SSC CGL Maths Questions Questions

Latest SSC CGL Maths Questions

Question 1:

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The cost of apples is increased by 20% and then decreased by 20%. What is the net pecentage decrease?

1. 4%
2. 3%
3. 5%
4. 6%

Answer (Detailed Solution Below)

Option 1 : 4%

SSC CGL Maths Questions Question 1 Detailed Solution

Given:

The cost of apples is increased by 20% and then decreased by 20%.

Calculation:

Let the price of apples be Rs. 100

After increase it is 100 × 120%

⇒ Rs. 120

After decrease it is 120 × 80%

⇒ Rs. 96

So, decrease = 100 - 96

⇒ Rs. 4

% of decrease = (4/100) × 100

⇒ 4%

∴ The net percentage decrease is 4%.

Shortcut Trick

	Before	After
20% increase	5	6
20% decrease	5	4
Net	25	24

So, net pecentage decrease 1/25 × 100 = 4%

Question 2:

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The area of a sector of a circle is 308 cm^2, with the central angle measuring 45°. The radius of the circle is:

1. 14 cm
2. 21 cm
3. 7 cm
4. 28 cm

Answer (Detailed Solution Below)

Option 4 : 28 cm

SSC CGL Maths Questions Question 2 Detailed Solution

Given:

The area of a sector of a circle is 308 cm^2

The angle of the sector is 45°

Concept used:

Area of a sector = $\pi r^2 \times \theta/360°$

θ = angle of the sector

r = radius

Calculation:

According to the question

According to the question,

$\frac{45^\circ}{360^\circ} \times \pi r^2 = 308$

$\Rightarrow \pi r^2 = 308 \times 8$

$\Rightarrow 22/7 \times r^2 = 2464$

$\Rightarrow r^2 = 784$

$\Rightarrow r = 28cm$

So, radius = 28 cm

∴ The radius of the circle is 28 cm.

Question 3:

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If the 8-digit number 123456xy is divisible by 8, then the total possible pairs of (x, y) are:

1. 8
2. 13
3. 10
4. 11

Answer (Detailed Solution Below)

Option 2 : 13

SSC CGL Maths Questions Question 3 Detailed Solution

Given:

The 8-digit number 123456xy is divisible by 8

Concept used:

If the last three digits of a number are divisible by 8, then the number is completely divisible by 8.

Calculation:

So, 6xy should be divisible by 8

Now,

Possible numbers are 600, 608, 616, 624, 632, 640, 648, 656, 664, 672, 680, 688, 696

So, total of 13 possible pairs can be made

∴ The required answer is 13.

Question 4:

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What is the possible value of $(a + b + c) - 3$, if $a^2 + b^2 + c^2 = 9$ and $ab + bc + ca = 8$?

1. 5
2. 3
3. 9
4. 2

Answer (Detailed Solution Below)

Option 4 : 2

SSC CGL Maths Questions Question 4 Detailed Solution

Given:

$a^2 + b^2 + c^2 = 9$ and $ab + bc + ca = 8$

Concept used:

$(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$

Calculation:

$(a + b + c)^2 = 9 + 2 \times 8$

$\Rightarrow 9 + 16$

$\Rightarrow 25$

So, $(a + b + c) = 5$

Now,

$(a + b + c) - 3 = 5 - 3$

$\Rightarrow 2$

∴ The required answer is 2.

Question 5:

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If $x + y + z = 0$, then what is the value of $\frac{x^2}{(yz)} + \frac{y^2}{(xz)} + \frac{z^2}{(xy)}$?

1. 1

2. 0

3. 2

4. 3

Answer (Detailed Solution Below)

Option 4 : 3

SSC CGL Maths Questions Question 5 Detailed Solution

Given:

$x + y + z = 0$

Concept used:

$x^3 + y^3 + z^3 - 3xyz = (x + y + z)(x^2 + y^2 + z^2-xy-yz-zx)$

If $x + y + z = 0$, then

$x^3 + y^3 + z^3 - 3xyz = 0$

So, $x^3 + y^3 + z^3 = 3xyz$

Calculation:

$\frac{x^2}{(yz)} + \frac{y^2}{(xz)} + \frac{z^2}{(xy)}$

$\Rightarrow \frac{x^3+y^3+z^3}{(xyz)}$

$\Rightarrow \frac{3xyz}{xyz}$

$\Rightarrow 3$

∴ The required answer is 3.

Question 6:

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Study the given table and answer the question that follows.

The table shows the percentage of marks obtained by 7 students in different subjects.

Subject → Students ↓	Hindi	English	Maths	Physics	Chemistry	Biology	IT
Amit	67	88	92	88	58	60	98
Ruchi	65	78	68	70	64	72	76
Kanchan	89	66	76	76	72	68	76
Prashant	88	80	72	68	62	64	72
Mrinal	78	64	76	74	68	80	78
Kunal	60	86	88	74	94	76	84
Diksha	74	92	96	66	86	88	96

How many students have scored the highest percentage of marks in more than one subject?

1. Four
2. Three
3. Two
4. One

Answer (Detailed Solution Below)

Option 3 : Two

SSC CGL Maths Questions Question 6 Detailed Solution

Calculation:

Highest % in Hindi = 89

Highest % in English = 92

Highest % in Math = 96

Highest % in Physics = 88

Highest % in Chemistry = 94

Highest % in Biology = 88

Highest % in IT = 98

Now,

Amit scored the highest marks in Physics and IT

Ruchi did not score the highest marks in any subject

Kanchan scored the highest marks in Hindi

Prashant did not score the highest marks in any subject

Mrinal did not score the highest marks in any subject

Kunal scored the highest marks in Chemistry

Diksha scored the highest marks in English, Math, and Biology

So, total of two students scored the highest percentage of marks in more than one subject

∴ The required answer is Two.

Question 7:

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A sum becomes Rs. 15,500 in 7 years on simple interest at the rate of 30 percent per annum. What is the total interest for the 7 years?

1. Rs. 12,200

2. Rs. 1,47,000

3. Rs. 10,500

4. Rs. 11,500

Answer (Detailed Solution Below)

Option 3 : Rs. 10,500

SSC CGL Maths Questions Question 7 Detailed Solution

Given:

Sum becomes Rs. 15500

Rate of interest (r) = 30% per annum

Time period (t) = 7 years

Formula used:

Simple interest (S.I) = (Prt/100)

Where,

P = principal amount

r = rate of interest

t = time period

Calculation:

If the sum becomes Rs. 16000 Means,

[P + (S.I)] = sum

⇒ [P + (Prt /100)] = sum

⇒ [P + (P × 30 × 7)/ 100] = 15500

⇒ [P + (P × 210/100)] = 15500

⇒ [P + (21P/10)] = 15500

⇒ [31P/10] = 15500

⇒ P = 15500 × (10/31)

⇒ P = 5000

So, S.I = 15500 - 5000

⇒ Rs. 10500

∴ The total interest for the 7 years is Rs. 10500.

Question 8:

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The marked price of a chair is ₹2,400, which is 20% above the cost price. If the chair is sold at a discount of 10% on marked price, what is the profit percentage?

1. 10%
2. 8%
3. 9%
4. 26.2%

Answer (Detailed Solution Below)

Option 2 : 8%

SSC CGL Maths Questions Question 8 Detailed Solution

Given:

The marked price of a chair is ₹2,400, which is 20% above the cost price.

The chair is sold at a discount of 10% on the marked price

Concept used:

Selling price = Marked price × (100 - Discount)%

Selling price = Cost × (100 + profit)%

Calculation:

Selling price of the chair = 2400 × 90%

⇒ Rs. 2160

Now,

Cost price of the chair = 2400 × (100/120)

⇒ Rs. 2000

Profit = 2160 - 2000

⇒ Rs. 160

Profit% = (160/2000) × 100

⇒ 8%

∴ The profit percentage is 8%.

Shortcut Trick

MP is 20% above CP then CP : MP = 5 : 6

After 10% discount MP : SP = 10 : 9

Then, CP : SP = 50 : 54 so profit% = 4/50 × 100 = 8%

Question 9:

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Two identical circles each of radius 30 cm intersect each other such that the circumference of each one passes through the centre of the other. What is the area of the intersecting region?

1. $400\pi - 250\sqrt{3}$ cm^2

2. $300\pi - 150\sqrt{3}$ cm^2

3. $500\pi - 350\sqrt{3}$ cm^2

4. $600\pi - 450\sqrt{3}$ cm^2

Answer (Detailed Solution Below)

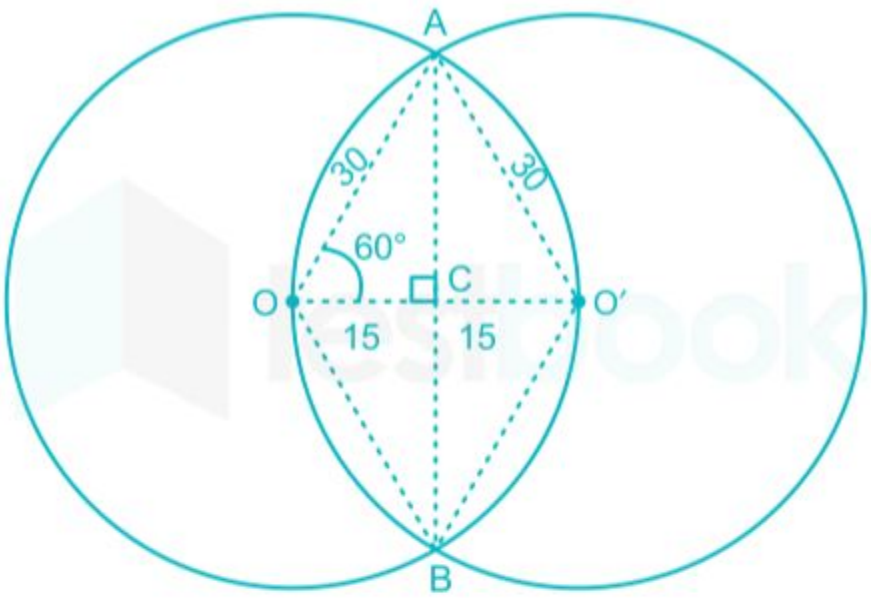
Option 4 : $600\pi - 450\sqrt{3}$ cm^2

SSC CGL Maths Questions Question 9 Detailed Solution

Given:

Two identical circles each of radius 30 cm intersect each other such that the circumference of each one passes through the centre of the other.

Calculation:



OA = O'A = OB = OB' = OO' = 30 cm

In triangle AOO',

OA = O'A = OO' = 30 cm (As all three sides of AOO' are equal so it is an equilateral triangle)

⇒ ∠AOO' = 60°

⇒ ∠AOB = 120°

In triangle ACO,

$AC^2 = OA^2 - OC^2 = 900 - 225$

⇒ $AC^2 = 675$

⇒ AC = 15√3

So, AB = 30√3

Area of AO′BA = Area of sector AO′BO - Area of triangle AOB =

⇒ $\pi(30)^2 \div 3 - ½ \times 30\sqrt{3} \times 15$

⇒ $900\pi \div 3 - 225\sqrt{3}$

⇒ $300\pi - 225\sqrt{3}$

Area of intersecting region = 2(Area of AO′BA)

⇒ $600\pi - 450\sqrt{3}$ cm^2

∴ The required answer is $600\pi - 450\sqrt{3}$ cm^2.

Question 10:

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If ΔBPQ ≅ ΔASR and ∠A = $\frac{1}{3}$∠R = ∠S then find ∠Q. (All angles are in degrees).

1. 108°
2. 36°
3. 72°
4. 118°

Answer (Detailed Solution Below)

Option 1 : 108°

SSC CGL Maths Questions Question 10 Detailed Solution

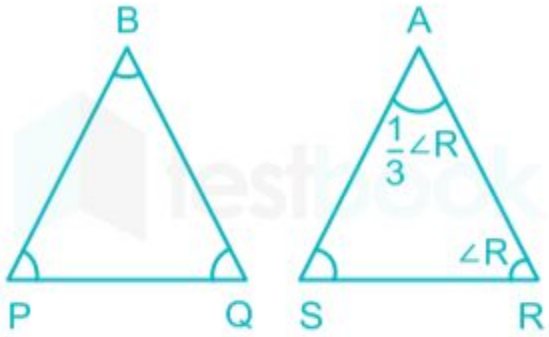
Given:

$\angle A = \frac{1}{3}\angle R = \angle S$

Concept used:

If two triangles are congruent, then their corresponding angles are equal

Calculation:



$\angle A = \frac{1}{3}\angle R$

$\Rightarrow 3\angle A = \angle R$

Again,

$\frac{1}{3}\angle R = \angle S$

$\Rightarrow \angle R = 3\angle S$

Also $\angle A = \angle S$

Now,

$\angle A + \angle R + \angle S = 180°$

$\Rightarrow \angle A + 3\angle A + \angle A = 180°$

$\Rightarrow 5\angle A = 180°$

$\Rightarrow \angle A = 36°$

So, $\angle R = 3 \times 36°$

$\Rightarrow 108°$

Now,

As $\Delta BPQ \cong \Delta ASR$

So, $\angle R = \angle Q$

So, $\angle Q = 108°$

∴ The required answer is 108°.