 20 Hence, Efficiency of C = 20 – 5 = 15 Efficiency of B = 18 – 15 = 3 Hence, Time in which B alone can complete = 180/3 = 60 days

Question 70 :

A can do 1/5 of work in 10 days, B can do 1/3 of the work in 25 days. In how many days can they do half of the work working together?

Difficulty : Moderate **Average Time : 94 Seconds**

Options :

1. 30
2. 45
3. 15
4. 20

Solution :

The correct answer is **option 3** i.e. **15**

Understanding	Application
A can do 1/5 of work in 10 days, B can do 1/3 of the work in 25 days.	So, Time in which A can complete the job = 10 × 5 = 50 days And Time in which B can complete the job = 25 × 3 = 75 days So, Time in which they together can complete the job = 1/(1/50 + 1/75) = 1/(1/30) = 30 And Time in which they together can complete half of the job = 15 days

Question 71 :

1 bar of chocolate costs Rs 80 but a box containing 6 bars of the same chocolate costs Rs 400. What is the effective discount (in %) on the box?

Difficulty : Moderate **Average Time : 98 Seconds**

Options :

1. 20
2. 16.67
3. 25
4. 15

Solution :

The correct answer is **Option 2** i.e. **16.67%**

Understanding	Application

1 bar of chocolate costs Rs 80 but a box containing 6 bars of the same chocolate costs Rs 400.	Original cost of 6 bars of chocolates = 6 × 80 = Rs. 480 So, Effective discount on the box = [(480 – 400)/480] × 100 = 16.67%

Comprehension :

Instructions The table given below shows the ratio of cars and Bikes manufactured by 5 different companies. The table also shows the ratio of three different types of cars Cl, C2 and C3 and three different types of bikes al, B2 and B3 manufactured by these 5 different companies. Total numbers of car and bikes together manufactured by D, E, F, G and H are 300000, 280000, 320000, 400000 and 480000 respectively. Company Car : Bike C1 : C2 : C3 B1 : B2 : B3 D 1 : 02 2 : 03 : 05 2 : 02 : 01 E 3 : 01 1 : 01 : 01 2 : 03 : 02 F 1 : 01 2 : 01 : 01 1 : 01 : 02 G 3 : 01 2 : 03 : 01 1 : 02 : 02 H 1 : 02 1 : 02 : 01 2 : 01 : 05

Question 72 :

15% discount is offered on a shirt marked at Rs 1200. But the shirt is sold at Rs 918 after giving a further cash discount. How much is this cash discount (in %)?

Difficulty : Moderate **Average Time : 129 Seconds**

Options :

1. 10
2. 12
3. 5
4. 8

Solution :

The correct answer is Option 1 i.e. 10

Understanding	Application

15% discount is offered on a shirt marked at Rs 1200.	So, Price after discount = 1200 × 0.85 = 1020 But the shirt is sold at Rs 918 after giving a further cash discount. So, Required percentage = [(1020 – 918)/1020] × 100 = 10%

Question 73 :

A retailer marks up his goods by 30% and offers 15% discount. What will be the selling price (in Rs) of an item sold by the retailer if its cost to the retailer is Rs 1,000?

Difficulty : Moderate **Average Time : 128 Seconds**

Options :

1. 1050
2. 1105
3. 805
4. 1225

Solution :

The correct answer is **option 2** i.e. **1105**

Understanding	Application
Cost price = Rs. 1000 The retailer marks up his goods by 30% and offers 15% discount.	So, Selling price = (1000 × 1.3) × 0.85 = 1105

Question 74 :

The selling price of a smartphone is Rs 9,600 if the discount on it is 20%. What would be the selling price (in Rs) of the smartphone if the discount on it was 25%?

Difficulty : Moderate

Average Time : 81 Seconds

Options :

1. 10240
2. 7680
3. 1200
4. 9000

Solution :

The correct answer is **option 4** i.e. **9000**

Understanding	Application
The selling price of a smartphone is Rs 9,600 if the discount on it is 20%.	So, Marked price of phone = 9600/0.8 = 12000
Now discount = 25%	So, Selling price = 12000 × 0.75 = 9000

Comprehension :

Instructions The table given below shows the ratio of cars and Bikes manufactured by 5 different companies. The table also shows the ratio of three different types of cars Cl, C2 and C3 and three different types of bikes al, B2 and B3 manufactured by these 5 different companies. Total numbers of car and bikes together manufactured by D, E, F, G and H are 300000, 280000, 320000, 400000 and 480000 respectively. Company Car : Bike C1 : C2 : C3 B1 : B2 : B3 D 1 : 02 2 : 03 : 05 2 : 02 : 01 E 3 : 01 1 : 01 : 01 2 : 03 : 02 F 1 : 01 2 : 01 : 01 1 : 01 : 02 G 3 : 01 2 : 03 : 01 1 : 02 : 02 H 1 : 02 1 : 02 : 01 2 : 01 : 05

Question 75 :

The wages of three labourers A, B and C are in the ratio 10 : 12 : 15. As wage is increased in the ratio 5 : 6, B's wage is

increased in the ratio 3 : 4 and C's wage is increased in the ratio 3 : 5. The new ratio of the wages of A : B : C is .....

Difficulty : Moderate **Average Time : 122 Seconds**

Options :

1. 15 : 18 : 20
2. 12 : 16 : 25
3. 6 : 7 : 9
4. 8 : 6 : 5

Solution :

The correct answer is Option 2 i.e. 12 : 16 : 25

Understanding	Application
The wages of three labourers A, B and C are in the ratio 10 : 12 : 15.	Suppose the wages of A, B and C are 10x, 12x and 15x respectively.
Wage is increased in the ratio 5 : 6, B's wage is increased in the ratio 3 : 4 and C's wage is increased in the ratio 3 : 5.	So, New wages of A = 10x × 6/5 = 12x New wages of A = 12x × 4/3 = 16x New wages of A = 15x × 5/3 = 25x So, New ratio of the wages of A : B : C = 12x : 16x : 25x = 12 : 16 : 25

Question 76 :

The ratio of present ages of Ajay and Vijay is 2 : 3. 4 years ago the ratio of their ages was 3 : 5. What is Vijay's present age (in years)?

Difficulty : Moderate **Average Time : 156 Seconds**

Options :

1. 16
2. 8
3. 32
4. 24

Solution :

The correct answer is **option 4** i.e. **24 years**

Understanding	Application
The ratio of present ages of Ajay and Vijay is 2 : 3. 4 years ago the ratio of their ages was 3 : 5.	Suppose the present ages of Ajay and Vijay are 2x and 3x respectively. So, (2x – 4) : (3x – 4) = 3 : 5 10x – 20 = 9x – 12 x = 8 Hence, Vijay's present age = 3x = 24 years

Question 77 :

If 12A = 16B = 15C; find A : B : C.

Difficulty : Moderate **Average Time : 85 Seconds**

Options :

1. 12 : 16 : 15
2. 15 : 16 : 12
3. 20 : 15 : 16
4. 16 : 15 : 20

Solution :

The correct answer is **option 3** i.e. **20 : 15 : 16**

Application
12A = 16B = 15C So, A : B = 4 : 3 B : C = 15 : 16 And A : C = 5 : 4 Hence, A : B : C = (4 × 5) : 15 : (4 × 4) = 20 : 15 : 16

Question 78 :

Find the third proportional of 16 and 20?

Difficulty : Moderate **Average Time : 60 Seconds**

Options :

1. 24
2. 25
3. 32
4. 40

Solution :

The correct answer is **option 2** i.e. **25**

Application
Third proportional to 16 and 20 = $20^2/16$ = 25

Question 79 :

Find the number of students who took an exam if the ratio of those who passed to those who failed in the exam was 10 : 3. If 40 more students had taken the exam and 10 less had failed, then the ratio of those who passed to those who failed in the exam would have been 5 : 1.

Difficulty : Moderate

Average Time : 66 Seconds

Options :

1. 200
2. 250
3. 300
4. 260

Solution :

The correct answer is **option 4** i.e. **260**

Understanding	Application
Ratio of those who passed to those who failed in the exam was 10 : 3.	Suppose the number of students who passed and number of students who failed in the exam are 10x and 3x respectively.

If 40 more students had taken the exam and 10 less had failed, then the ratio of those who passed to those who failed in the exam would have been 5 : 1.	So, Total students = 13x + 40 Number of students who failed = 3x – 10 So, Number of students who passed = (13x + 40) – (3x – 10) = (10x + 50) So, (10x + 50) : (3x – 10) = 5 : 1 10x + 50 = 15x – 50 5x = 100 x = 20 So, Total number of students who took exam = 13x = 260

Question 80 :

The ratio of the bank balance of three brothers A, B and C is 10 : 12 : 5. B transfers Rs 60,000 from his account to C's. The new ratio of the bank balances becomes 10 : 9 : 8. What is the bank balance of A (in Rs)?

Difficulty : Moderate **Average Time : 127 Seconds**

Options :

1. 100000
2. 200000
3. 300000
4. 400000

Solution :

The correct answer is **option 2** i.e. **200000**

Understanding	Application
The ratio of the bank balance of three brothers A, B and C is 10 : 12 : 5	Suppose the balances are 10x, 12x and 5x.
B transfers Rs 60,000 from his account to C's. The new ratio of the bank balances becomes 10 : 9 : 8	So, 10x : (12x – 60000) = 10 : 9 90x = 120x – 600000 30x = 600000 x = 20000 Hence, Bank balance of A = 10x = Rs. 200000

Question 81 :

In a set of three numbers, the average of first two numbers is 21, the average of the last two numbers is 24, and the average of the first and the last numbers is 15. What is the average of three numbers?

Difficulty : Moderate **Average Time : 119 Seconds**

Options :

1. 20
2. 60
3. 25
4. 18

Solution :

The correct answer is **option 1** i.e. **20**

Understanding	Application

In a set of three numbers, the average of first two numbers is 21, the average of the last two numbers is 24, and the average of the first and the last numbers is 15.	Suppose the numbers are p, q and r. So, (p + q) = 21 × 2 = 42 (q + r) = 24 × 2 = 48 And (p + r) = 15 × 2 = 30 Adding the equations: 2(p + q + r) = 120 (p + q + r) = 60 Average = 60/3 = 20

Question 82 :

In a club there are 12 wrestlers. When a wrestler whose weight is 90 kg leaves the club, he is replaced by a new wrestler then the average weight of this 12 member club increases by 0.75 kg. What is the weight (in kg) of the new wrestler who joined the club?

Difficulty : Moderate **Average Time : 98 Seconds**

Options :

1. 108
2. 99
3. 112
4. 100

Solution :

The correct answer is **option 2** i.e. **99**

Understanding	Application

In a club there are 12 wrestlers. When a wrestler whose weight is 90 kg leaves the club, he is replaced by a new wrestler then the average weight of this 12 member club increases by 0.75 kg.	Suppose the average weight = X kg. And P is the weight of new wrestler. So, (12X – 90 + P) = (X + 0.75) × 12 P – 90 = 9 P = 99 Hence, Weight of the new wrestler who joined the club = 99 kg

Question 83 :

The average weight of a group of 15 students is 32.5 & the average weight of another group of 17 students is 28.5. Find the average weight of both groups together.

Difficulty : Moderate **Average Time : 95 Seconds**

Options :

1. 31.525
2. 30.375
3. 32.125
4. 29.550

Solution :

The correct answer is **option 2** i.e. **30.375**.

Average = sum of the weight of students/total number of students

The average weight of 15 students = 32.5

The average weight of 17 students = 28.5

The sum of the weight of 15 students = (15 × 32.5) = 487.5

The sum of the weight of 17 students = (17 × 28.5) = 484.5

The total number of student in both the group = (15 + 17) = 32

The sum of the weight of 32 students = (487.5 + 484.5) = 972

The average weight of 32 students = 972/32 = 30.375

Comprehension :

Instructions The table given below shows the ratio of cars and Bikes manufactured by 5 different companies. The table also shows the ratio of three different types of cars Cl, C2 and C3 and three different types of bikes al, B2 and B3 manufactured by these 5 different companies. Total numbers of car and bikes together manufactured by D, E, F, G and H are 300000, 280000, 320000, 400000 and 480000 respectively. Company Car : Bike C1 : C2 : C3 B1 : B2 : B3 D 1 : 02 2 : 03 : 05 2 : 02 : 01 E 3 : 01 1 : 01 : 01 2 : 03 : 02 F 1 : 01 2 : 01 : 01 1 : 01 : 02 G 3 : 01 2 : 03 : 01 1 : 02 : 02 H 1 : 02 1 : 02 : 01 2 : 01 : 05

Question 84 :

The average of 35 consecutive even numbers is 44. Find the smallest number.

Difficulty : Moderate **Average Time : 71 Seconds**

Options :

1. 8
2. 12
3. 10
4. 14

Solution :

The correct answer is Option 3 i.e. 10

Understanding	Application

The average of 35 consecutive even numbers is 44.	Suppose the smallest number is x. So, [x + (x + 2) + (x + 4) + (x + 6) …….. + (x + 68] = 44 × 35 [35x + 2 × (34 × 35)/2] = 1540 35x + 1190 = 1540 35x = 350 x = 10 Hence, Smallest number = 10

Question 85 :

If a shopkeeper sells a mixer at Rs 11,400 then he suffers a loss of 5%. At what price (in Rs) should he sell the mixer to gain 10%?

Difficulty : Moderate **Average Time : 130 Seconds**

Options :

1. 9845
2. 10909
3. 13200
4. 11913

Solution :

The correct answer is **option 3** i.e. **13200**

Understanding	Application

If a shopkeeper sells a mixer at Rs 11,400 then he suffers a loss of 5%.	So, Cost price = 11400/0.95 = 12000 Hence, SP for 10% gain = 12000 × 1.1 = Rs. 13200

Question 86 :

A grain trader has 100 bags of rice. He sold some bags at 10% profit and rest at 20% profit. His overall profit on selling these 100 bags was 14%. How many bags did he sell at 20% profit?

Difficulty : Moderate **Average Time : 81 Seconds**

Options :

1. 40
2. 50
3. 60
4. 70

Solution :

The correct answer is **option 1** i.e. **40**

Understanding	Application

A grain trader has 100 bags of rice. He sold some bags at 10% profit and rest at 20% profit. His overall profit on selling these 100 bags was 14%.	Suppose the seller sold x bags at 10% profit and (100 – x) bags at 20% profit. So, CP × x × 1.1 + CP × (100 – x) × 1.2 = 100 × CP × 1.14 1.1x + 120 – 1.2x = 114 0.1x = 6 x = 60 Hence, He sold 40 (= 100 – 60) bags at 20% profit.

Question 87 :

By selling 21 pots at Rs 2,520, there is a loss equal to the cost price of 3 pots. Find the cost price (in Rs) of each pot.

Difficulty : Moderate **Average Time : 106 Seconds**

Options :

1. 140
2. 150
3. 160
4. 180

Solution :

The correct answer is **option 1** i.e. **140**

Understanding	Application

By selling 21 pots at Rs 2,520, there is a loss equal to the cost price of 3 pots.	So, 21SP = 2520 SP = Rs. 120 And 21SP = 21CP – 3CP 21SP = 18CP CP/SP = 21/18 CP = 21/18 × 120 = 140

Question 88 :

The profit margin on a sofa set is 100%. If the cost price of the sofa set falls by 20% then what will be the new profit margin (in %)?

Difficulty : Moderate **Average Time : 84 Seconds**

Options :

1. 150
2. 120
3. 200
4. 180

Solution :

The correct answer is **option 1** i.e. **150**

Understanding	Application
Profit margin = 100%	Suppose CP = X So, SP = 2X

Cost price of the sofa set falls by 20%	So, New CP = 0.8X Hence, Profit margin = [(2X – 0.8X)/0.8X] × 100 = 150%

Question 89 :

150% of 0.05% of x is 75. Find x.

Difficulty : Moderate **Average Time : 90 Seconds**

Options :

1. 1,00,000
2. 75000
3. 1,25,000
4. 1,50,000

Solution :

The correct answer is **option 1** i.e. **100000**

Application
150% of 0.05% of x is 75. So, 1.5 × 0.05/100 × x = 75 x = 100000

Question 90 :

A student multiplied a number by 4/5 instead of 5/4. What is the percentage error in the calculation?

Difficulty : Moderate **Average Time : 58 Seconds**

Options :

1. 16

25

3. 36

4. 20

Solution :

The correct answer is **option 3** i.e. **36.**

Understanding	Application
A student multiplied a number by 4/5 instead of 5/4.	Suppose the number = 20 So, After error, number = 20 × 4/5 = 16 And Correct answer = 20 × 5/4 = 25 Hence, Percentage error = [(25 – 16)/25] × 100 = 36%

Question 91 :

Elections were held in a society to elect a chairman. There were only two candidates A and B. Candidate B got 25% less votes than candidate A. The number of members who did not cast the vote was same as the number of votes that candidate B got. By how many votes did A win if the society had 20,000 members.

Difficulty : Moderate **Average Time : 60 Seconds**

Options :

1. 6000

2. 4000

3. 8000

2000

Solution :

The correct answer is **option 4** i.e. **2000**

Understanding	Application
Candidate B got 25% less votes than candidate A. The number of members who did not cast the vote was same as the number of votes that candidate B got.	Suppose A got P votes. So, Number of votes received by B = 0.75P And The number of members who did not cast the vote = 0.75P
Society had 20,000 members.	So, (Total votes – number of members who did not cast the vote) = Votes received by A and B (20000 – 0.75P) = P + 0.75P 2.5P = 20000 P = 8000 Hence, A won by 2000 (= 0.25P) votes.

Question 92 :

250% of a = b, then b% of 250 is the same as a% of .....

Difficulty : Moderate **Average Time : 115 Seconds**

Options :

1. 625
2. 1000
3. 100

6250

Solution :

The correct answer is **option 1** i.e. **625**

Understanding	Application
250% of a = b	So, b = 2.5a Hence, b% of 250 = 2.5b = 2.5 × 2.5a = 6.25a = a% of 625

Question 93 :

A gun shoots a bullet at the speed of 500 m in 0.2 seconds. What is its speed in km/hr?

Difficulty : Moderate **Average Time : 79 Seconds**

Options :

1. 1000
2. 900
3. 100
4. 9000

Solution :

The correct answer is **option 4** i.e. **9000 km/hr**

Understanding	Application

A bullet shoots 500 m in 0.2 seconds.	So, Speed = (500/1000)/(0.2/3600) = 9000 km/hr

Question 94 :

A taxi goes from City A to City B at an average speed of 84 km/hr. In the return journey due to traffic the average speed of the taxi falls by 24 km/hr. Find the average speed of the taxi (in km/hr) for the total journey.

Difficulty : Moderate **Average Time : 83 Seconds**

Options :

1. 72
2. 75
3. 70
4. 68

Solution :

The correct answer is **option 3** i.e. **70**

Understanding	Application
A taxi goes from City A to City B at an average speed of 84 km/hr. In the return journey due to traffic the average speed of the taxi falls by 24 km/hr.	Average speed in return journey = 84 – 24 = 60 km/hr So, Average speed of the journey = [2 × 84 × 60]/[84 + 60] = 10080/144 = 70 km/hr

Question 95 :

A jogger covered a certain distance at some speed. Had he moved 3 km/hr faster, he would have taken 20 minutes less. If he had moved 1 km/hr slower, he would have taken 10 minutes more. What is the distance (in km) that he jogged?

Difficulty : Moderate **Average Time : 94 Seconds**

Options :

1. 9
2. 10
3. 12
4. 8

Solution :

The correct answer is **option 3** i.e. **12**

Understanding	Application
Had he moved 3 km/hr faster, he would have taken 20 minutes less. If he had moved 1 km/hr slower, he would have taken 10 minutes more.	Suppose the distance = D km Speed = S km/hr So, D/(S + 3) = D/S – 20/60 And D/(S – 1) = D/S + 10/60 Solving the equation: D = 12 km

Question 96 :

Ramesh travels by bus from city A to city B at an average speed of 44 km/hr. Suresh travels by taxi from city A to city B at an average speed of 77 km/hr and takes 3 hours lesser than time taken by Ramesh. What is the distance (in km) between the two cities?

Difficulty : Moderate

Average Time : 96 Seconds

Options :

1. 363
2. 308
3. 280
4. 336

Solution :

The correct answer is **option 2** i.e. **308**

Understanding	Application
Ramesh travels by bus from city A to city B at an average speed of 44 km/hr. Suresh travels by taxi from city A to city B at an average speed of 77 km/hr and takes 3 hours lesser than time taken by Ramesh.	Suppose distance = D So, D/44 – D/77 = 3 33D = 3 × 44 × 77 D = 308 Hence, Distance = 308 km

Question 97 :

In 4 years at simple interest the principal increases by 12%. Calculate the amount (in Rs) received at the end of 2 years on Rs 20,000 at the same rate if compounded annually?

Difficulty : Moderate **Average Time : 96 Seconds**

Options :

1. 21632
2. 21218
3. 22472
4. 22400

Solution :

The correct answer is **option 2** i.e. **21218**

Understanding	Application
In 4 years at simple interest the principal increases by 12%.	So, 0.12P = (P × R × 4)/100 R = 3

Now, P = 20000 T = 2 years R = 3%	So, $A = 20000 \times (1 + 3/100)^2$ $= 20000 \times 1.0609$ $= 21218$

Question 98 :

Find the difference (in Rs) in the interest earned on Rs 10,00,000 at 10% in 1 year compounded annually and semi-annually.

Difficulty : Moderate **Average Time : 95 Seconds**

Options :

1. 250
2. 1000
3. 100
4. 2500

Solution :

The correct answer is **option 4** i.e. **2500**

Understanding	Application
P = Rs. 1000000 R = 10% T = 1 year	When the interest is compounded annually: $A = 1000000 \times (1 + 10/100)$ $= 1100000$ And When the interest is compounded semi-annually: $A = 1000000 \times (1 + 5/100)^2$ $= 1102500$ So, Difference of interest = 1102500 – 1100000 = Rs. 2500

Comprehension :

Instructions The table given below shows the ratio of cars and Bikes manufactured by 5 different companies. The tablealso shows the ratio of three different types of cars Cl, C2 and C3 and three different types of bikes al, B2 and B3 manufactured by these 5 different companies. Total numbers of car and bikes together manufactured by D, E, F, G and H are 300000, 280000, 320000, 400000 and 480000 respectively. Company Car : Bike C1 : C2 : C3 B1 : B2 : B3 D 1 : 02 2 : 03 : 05 2 : 02 : 01 E 3 : 01 1 : 01 : 01 2 : 03 : 02 F 1 : 01 2 : 01 : 01 1 : 01 : 02 G 3 : 01 2 : 03 : 01 1 : 02 : 02 H 1 : 02 1 : 02 : 01 2 : 01 : 05

Question 99 :

A bank gives Rs 25,000 on a saving a certain principal in 2 years at 8% rate of interest. How much will the bank give (in Rs) on the same principal in 4 years at the same rate of interest compounded annually?

Difficulty : Moderate **Average Time : 112 Seconds**

Options :

1. 27000
2. 29000
3. 29160
4. 27080

Solution :

The correct answer is Option 3 i.e. 29160

Understanding	Application
A bank gives Rs 25,000 on a saving a certain principal in 2 years at 8% rate of interest.	So, 25000 = P + (P × 8 × 2)/100 1.16P = 25000 P = 25000/1.16 So, Principal = Rs. 25000/1.16

Now, For CI: P = 25000/1.16 R = 8% and T = 4	So, A = 25000/1.16 × $(1 + 8/100)^4$ = 29160 (Approx.)

Question 100 :

Find the rate of interest (in%) if simple interest earned on a certain sum for the 3 years is Rs 900 and compound interest earned in 2 years is Rs 636?

Difficulty : Moderate **Average Time : 167 Seconds**

Options :

1. 12
2. 10
3. 9
4. 8

Solution :

The correct answer is **option 1** i.e. **12%**

Understanding	Application
Simple interest earned on a certain sum for the 3 years is Rs 900.	So, Simple interest for 2 years = 900 × 2/3 = Rs. 600 And Simple interest for 1 year = 600/2 = Rs. 300
Compound interest earned in 2 years is Rs 636	So, Difference of CI and SI for 2 years = 636 – 600 = Rs. 36

The CI for 2nd year will have the extra component i.e. interest on SI of 1st year.	So, 36 = 300 × R/100 R = 12%

Ssc Cgl Tier II Previous Year Question Paper Analysis

The analysis of Ssc Cgl Tier II Previous Year Question Paper held on 2018-03-09 in the Morning exam is as follows:

1. 100 questions were moderate.
2. The safe score is 150 marks.
3. 100 questions were asked from Quantitative Aptitude and 100 questions were asked from Quantitative Aptitude
4. 7 questions should have been skipped if you were short of time.

Ssc Cgl Tier II Previous Year Question Paper Topic Wise Weightage

Quantitative Aptitude

1. Average - 3
2. Percentage - 4
3. Data Interpretation - 5
4. Time And Work - 4
5. Time Speed And Distance - 5
6. Interest - 4
7. Ratios And Proportion - 6
8. Geometry - 14
9. Trigonometry - 10
10. Mensuration - 7
11. Number System - 1
12. MIxtures And Alligations - 1
13. Partnership - 2
14. Profit And Loss - 7
15. Statistics - 1
16. Data Sufficiency - 26

Ssc Cgl Tier II Previous Year Question Paper Tips and Tricks

1. Try to solve Ssc Cgl Tier II Previous Year Question Paper without taking any help from the solutions.
2. Ssc Cgl Tier II Previous Year Question Paper require proper usage of concept so firstly read the question thoroughly and then use the right concept.
3. In case you're not able to solve the question in less than 30 seconds in the exam then you should skip the question and move to the next question.

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