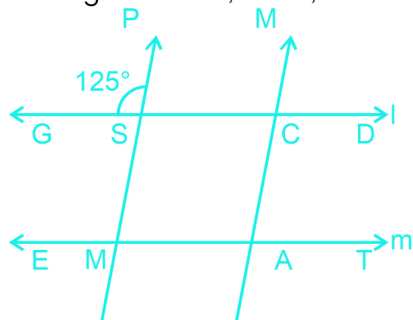


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Quantitative Aptitude - Geometry

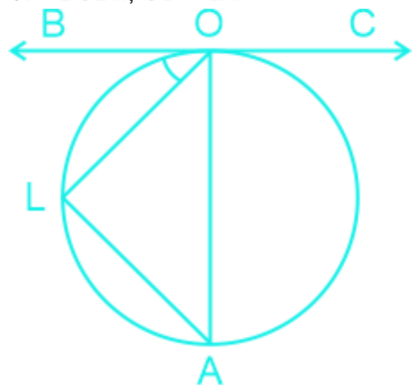
English

Q:1 It is given that, in the figure given below, SCAM is a parallelogram, and $\angle PSG = 125^\circ$, then find the average of $\angle BCD$, $\angle CAT$, and $\angle SME$.



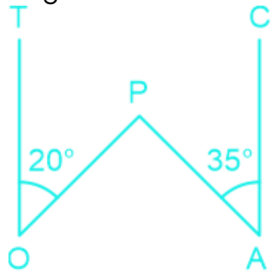
1. 76.33°
2. 70°
3. 92°
4. 78.33°

Q:2 In the circle given below, AO is the diameter and BC is tangent to the circle. Find the value of $\angle BOL$ if, $OL = LA$.



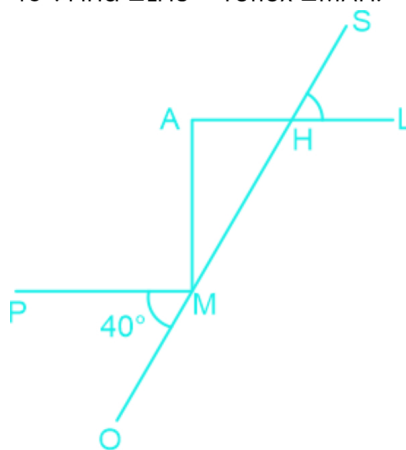
1. 60°
2. 55°
3. 45°
4. 30°

Q:3 In the figure given below $TO \parallel AC$. Also $\angle TOP = 20^\circ$ and $\angle CAP = 35^\circ$. Find the complementary angle of $\angle OPA$.



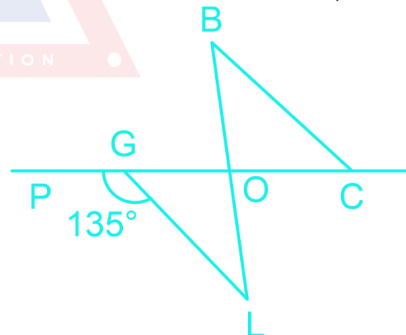
1. 25°
2. 45°
3. 35°
4. 20°

Q:4 In the figure given below, $PM \perp AL$ and $\angle PMO = 40^\circ$. Find $\angle LHS + \text{reflex } \angle MAH$.



1. 300°
2. 270°
3. 180°
4. 310°

Q:5 If in the given figure $\angle OGL = \angle OCB$ and $\angle LGP = 135^\circ$ and $\angle BOG = 75^\circ$ then, find $\angle OBC$.



1. 45°
2. 60°
3. 75°
4. 30°

Q:6 Two monkeys are hanging on two rods with different lengths each fixed perpendicularly to the roof of a room. The length of the shorter rod is 56 m and the minimum distance between the monkey hanging on it to the monkey hanging on



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English

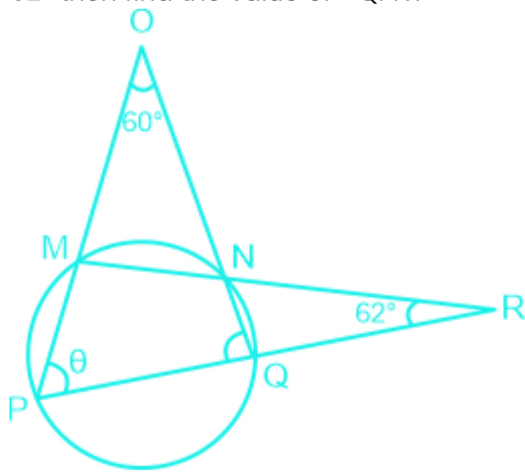
the longer rod is 9 m more than the distance between the two rods. If the minimum distance of the monkey hanging on the shorter rod and the point to which the longer rod is joined with the roof is 65 m, find the approximate length of the longer rod. (in m)

1. 23
2. 26
3. 30
4. Cannot be determined

Q:7 If the angles of a quadrilateral are $(2x - 260)^\circ$, $(4x + 100)^\circ$, $(x + 200)^\circ$ and $(2x - 4)^\circ$, find the value of $(3x - 30)^\circ$.

1. 72°
2. 36°
3. 108°
4. None of these

Q:8 In the given diagram $\angle MON = 60^\circ$ and $\angle QRN = 62^\circ$ then find the value of $\angle QPN$?



1. 58°
2. 84°
3. 29°
4. 61°

Q:9 PQRS is a cyclic quadrilateral and its diagonal PR and SQ intersect at K at the right angle. If $KP^2 + KP^2 + KR^2 + KS^2 = 196$ cm then, find the area of the circle.

1. 343 cm^2
2. 154 cm^2
3. 616 cm^2
4. 84 cm^2

Q:10 PQR is a right-angle triangle where $R = 90^\circ$. RK is perpendicular on side PQ. If the length of the side $QR = 6$ cm and $PR = 8$ cm then, find the ratio between QK and KP.

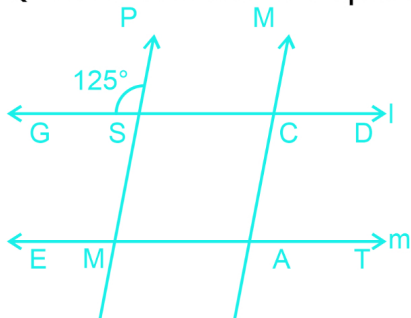
1. 1 : 2
2. 9 : 16
3. 36 : 13
4. 5 : 16

Answer Key

1. (4)	2. (3)	3. (3)	4. (4)	5. (4)
6. (2)	7. (4)	8. (3)	9. (3)	10. (2)

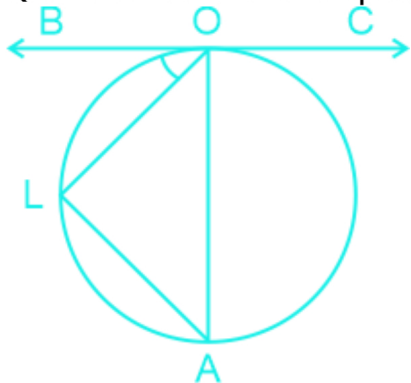
Answers and Solutions

Q:1 The correct answer is **option 4** i.e **78.33°**.



Given - $\angle PSG = 125^\circ$
 $\Rightarrow \angle PSG = \angle MCS = 125^\circ$ (corresponding angles)
 $\Rightarrow \angle MCS + \angle BCD = 180^\circ$ (linear pair)
 $\Rightarrow \angle BCD = 55^\circ$
 $\Rightarrow \angle BCD = \angle CAT = 55^\circ$ (corresponding angles)
 $\Rightarrow \angle PSG = \angle SME = 125^\circ$ (corresponding angles)
 Average of $\angle BCD$, $\angle CAT$, and $\angle SME$
 $\Rightarrow (125 + 55 + 55)/3 = 78.33^\circ$

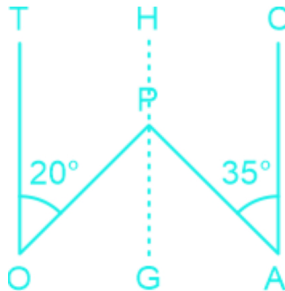
Q:2 The correct answer is **Option 3** i.e. **45°**.



We know that $\angle OLA = 90^\circ$ (the angle in a semicircle is always a right angle)
 Given : $OL = LA$
 Hence, $\angle LOA = \angle OAL = 45^\circ$
 And, $\angle BOA = 90^\circ$ (as tangent makes an angle of 90° with the point of contact with the circle)
 $\Rightarrow \angle BOL + \angle LOA = 90^\circ$
 $\Rightarrow \angle BOL + 45^\circ = 90^\circ$

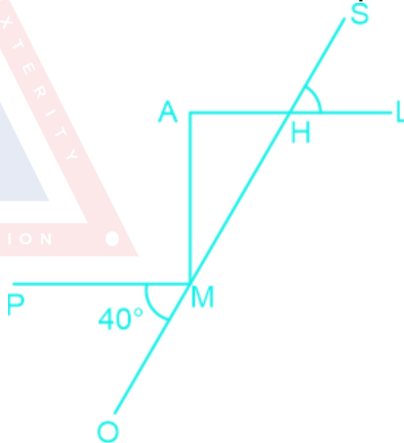
$$\Rightarrow \angle BOL = 45^\circ$$

Q:3 The correct answer is **option 3** i.e **35°**.



Construction - Draw a line parallel to TO and AC i.e. GH passing through P
 Now,
 $\Rightarrow \angle TOP = \angle OPH = 20^\circ$
 Similarly,
 $\Rightarrow \angle CAP = \angle HPA = 35^\circ$
 Now, $\angle OPH + \angle HPA = (20 + 35) = 55^\circ$
 Complementary angle $\angle OPA = (90 - 55) = 35^\circ$

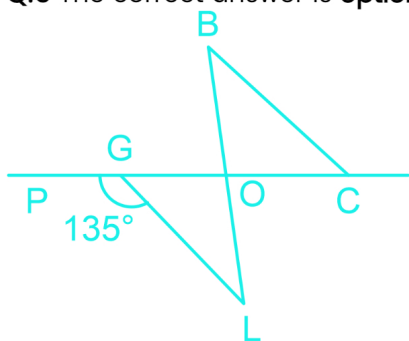
Q:4 The correct answer is **option 4** i.e **310°**.



Given - $PM \perp AL$ so, $AM \perp AL$
 Hence, $\angle PMA = \angle MAH = 90^\circ$
 $\Rightarrow \angle PMO + \angle PMA + \angle AMH = 180^\circ$
 $\Rightarrow (40 + 90 + \angle AMH) = 180^\circ$
 $\Rightarrow \angle AMH = 50^\circ$
 In triangle AMH
 $\Rightarrow (\angle AMH + \angle HAM + \angle AHM) = 180^\circ$
 $\Rightarrow (50 + 90 + \angle AHM) = 180^\circ$
 $\Rightarrow \angle AHM = 40^\circ$
 So, $\angle LHS = 40$ (Vertical Opposite Angle)
 complete $\angle A = 360^\circ$
 $\Rightarrow \angle MAH = 90^\circ$

reflex angle = $(360 - 90) = 270^\circ$
 $\Rightarrow \angle \text{LHS} + \text{reflex } \angle \text{MAH} = (40 + 270) = 310^\circ$

Q:5 The correct answer is **option 4** i.e 30° .



Given - $\angle \text{OGL} = \angle \text{OCB}$ and,
 $\angle \text{LGP} = 135^\circ$ and $\angle \text{BOG} = 75^\circ$

Find $\angle \text{OBC} = ?$

$$\Rightarrow \angle \text{PGL} + \angle \text{OGL} = 180^\circ$$

$$\Rightarrow 135^\circ + \angle \text{OGL} = 180^\circ$$

$$\Rightarrow \angle \text{OGL} = 45^\circ$$

$$\Rightarrow \angle \text{OGL} = \angle \text{OCB} = 45^\circ$$

Now,

$$\angle \text{BOG} + \angle \text{BOC} = 180^\circ$$

$$\Rightarrow 75^\circ + \angle \text{BOC} = 180$$

$$\Rightarrow \angle \text{BOC} = 105^\circ$$

In triangle BOC

$$\Rightarrow \angle \text{BOC} + \angle \text{OCB} + \angle \text{OBC} = 180^\circ$$

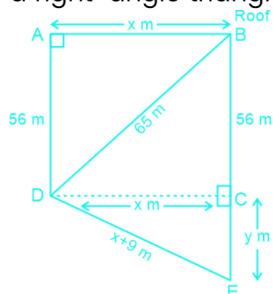
$$\Rightarrow 105^\circ + 45^\circ + \angle \text{OBC} = 180$$

$$\Rightarrow \angle \text{OBC} = 30^\circ$$

Q:6 The correct answer is **Option 2** i.e. **26**.

Let AD be the shorter rod and BE be the longer rod, and the monkeys be at D and C, then according to question, the following figure will be formed assuming the distance between the two rods be x m.

Now as the rods are fixed perpendicularly, $\triangle \text{DAB}$ is a right-angle triangle, right-angled at A.



Then by Pythagoras theorem,

$$56^2 + x^2 = 65^2$$

$$x^2 = 1089$$

$$x = 33 \text{ m}$$

$$\text{DE} = x + 9 = 42 \text{ m}$$

Now length of the longer rod = $56 + y$

Now in $\triangle \text{DCE}$, by Pythagoras theorem,

$$42^2 = 33^2 + y^2$$

$$1764 - 1089 = y^2$$

$$675 \approx 676 = y^2$$

$$y = 26 \text{ m (approximately)}$$

Q:7 The correct answer is **Option 4** i.e. **None of these**.

We know that sum of angles of quadrilateral = 360°

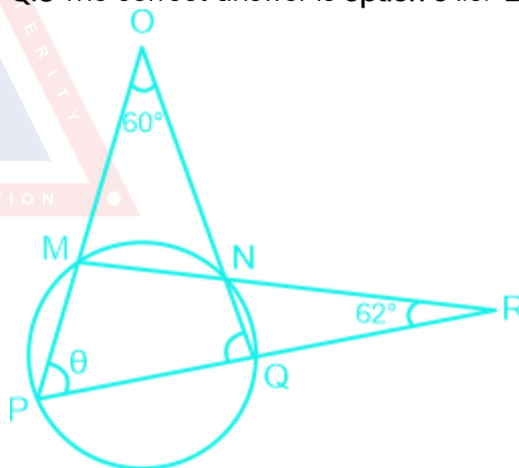
$$(2x - 260)^\circ + (4x + 100)^\circ + (x + 200)^\circ + (2x - 4)^\circ = 360^\circ$$

$$9x + 36^\circ = 360^\circ$$

$$x = 36^\circ$$

$$(3x - 30)^\circ = 108^\circ - 30^\circ = 78^\circ$$

Q:8 The correct answer is **option 3** i.e. **29°** .



In the above diagram,

We have given that $\angle \text{MON} = 60^\circ$ and $\angle \text{QRN} = 62^\circ$
 $\angle \text{QPN} = \theta$

The value of exterior angle is equal to the opposite interior angle.

$$\angle \text{RNQ} = \angle \text{MNO} = \theta$$

$$\angle \text{PQN} = 62^\circ + \theta \text{ (Exterior angle of triangle QNR)}$$

$$\angle \text{PMN} = 60^\circ + \theta \text{ (Exterior angle of triangle MNO)}$$

In cyclic quadrilateral sum of the opposite angle is 180° .

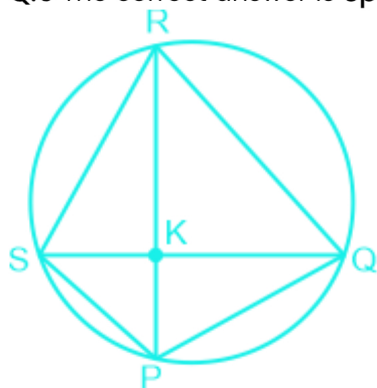
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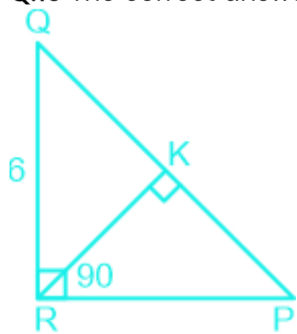
So, $62^\circ + \theta + 60^\circ + \theta = 180^\circ$
 $\theta = (180^\circ - 122^\circ)/2$
 $\theta = 29^\circ$

Q:9 The correct answer is **option 3** i.e. **616 cm²**.



We have given,
 $KP^2 + KP^2 + KR^2 + KS^2 = 196 \text{ cm}$
 Radius $r = \sqrt{(KP^2 + KP^2 + KR^2 + KS^2)} = \sqrt{196} = 14$
 cm
 So, the area of the circle = $\frac{22}{7} \times 14 \times 14 = 616$
 cm².

Q:10 The correct answer is **Option 2** i.e. **9 : 16**.



We know that,
 $\Rightarrow QK/PK = QR^2/PR^2$
 $\Rightarrow QK/PK = 36/64 = 9/16$