PhysicsByAaryan

CSIR NET . GATE . JEST . BARC - Physics

Geometry - CSIR NET Physics PYQs

General Aptitude . All PYQs (2015-2025) with answer key

56 questions . Answer key included

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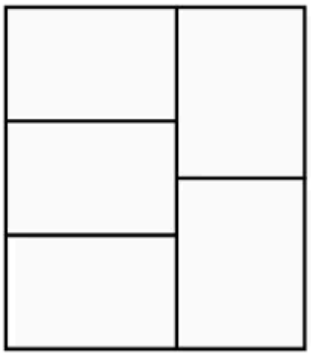
Q1. [Dec 2015] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2015 Dec	2 M

Five congruent rectangles are drawn inside a big rectangle pf perimeter 165 as shown. What is the perimeter of one of the five rectangles?

1. 37
2. 75
3. 15
4. 165



Q2. [Dec 2015] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2015 Dec	2 M

A cubical cardboard box made of $1cm$ thick card board has outer side of $29cm$. A tight-fitting cubical box of the same thickness is placed inside it, then another one inside it and so on. How many cubical boxes will be there in the entire set?

1. 29
2. 28
3. 15
4. 14

Q3. [Dec 2015] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2015 Dec	2 M

The triangle formed by the lines $y = x, y = 1 - x$ and $x = 0$ in a two dimensional plane is (x and y axes have the same scale)

1. isosceles and right-angled
2. isosceles but not right-angled
3. right-angled but not isosceles
4. neither isosceles nor right angled

Q4. [Dec 2015] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2015 Dec	2 M

Four circles of unit radius each are drawn such that each one touches two others and their centres lie on the vertices of a square. The area of the region enclosed between the circles is

1. $\pi - 1$
2. $\pi - 2$
3. $3 - \pi$
4. $4 - \pi$

Q5. [June 2015] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2015 June	2 M

A $12\text{m} \times 4\text{m}$ rectangular roof is resting on four 4m tall thin poles. Sunlight falls on the roof at an angle of $45°$ from the east, creating a shadow on the ground. What will be the area of the shadow?

1. 24m^2
2. 36m^2
3. 48m^2
4. 60m^2

Q6. [June 2015] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2015 June	2 M

The maximum number of points formed by intersection of all pairs of diagonals of convex octagon is

1. 70
2. 400
3. 120
4. 190

Q7. [June 2015] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2015 June	2 M

Find the height of a box of base area 24 cm 48 cm, in which the longest stick that can be kept is 56 cm long.

1. 8 cm
2. 32 cm
3. 37.5 cm
4. 16 cm

Q8. [June 2015] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2015 June	2 M

The product of the perimeter of a triangle, the radius of its in-circle, and a number gives the area of the triangle. The number is

1. $^1/_4$
2. $^1/_3$
3. $^1/_2$
4. 1

Q9. [June 2015] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2015 June	2 M

An infinite row of boxes is arranged. Each box has half the volume of the previous box. If the largest box has a volume of 20 cc, what is the total volume of all boxes'?

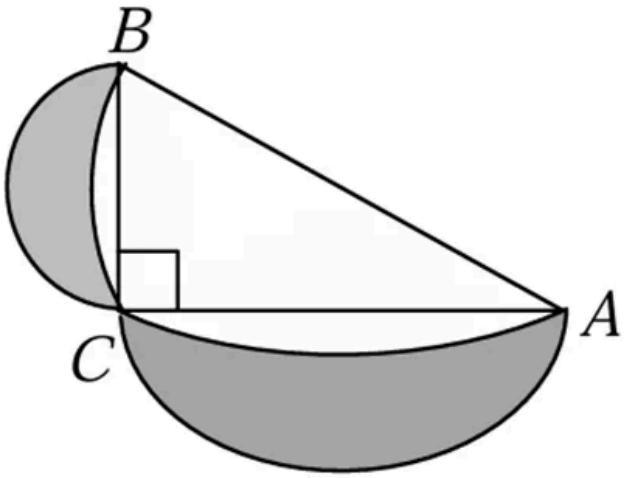
1. Infinite
2. 400 cc
3. 40 cc
4. 80 cc

Q10. [June 2015] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2015 June	2 M

ABC is a right-angled triangle inscribed in a semicircle. Smaller semicircles are drawn on sides BC and AC . If the area of the triangle is a, what is the total area of the shaded lumes?



1. a
2. π a
3. a /π
4. a /2π

Q11. [June 2015] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2015 June	2 M

An inclined plane rests against a horizontal cylinder of radius R. If the plane makes an angle of $30°$ with the ground, the point of contact of the plane with the cylinder is at a height of

1. $1.500\ R$
2. $1.866\ R$
3. $1.414\ R$
4. $1.000\ R$

Q12. [June 2015] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2015 June	2 M

What is the maximum number of parallel, non-overlapping cricket pitches(length 24 m , width 3m) that can be laid in a field of diameter 140 m , if the boundary is required to be at least 60 m from the centre of any pitch?

1. 6
2. 7
3. 12
4. 4

Q13. [Dec 2016] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2016 Dec	2M

A normal TV screen has a width to height ratio of 4:3, while a high definition TV screen has a ratio of 16:9. What is the approximate ratio of their diagonals, if the heights of the two types of screens are the same?

1. 5: 9
2. 5:18
3. 5: 15
4. 5: 6

Q14. [Dec 2016] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2016 Dec	2M

Comparing numerical values, which of the following is different from the rest?

1. The ratio of the circumference of a circle to its diameter.
2. The sum of the three angles of a plane triangle expressed in radians.
3. 22/7.
4. The net volume of a hemisphere of unit radius, and a cone of unit radius and unit height.

Q15. [Dec 2016] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2016 Dec	2M

A river is 4.1 km wide. A bridge built across it has 1/7 of its length on one bank and 1/8 of its length on the other bank. What is the total length of the bridge?

1. 5.1 km
2. 4.9 km
3. 5.6 km
4. 5.4 km

Q16. [Dec 2016] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2016 Dec	2M

OA, OB, and OC are radii of the quarter circle shown in the figure. AB is also equal to the radius.

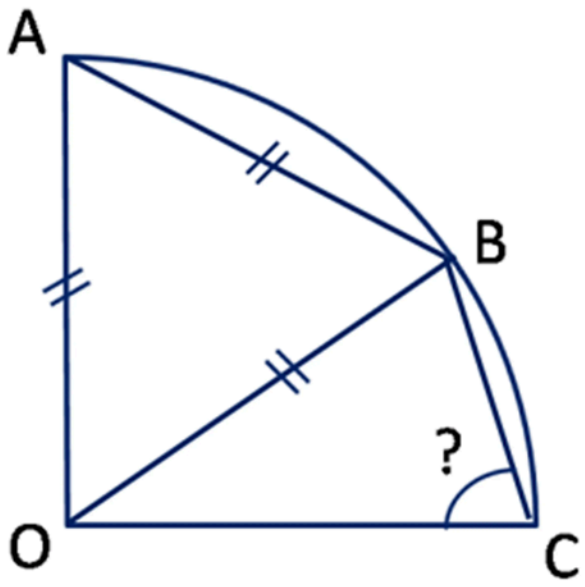
What is angle OCB?

1. $60°$

2. $75°$

3. $55°$

4. $65°$



Q17. [June 2016] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2016 June	2M

An infinite number of identical circular discs each of radius $\frac{1}{2}$ are tightly packed such that the centres of the discs are at integer values of coordinates x and y. The ratio of the area of the uncovered patches to the total area is

1. $1 - \pi/4$
2. $\pi/4$
3. $1 - \pi$
4. π

Q18. [June 2016] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2016 June	2M

AB and CD are two chords of a circle subtending $60°$ and $120°$ respectively at the same point on the circumference of the circle. Then AB: CD is

1. $\sqrt{3}:1$
2. $\sqrt{2}:1$
3. $1:1$
4. $\sqrt{3}:\sqrt{2}$

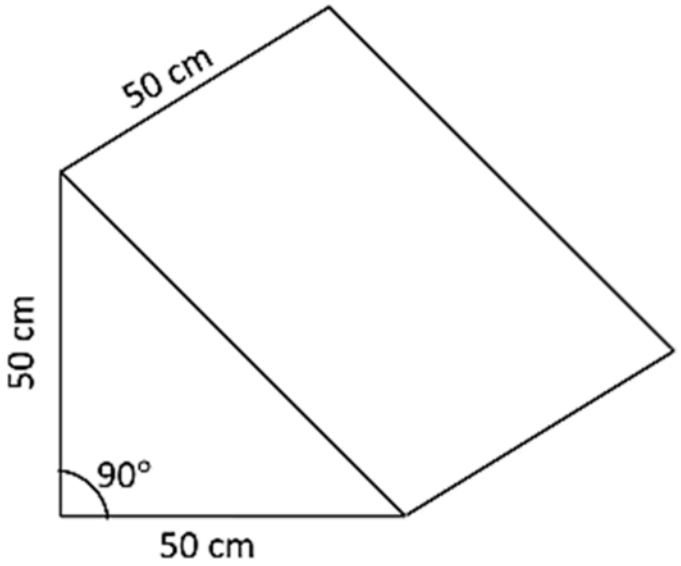
Q19. [June 2016] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2016 June	2M

The diagram shows a block of marble having the shape of a triangular prism. What is the maximum number of slabs of $10 \times 10 \times 5\ \text{cm}^3$ size that can be cut parallel to the face on which the block is resting?

1. 50
2. 100
3. 125
4. 250



Q20. [Dec 2017] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2017 Dec	2M

A sphere G of radius b is fixed mid-air and several spheres identical to the first one are shot at it with their velocities parallel to each other. If the shot spheres fall within an imaginary cylinder of radius $a(b \ll a)$, then the fraction of spheres that will hit G is

1. $2b/a$
2. $4b^2/a^2$
3. $(a-b)/(a+b)$
4. $8b^3/a^3$

Q21. [Dec 2017] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2017 Dec	2M

A $100m$ long fence is to be made by fixing a wire mesh on steel poles. Each pole has a $1m$ vertical portion and a $1m$ portion tilted at 45^0 to the vertical. What will be the area of wire mesh required?

1. $200\ \mathrm{m}^2$
2. $241.4\ \mathrm{m}^2$
3. $400\ \mathrm{m}^2$
4. $170.7\ \mathrm{m}^2$

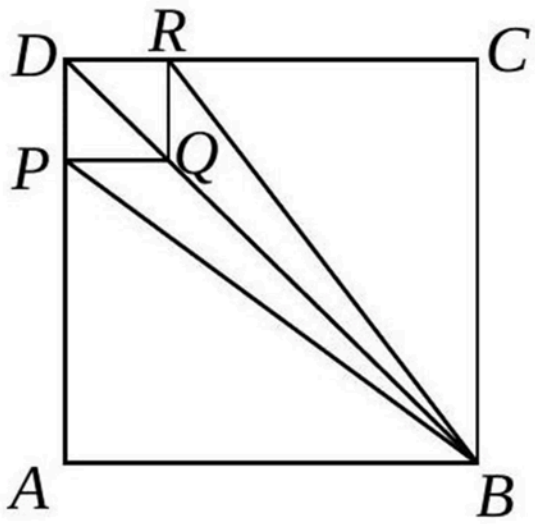
Q22. [Dec 2017] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2017 Dec	2M

DRQP is a small square of side a in the corner of a big square ABCD of side A . What is the ratio of the area of the quadrilateral $PBRQ$ to that of the square $ABCD$, given $A/a = 3$?

1. $2/9$
2. $1/6$
3. $1/3$
4. $2/7$



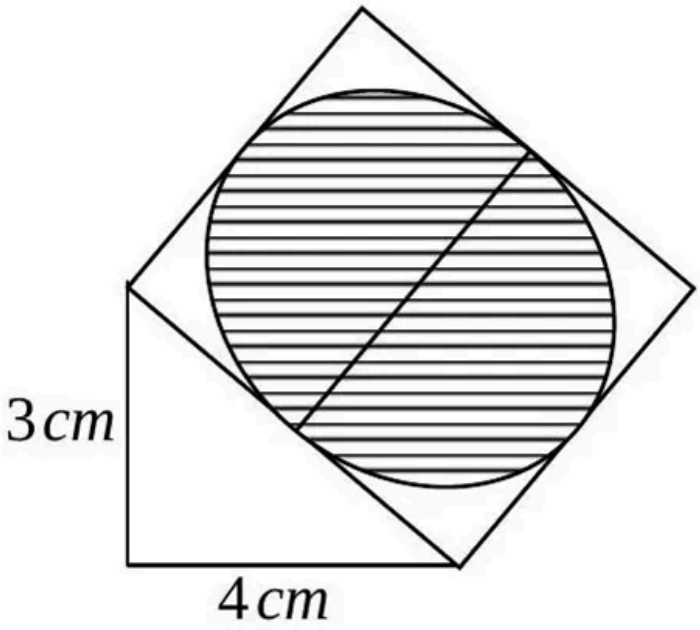
Q23. [June 2017] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2017 June	2M

A square is drawn with one of its sides as the hypotenuse of a right-angled triangle as shown in the figure. What is the area of the shaded circle?

1. $\frac{25\pi}{1}\,\text{cm}^2$
2. $\frac{25\pi}{2}\,\text{cm}^2$
3. $\frac{25\pi}{3}\,\text{cm}^2$
4. $\frac{25\pi}{4}\,\text{cm}^2$



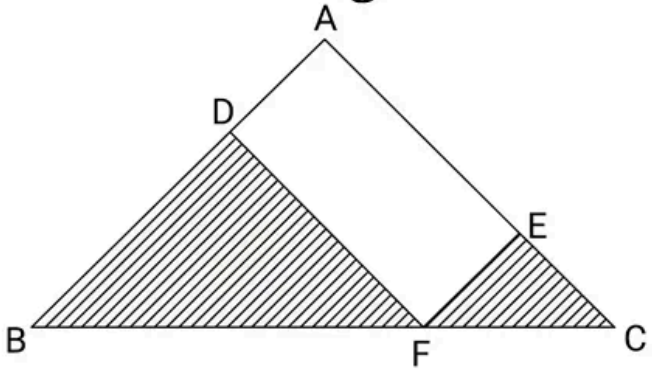
Q24. [June 2017] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2017 June	2M

In $\triangle ABC, AB = AC$ and $\angle BAC = 90°; EF \| AB$ and $DF \| AC$. The total area of the shaded region is

1. $AF^2/2$
2. AF^2
3. $BC^2/2$
4. BC^2



Q25. [June 2017] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2017 June	2M

Consider a circle of radius r. Fit the largest possible square inside it and the largest possible circle inside the square. What is the radius of the innermost circle?

1. $r/\sqrt{2}$
2. $\pi r/\sqrt{2}$
3. $\frac{r}{2\pi\sqrt{2}}$
4. $r/2$

Q26. [Dec 2018] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2018 Dec	2M

A rectangular photo frame of size $30cm \times 40cm$ has a photograph mounted at the center leaving a $5cm$ border all around. The area of the border is

1. $600\ \text{cm}^2$
2. $350\ \text{cm}^2$
3. $400\ \text{cm}^2$
4. $700\ \text{cm}^2$

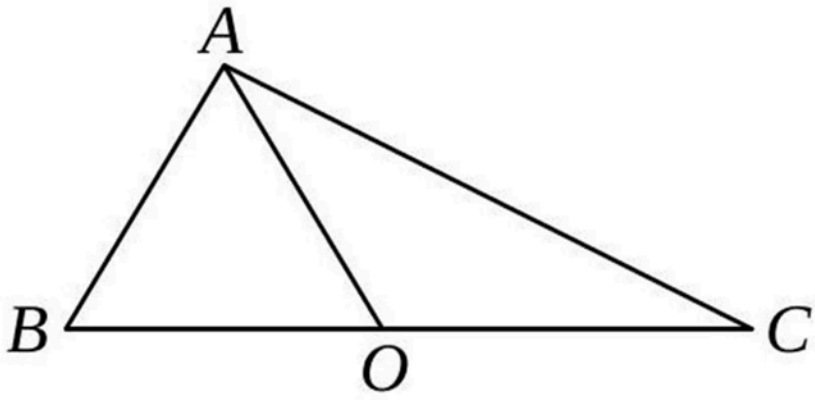
Q27. [Dec 2018] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2018 Dec	2M

In triangle ABC, $AB=11$, $BC=61$, $AC=60$, and O is the mid-point of BC. Then AO is

1. 18.5
2. 24.0
3. 30.5
4. 36.0



(Not to scale)

Q28. [Dec 2018] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2018 Dec	2M

Areas of three parts of a rectangle are given in unit of cm^2. What is the total area of the rectangle?

1. 18
2. 24
3. 36
4. 108

3	9
6	

Q29. [June 2018] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2018 June	2M

Areas of the three rectangles inside the full rectangle are given in the diagram. What is the area of the full rectangle?

1. 36
2. 48
3. 72
4. 96

Q30. [June 2018] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2018 June	2M

If all the angles of a triangle are prime numbers, which of the following could be one such angle?

1. 89°
2. 79°
3. 59°
4. 29°

Q31. [Dec 2019] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2019 Dec	2M

What is the ratio of the surface area of a cube with side 1 cm to the total surface area of the cubes formed by breaking the original cube into identical cubes of side 1 mm ?

1. $\frac{1}{6}$
2. $\frac{1}{10}$
3. $\frac{1}{100}$
4. $\frac{1}{36}$

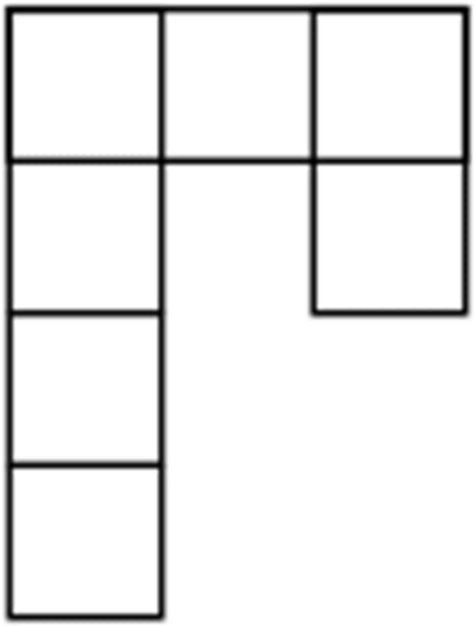
Q32. [Dec 2019] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2019 Dec	2M

How many non-square rectangles are there in the following figure, consisting of 7 squares?

1. 8
2. 9
3. 10
4. 11

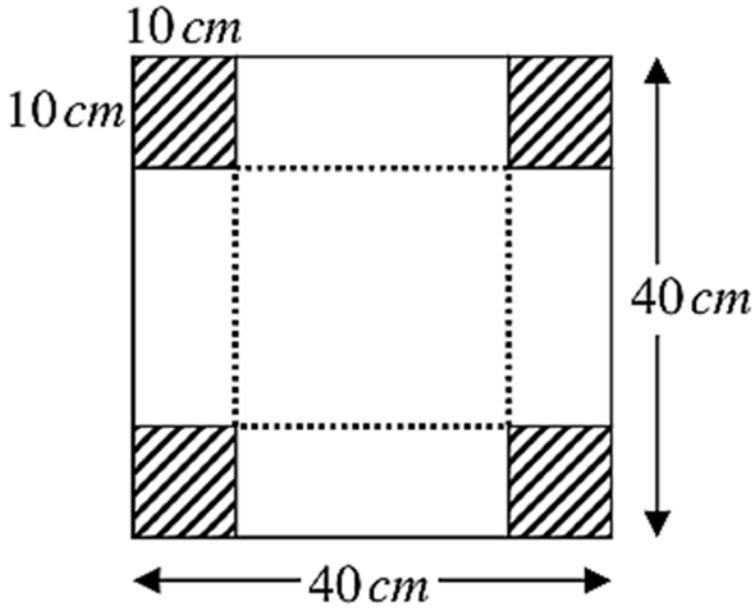


Q33. [June 2019] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2019 June	2M

An open rectangular box is made by excluding the four identical corners of a piece of paper as shown in the diagram and folding it along the dotted lines



The capacity of the box (in cm^3) is

1. 8000
2. 1000
3. 4000
4. 6000

Q34. [June 2019] . 2.0 marks

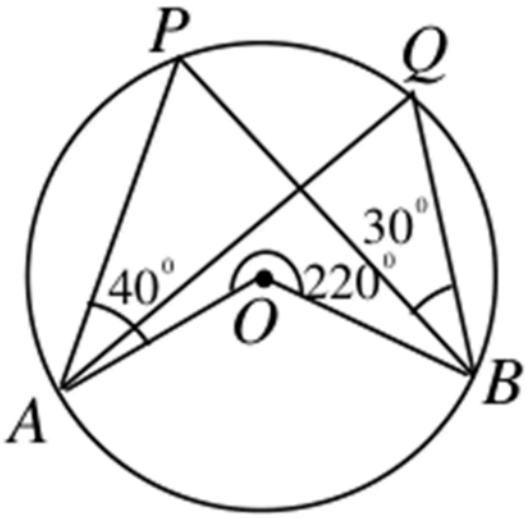
General Aptitude > Geometry

CSIR NET	2019 June	2M

In the given circle, O is the centre, $\angle PAO = 40°, \angle PBQ = 30°$ and outer angle $\angle AOB = 220°$.

Then $\angle AQB$ is

1. $70°$
2. $80°$
3. $60°$
4. $110°$



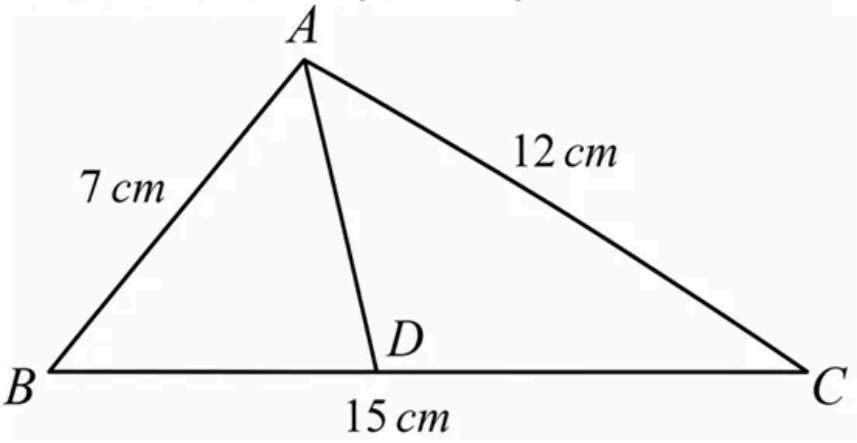
Q35. [June 2020] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2020 June	2M

In the following $\triangle ABC, AB = 7$ cm, $BC = 15$ cm and $AC = 12$ cm. D is a point on BC such that $\triangle ADC$ and $\triangle ABC$ are similar. Then AD (in cm) =

1. 5.6
2. 5.8
3. 6.1
4. 6.4

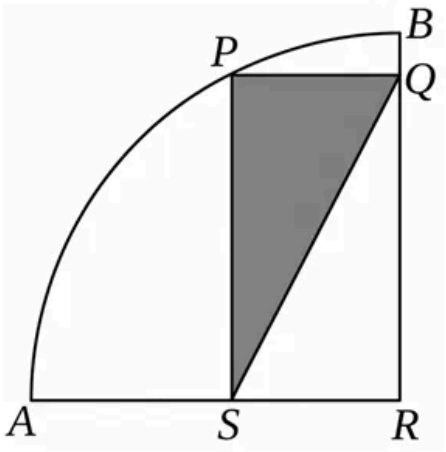


Q36. [June 2020] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2020 June	2M

PQRS is a rectangle inscribed in a quarter circle as shown. The area of shaded region is $24\,cm^2$ and $PQ = 6cm$. The area of the quarter circle is



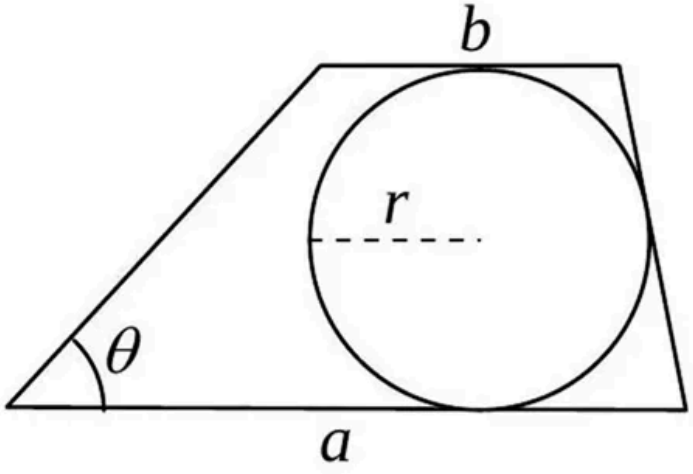
1. 36π
2. 25π
3. 13π
4. 48π

Q37. [June 2020] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2020 June	2M

Area of the trapezium as shown in the figure, is



1. $ab + r^2 \tan\theta$
2. $r(a+b)\cos\theta$
3. $2r(a+b)$
4. $r(a+b)$

Q38. [June 2020] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2020 June	2M

A wire is bent into the shape of a square enclosing an area M. If the same wire is bent to form a circle, the area enclosed will be

1. $\frac{4\sqrt{2}M}{\pi}$
2. M
3. $\frac{4M}{\pi}$
4. $\frac{\pi M}{2\sqrt{2}}$

Q39. [June 2021] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2021 June	2M

The maximum area of a right-angled triangle inscribed in a circle of radius r is

1. $2r^2$
2. $r^2/2$
3. $\sqrt{2}r^2$
4. r^2

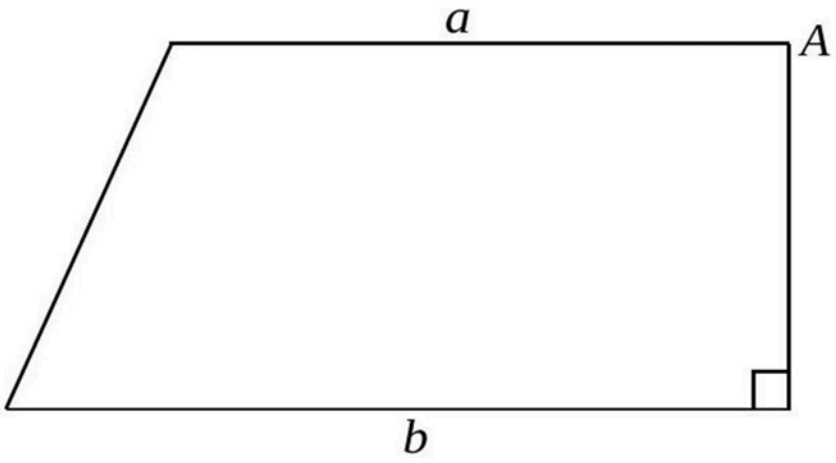
Q40. [June 2022] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2022 June	2M

At what horizontal distance from A should a vertical line be drawn so as to divide the area of the trapezium shown in the figure into two equal parts? (a and b are lengths of the parallel sides.)

1. $(a+b)/4$
2. $(a+b)/3$
3. $(a+b)/2$
4. $(2a+b)/2$



Q41. [June 2022] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2022 June	2M

A beam of square cross-section is to be cut out of a wooden log. Assuming that the log is cylindrical, what approximately is the largest fraction of the wood by volume that can be fruitfully utilized as the beam?

1. 49%
2. 64%
3. 71%
4. 81%

Q42. [June 2022] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2022 June	2M

How many rectangles are there in the given figure?

1. 6
2. 7
3. 8
4. 9

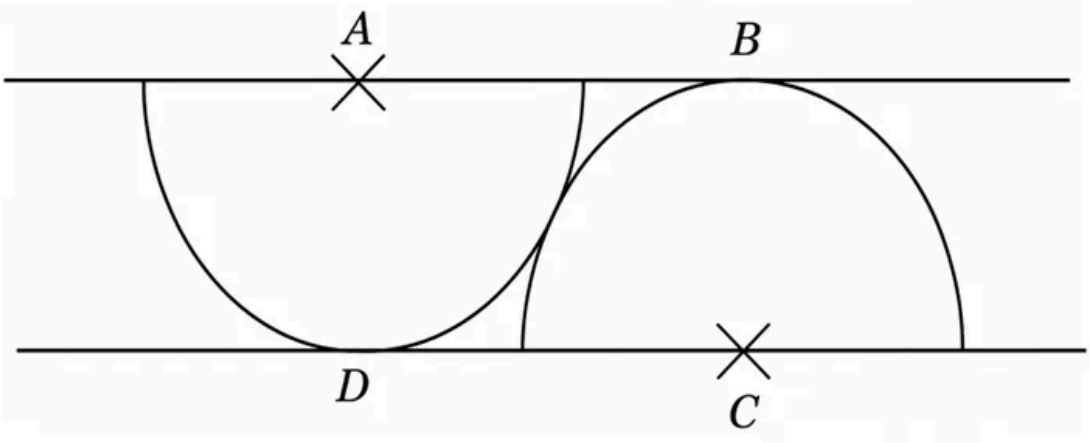
Q43. [June 2023] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2023 June	2M

Two semicircles of same radii centred at A and C, touching each other, are placed between two parallel lines, as shown in the figure. The angle BAC is

1. 30°
2. 35°
3. 45°
4. 60°



Q44. [June 2023] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2023 June	2M

Sum of all the internal angles of a regular octagon is ____ degrees.

1. 360
2. 1080
3. 1260
4. 900

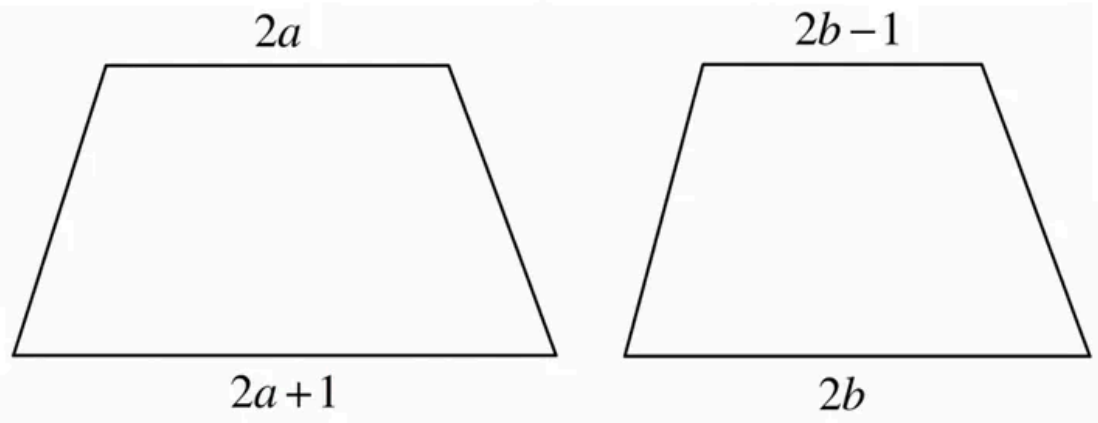
Q45. [June 2023] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2023 June	2M

If two trapeziums of the same height, as shown below, can be joined to form a parallelogram of area 2(a+b), then the height of the parallelogram will be

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



Q46. [Dec 2024] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2024 Dec	2M

A chocolate bar of 5 cm length and 4 cm width has to be cut into $1\,\text{cm} \times 1\,\text{cm}$ pieces. How many minimum cuts would be required, if pieces are to be taken one-by-one? (One can start by cutting along either length or width, before removing $1\,\text{cm} \times 1\,\text{cm}$ pieces one by one)

1. 20
2. 19
3. 18
4. 10

Q47. [Dec 2024] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2024 Dec	2M

There are four containers of equal height, whose bases are a circle, a square, a rectangle and an equilateral triangle having the same area. Which one of the following statements about these containers is true?

1. Their volumes are equal.
2. Volume of the rectangular container is larger than that of the square container.
3. Volume of the triangular container is smaller than that of the square container.
4. Volume of the square container is larger than that of the circular container.

Q48. [Dec 2024] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2024 Dec	2M

A block of marble $4\ \text{m} \times 3\ \text{m} \times 2\ \text{m}$ in size is cut into square tiles of 1 m side having thickness of 10 cm . Assuming there is no wastage in cutting, how many tiles will be made?

1. 120
2. 240
3. 360
4. 480

Q49. [Dec 2024] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2024 Dec	2M

One side and one diagonal of a rhombus are 13 cm and 24 cm , respectively. Then the area of the rhombus is

1. $90\ \text{cm}^2$
2. $100\ \text{cm}^2$
3. $110\ \text{cm}^2$
4. $120\ \text{cm}^2$

Q50. [June 2024] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2024 June	2M

A rectangular tray of $30\ \text{cm} \times 60\ \text{cm}$ size is used for baking circular biscuits. The diameter of each biscuit is 3 cm before baking, which increases by 10% on baking. What is the maximum number of biscuits that can be baked in the tray such that the base of each biscuit is in contact with the tray?

1. 171
2. 162
3. 180
4. 200

Q51. [June 2024] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2024 June	2M

In how many distinct ways can 128 identical marbles be arranged in a complete rectangular grid (disregarding the orientation of the grid)?

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

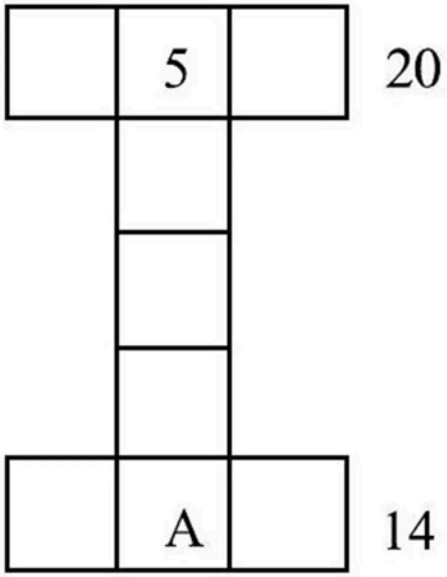
Q52. [June 2024] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2024 June	2M

The squares in the following grid are filled with numbers 1 to 9, without repetition, such that the numbers in the squares forming the top and bottom rows add to 20 and 14 respectively and those forming the column to 23 . What is the value of A ?

1. 4
2. 6
3. 7
4. 8



Q53. [June 2024] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2024 June	2M

On a one-way road, broken lines consisting of 2.5 m length segments separated by 2.5 m gaps are painted along the length of the road to demarcate 3 lanes, and continuous lines are painted along both the borders. What is the total length of the painted lines (in m) over a 250 m stretch of the road?

1. 500
2. 625
3. 750
4. 1000

Q54. [June 2024] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2024 June	2M

An egg tray has 30 cavities to hold eggs in 5 rows and 6 columns. Each cavity is surrounded by 4 raised corners shared by adjacent cavities. How many raised corners does the egg tray have?

1. 30
2. 35
3. 36
4. 42

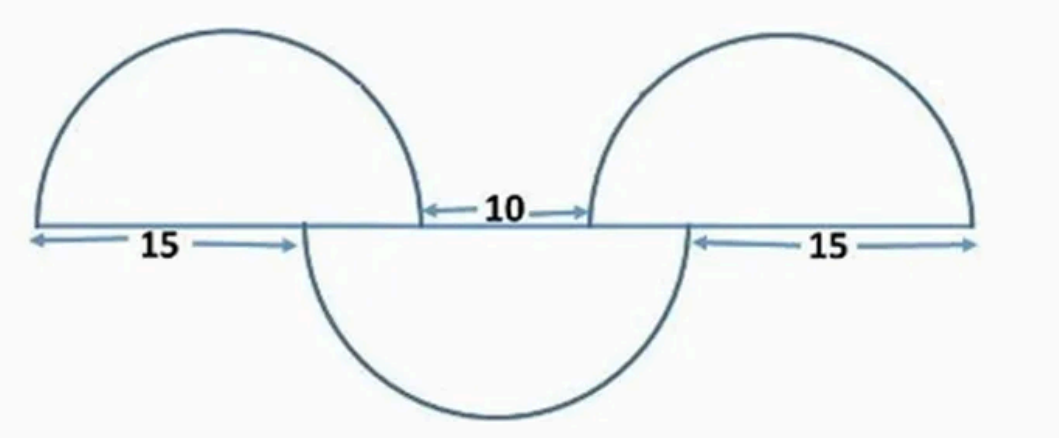
Q55. [June 2025] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2025 June	2M

Three identical semi-circles are arranged as shown. What is the diameter of the semi-circles?

1. 5π
2. 20
3. $15\pi/2$
4. 25



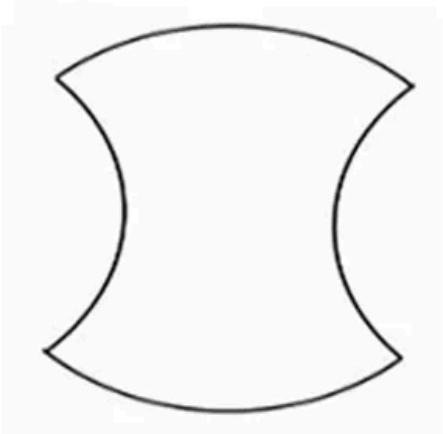
Q56. [June 2025] . 2.0 marks

General Aptitude > Geometry

CSIR NET	2025 June	2M

A circle of radius 1 unit is divided into four quarters and rejoined as shown below.

What is the area of this shape?



1. π
2. 1
3. 2
4. 4

Answer Key

56 questions . Subject and topic for quick revision

Q. No	Subject	Topic	Answer
Q1	General Aptitude	Geometry	**2**
Q2	General Aptitude	Geometry	**4**
Q3	General Aptitude	Geometry	**1**
Q4	General Aptitude	Geometry	**4**
Q5	General Aptitude	Geometry	**3**
Q6	General Aptitude	Geometry	**1**
Q7	General Aptitude	Geometry	**4**
Q8	General Aptitude	Geometry	**3**
Q9	General Aptitude	Geometry	**3**
Q10	General Aptitude	Geometry	**1**
Q11	General Aptitude	Geometry	**2**
Q12	General Aptitude	Geometry	**2**
Q13	General Aptitude	Geometry	**4**
Q14	General Aptitude	Geometry	**3**
Q15	General Aptitude	Geometry	**3**
Q16	General Aptitude	Geometry	**2**
Q17	General Aptitude	Geometry	**1**
Q18	General Aptitude	Geometry	**3**
Q19	General Aptitude	Geometry	**2**
Q20	General Aptitude	Geometry	**2**
Q21	General Aptitude	Geometry	**1**
Q22	General Aptitude	Geometry	**1**
Q23	General Aptitude	Geometry	**4**
Q24	General Aptitude	Geometry	**1**
Q25	General Aptitude	Geometry	**1**
Q26	General Aptitude	Geometry	**1**
Q27	General Aptitude	Geometry	**3**
Q28	General Aptitude	Geometry	**3**
Q29	General Aptitude	Geometry	**2**
Q30	General Aptitude	Geometry	**1 or 4**
Q31	General Aptitude	Geometry	**2**
Q32	General Aptitude	Geometry	**3**
Q33	General Aptitude	Geometry	**3**
Q34	General Aptitude	Geometry	**1**
Q35	General Aptitude	Geometry	**1**
Q36	General Aptitude	Geometry	**2**
Q37	General Aptitude	Geometry	**4**
Q38	General Aptitude	Geometry	**3**
Q39	General Aptitude	Geometry	**4**
Q40	General Aptitude	Geometry	**1**

Answer Key (cont.)

Q. No	Subject	Topic	Answer
Q41	General Aptitude	Geometry	**2**
Q42	General Aptitude	Geometry	**3**
Q43	General Aptitude	Geometry	**1**
Q44	General Aptitude	Geometry	**2**
Q45	General Aptitude	Geometry	**2**
Q46	General Aptitude	Geometry	**2**
Q47	General Aptitude	Geometry	**1**
Q48	General Aptitude	Geometry	**2**
Q49	General Aptitude	Geometry	**4**
Q50	General Aptitude	Geometry	**2**
Q51	General Aptitude	Geometry	**4**
Q52	General Aptitude	Geometry	**3**
Q53	General Aptitude	Geometry	**3**
Q54	General Aptitude	Geometry	**4**
Q55	General Aptitude	Geometry	**2**
Q56	General Aptitude	Geometry	**3**

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