



gradeup

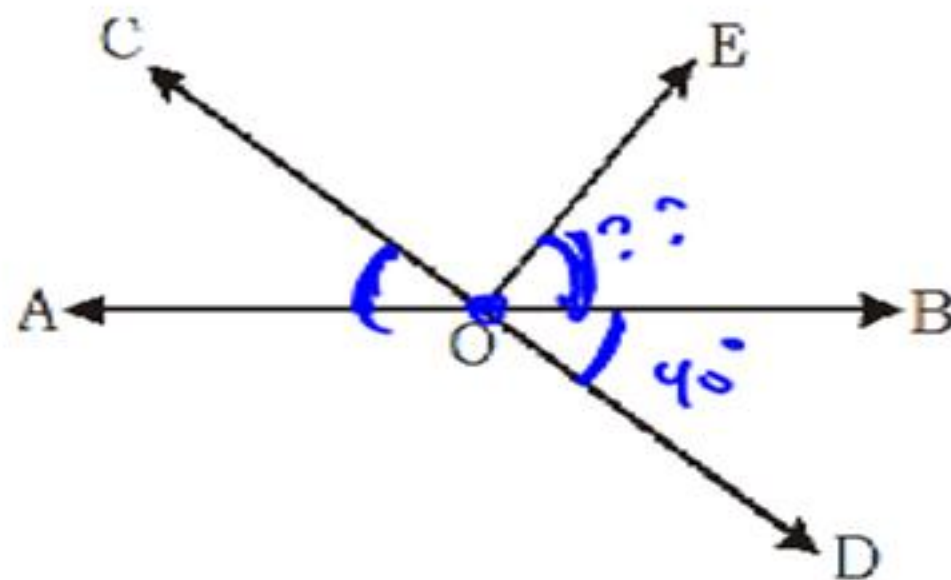
Sahi Prep Hai Toh Life Set Hai

Lines & Angles and Polygons

$$\underline{3:00} - \underline{4:00 \text{ pm}} \rightarrow \underline{\underline{150}}$$

Q1.

In the given figure lines AB and CD intersect at O. If $\angle AOC + \angle BOE = 70^\circ$ and $\angle BOD = 40^\circ$ then find $\angle BOE$ and reflexive $\angle COE$

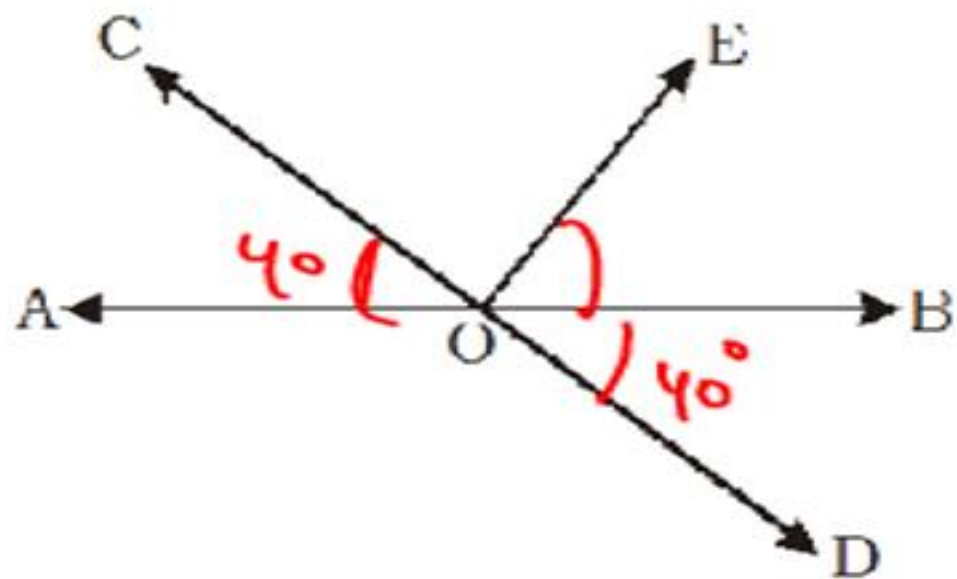


✓ (a) 30° , 250°

(a) 70° , 250°

(c) 30° , 210°

(d) 70° , 210°



$$\angle BOD = 40^\circ$$

$$\angle BOD = \angle COA \text{ [v.o.a]}$$

$$\angle COA = 40$$

$$40 + \angle BOE = 70$$

$$\angle BOE = 30$$

$$40 + 30 + \angle COE = 180$$

$$\angle COE = 110$$

Reflexive $\angle COE = 360 - 110 = 250$

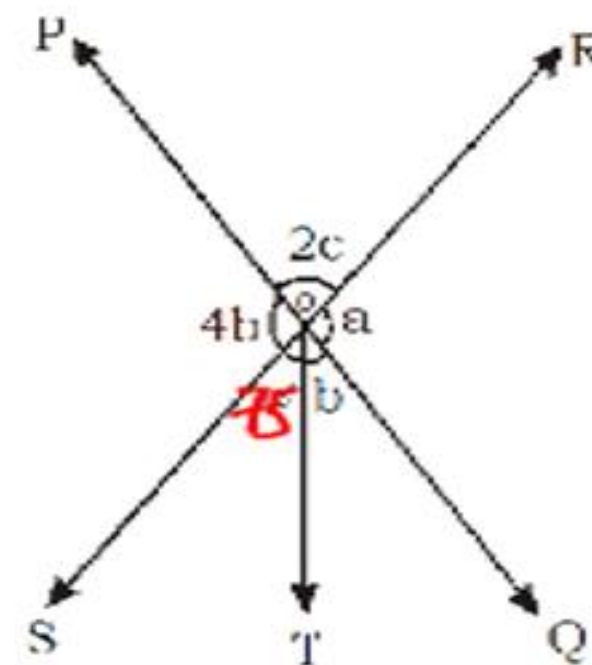
Ans. (a)

Q2.

In the given fig. two straight lines PQ and RS intersect each other at O. If $\angle SOT = 75^\circ$, find the value of a, b and c.

- ☒ (a) $a = 84^\circ$, $b = 21^\circ$, $c = 48^\circ$
 (c) $a = 72^\circ$, $b = 24^\circ$, $c = 54^\circ$

- (b) $a = 48^\circ$, $b = 20^\circ$, $c = 50^\circ$
 (d) $a = 64^\circ$, $b = 28^\circ$, $c = 45^\circ$



$$4b + 75 + b = 180$$

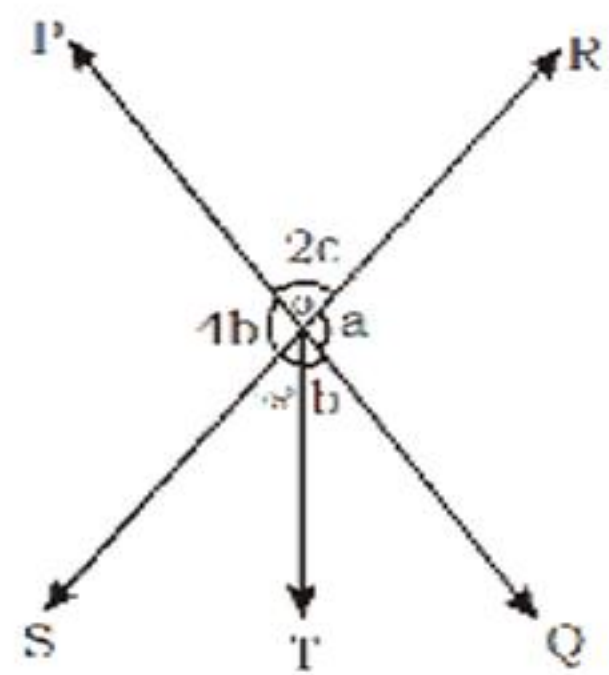
$$b = 21$$

$$a = 4b$$

$$a = 84$$

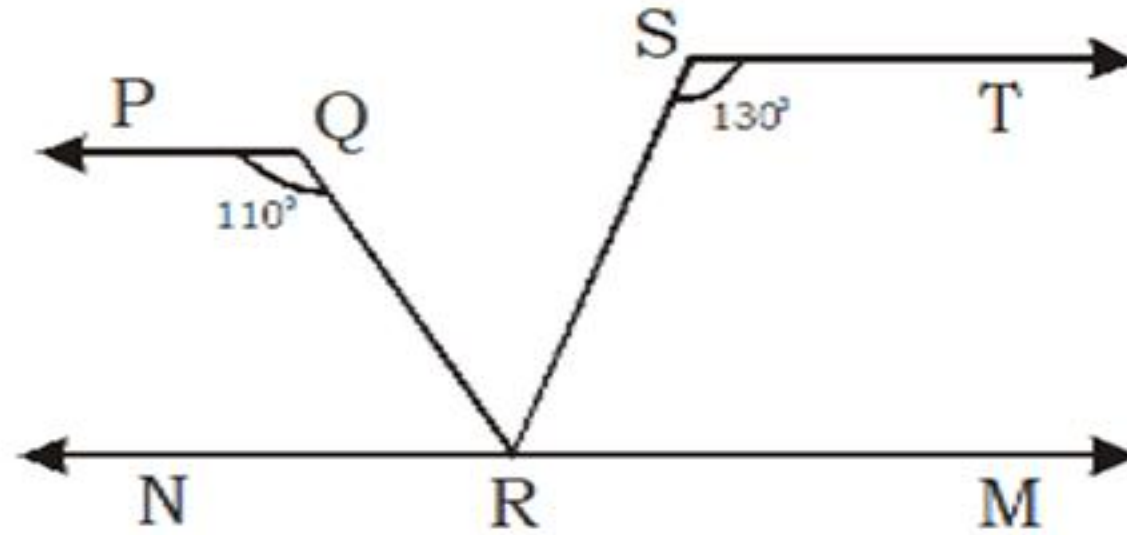
$$a + 2c = 180$$

$$c = 48$$



Ans. (a)

Q3. In the given figure if $PQ \parallel ST$, $\angle PQR = 110^\circ$ and $\angle RST = 130^\circ$, find $\angle QRS$

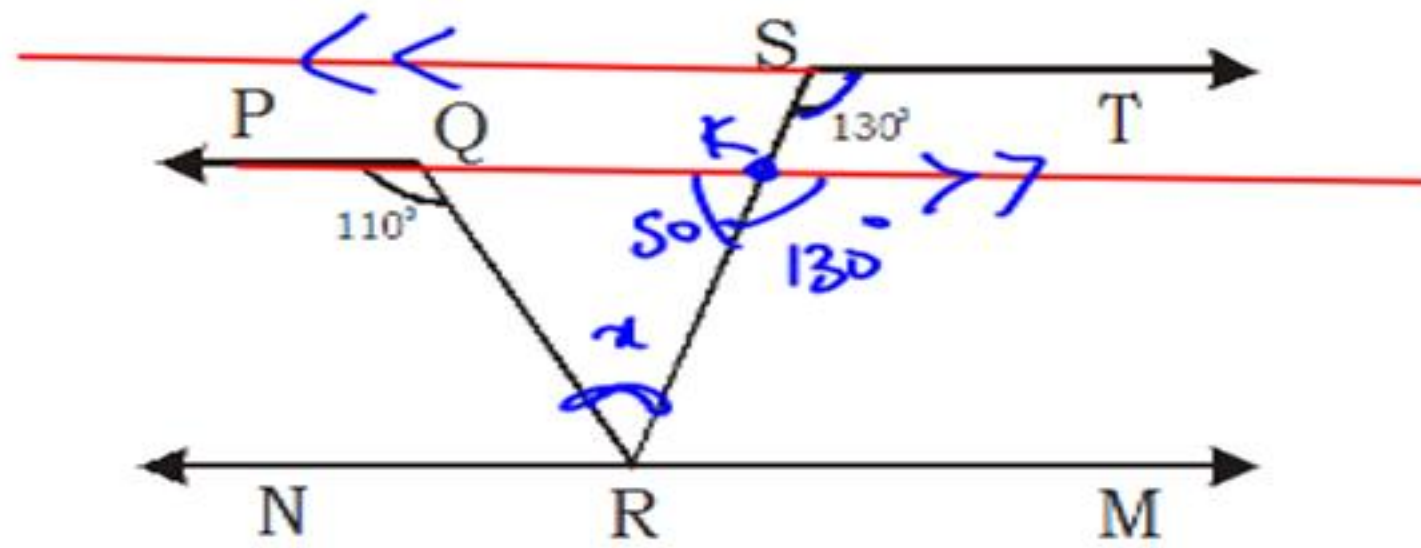


(a) 50°

(b) 60°

(c) 70°

(d) 80°



$$50 + x = 110$$

$$\underline{\underline{x = 60}}$$

Ans. (b)

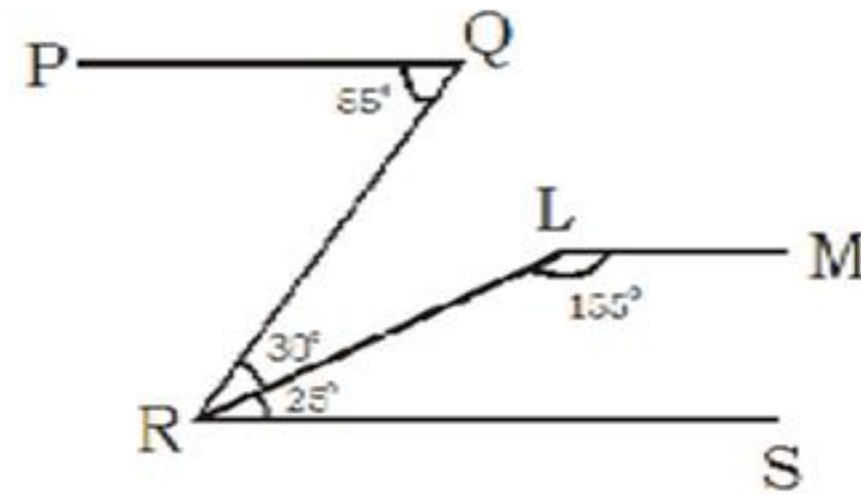
ANGLE BETWEEN 2 PARALLEL LINES



Angle B/w 2 parallel
lines

is 0° or 180°

Q4. In the fig. given below RS is parallel to PQ what is the angle between lines PQ and LM?

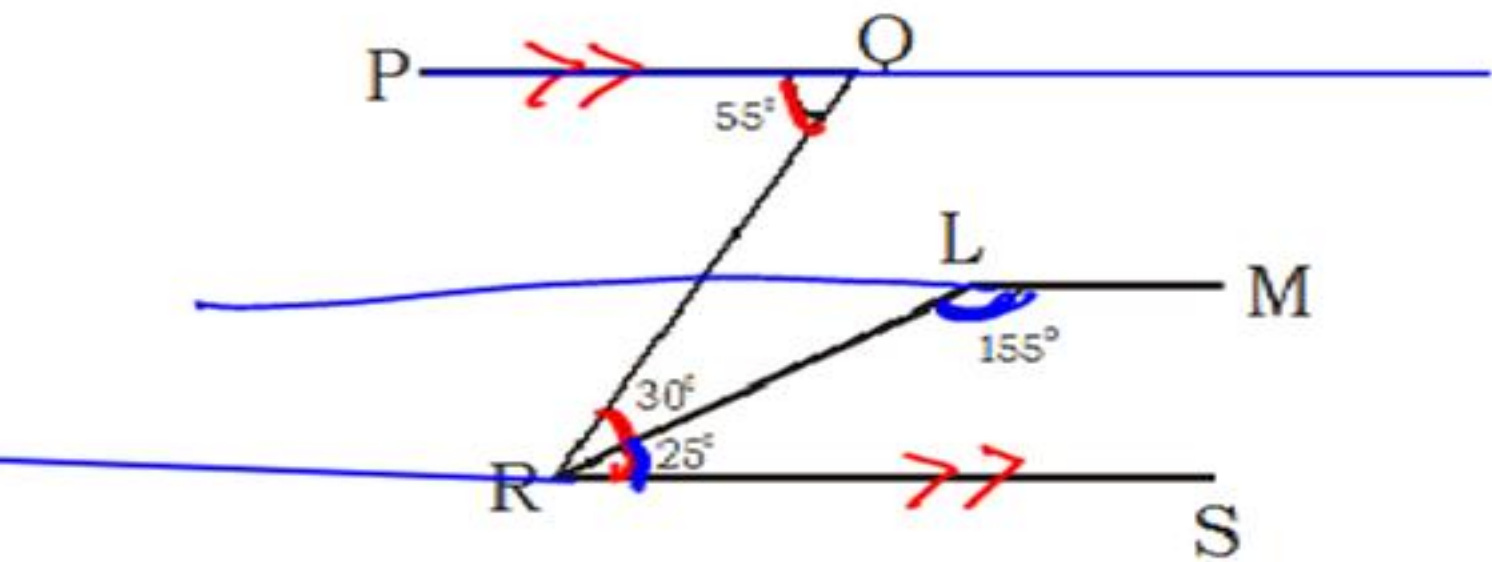


(a) 175°

(b) 177°

(c) 179°

☒ (d) 180°



Find angle b/w PQ & LM

Lines RS & LM

$$\angle SRL + \angle RLM = 180^\circ$$

$$\underline{\underline{LM \parallel RS}}$$

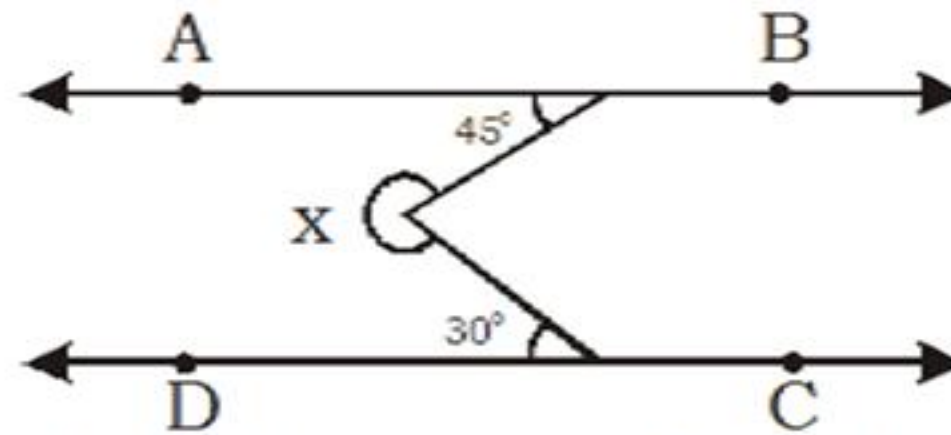
$$\underline{\underline{PQ \parallel RS}} \text{ (Given)}$$

$$\boxed{PQ \parallel LM}$$

Angle b/w them 180°

Ans. (d)

Q5. In the given fig. $AB \parallel CD$, then x is equal to

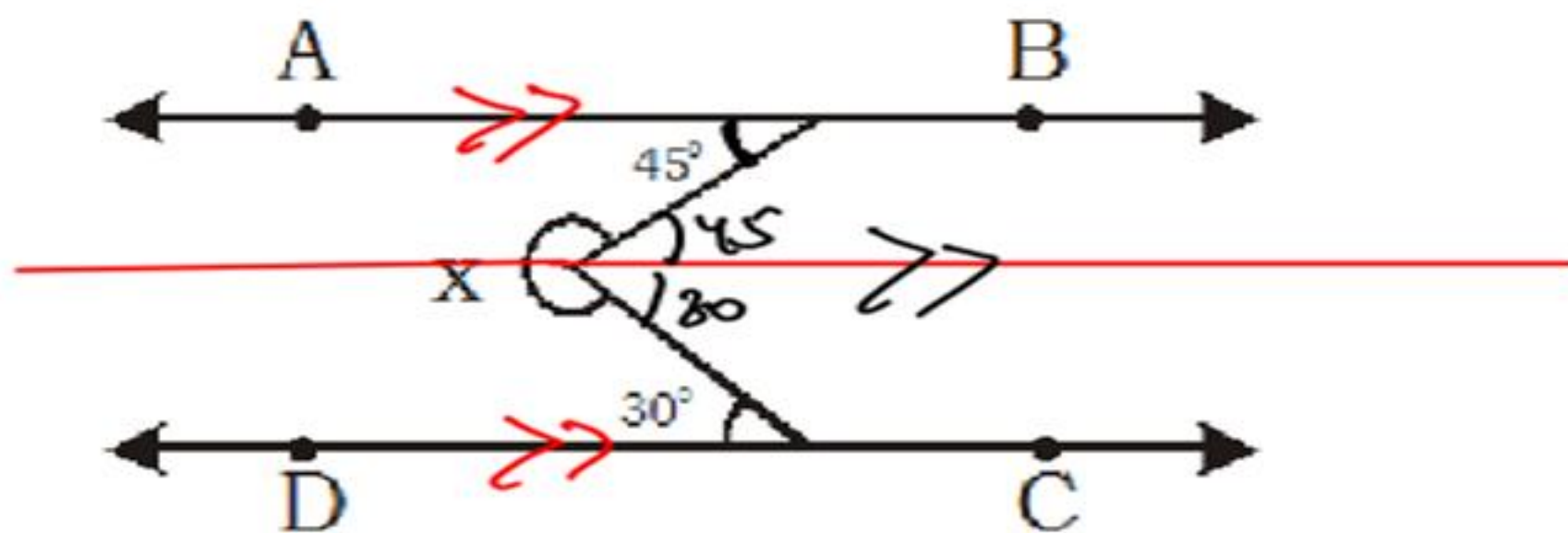


(a) 290°

(b) 300°

(c) 280°

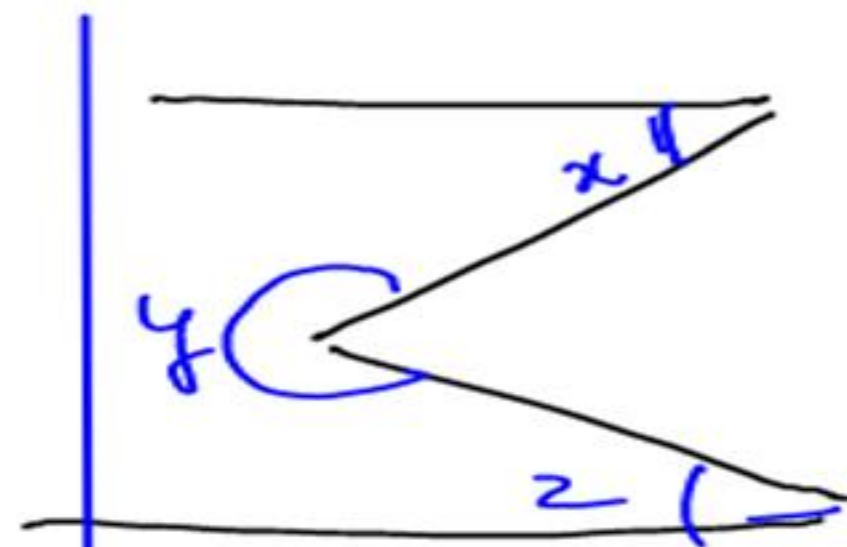
(d) 285°



$$75 + x = 360$$

$$x = 285$$

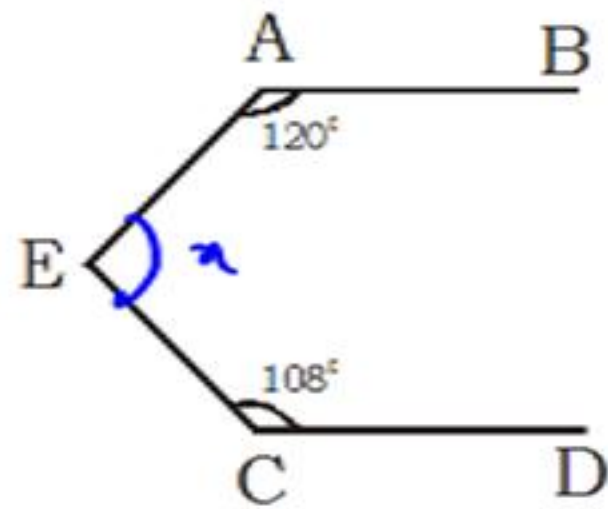
Shortcut



$$x + y + z = 360^\circ$$

Ans. (d)

Q6. In the fig. $AB \parallel CD$, find $\angle AEC$



(a) 220°

(b) 140°

(c) 150°

☒ (d) 132°

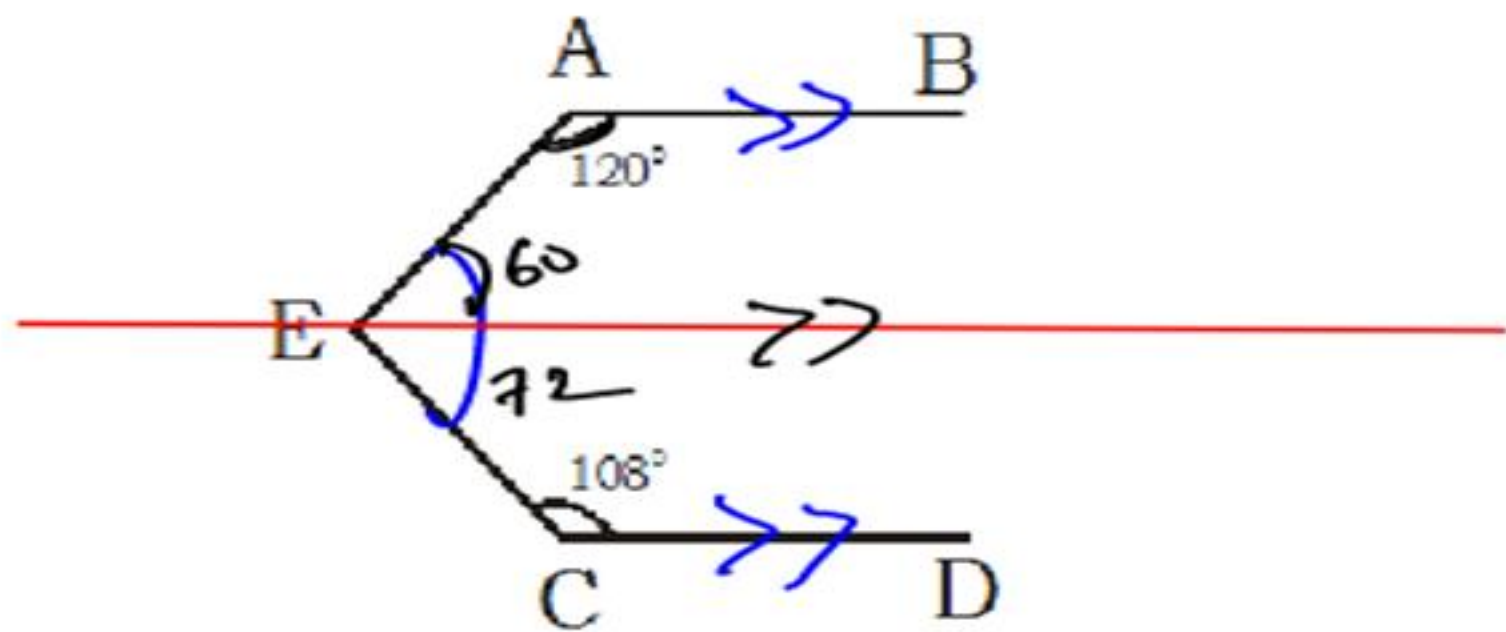


$$x + y + z = \underline{\underline{360}}$$

Shortcut \rightarrow

$$120 + x + 108 = 360$$

$$\boxed{x = 132}$$

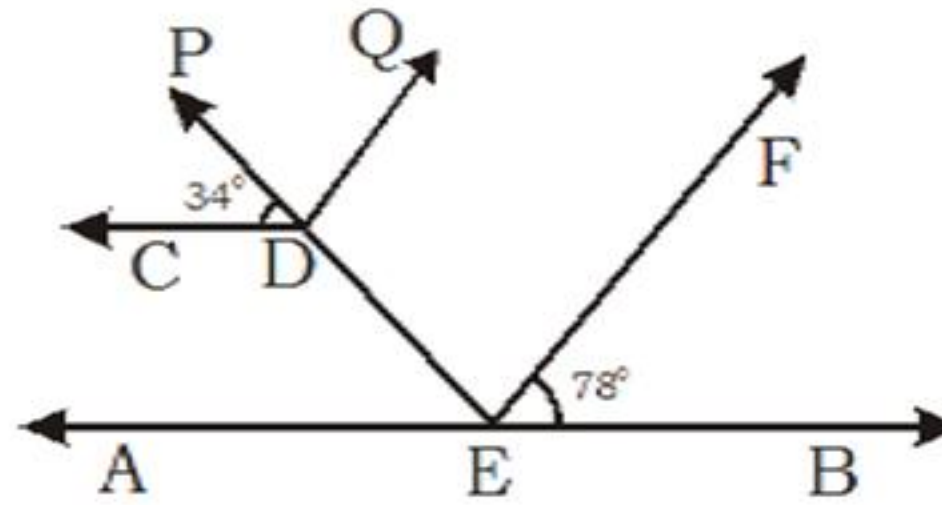


$$60 + 72 = \underline{132}$$

Ans. (d)

Q7. In the figure $AB \parallel CD$ and $EF \parallel DQ$, find the value of $\angle PDQ$

75sec

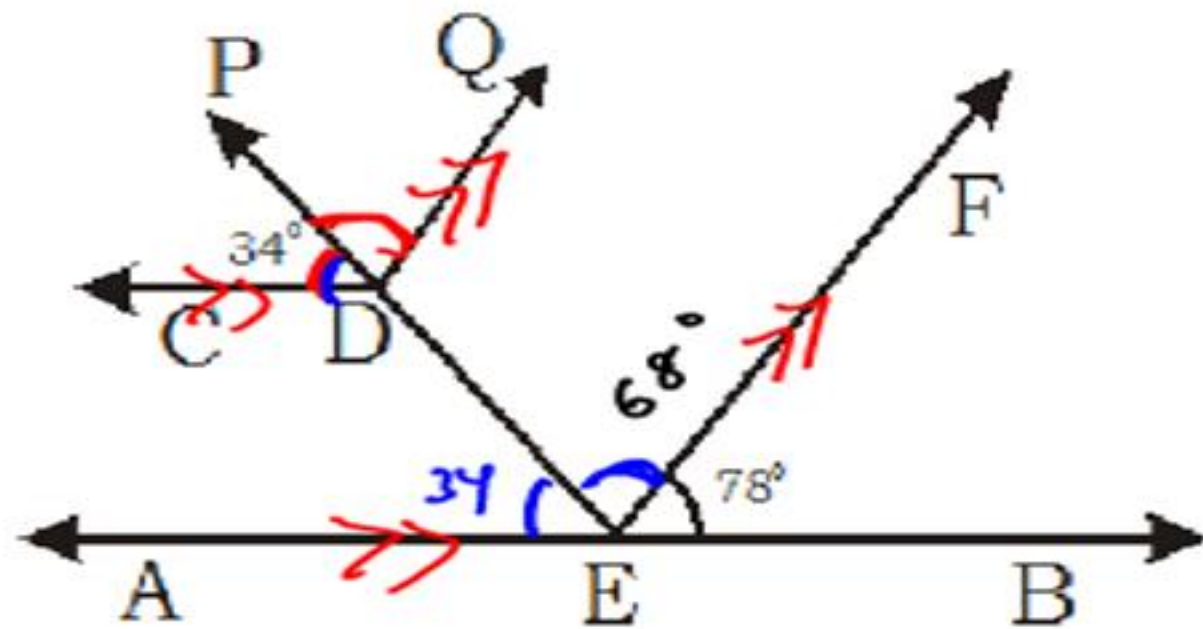


(a) 68°

(b) 78°

(c) 56°

(d) None of these



$$CD \parallel AB$$

$$\angle AED = \angle CDP = 34^\circ$$

$$34 + \angle PEF + 78 = 180$$

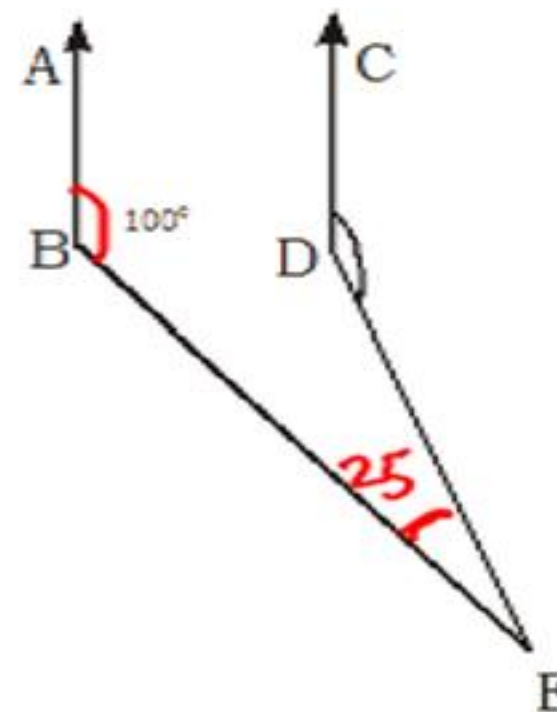
$$\angle PEF = 68^\circ$$

Now $DQ \parallel EF$

$$\angle PDQ = \underline{\underline{68^\circ}}$$

Ans. (a)

Q8. In the given figure $AB \parallel CD$, $\angle ABE = 100^\circ$ $\angle BED = 25^\circ$. Find $\angle CDE$



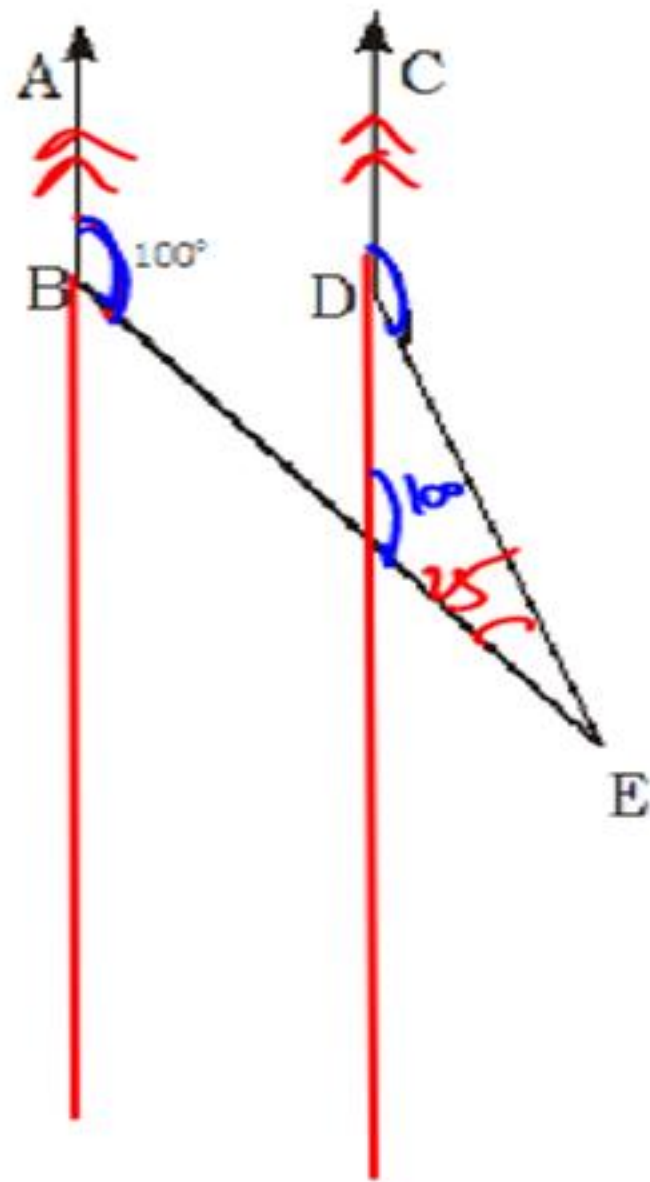
60 sec

(a) 125°

(b) 55°

(c) 65°

(d) 75°

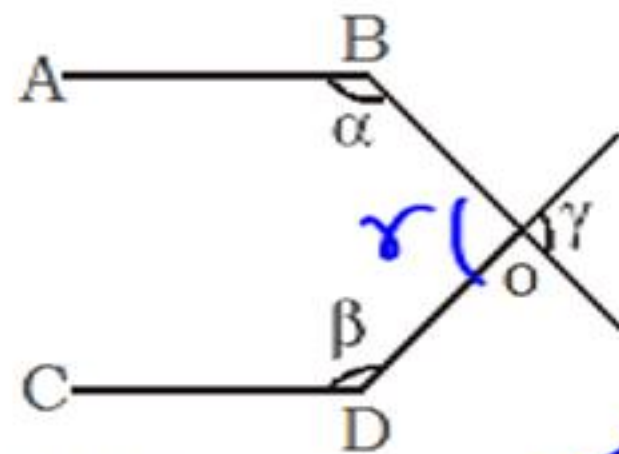


$$\angle CDE = 100 + 25$$

$$= \underline{\underline{125}}$$

Ans. (a)

Q9. If $AB \parallel CD$ then find the value of $\alpha + \beta + \gamma$.



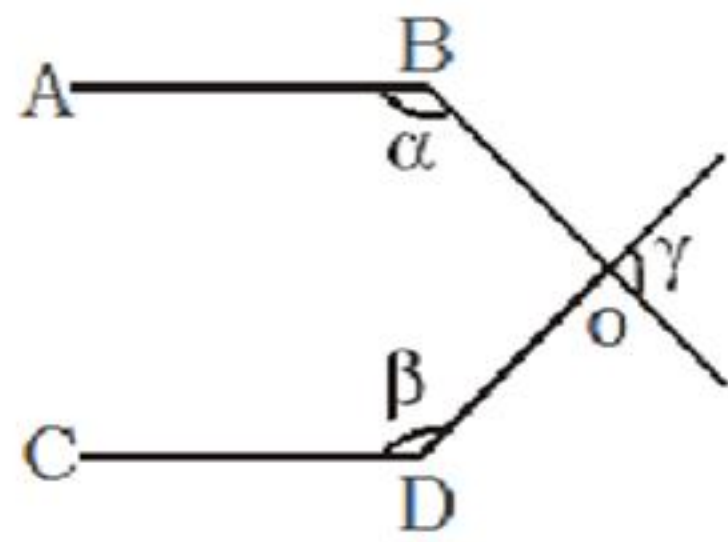
(a) 180°

(b) 270°

(c) 360°

(d) 90°

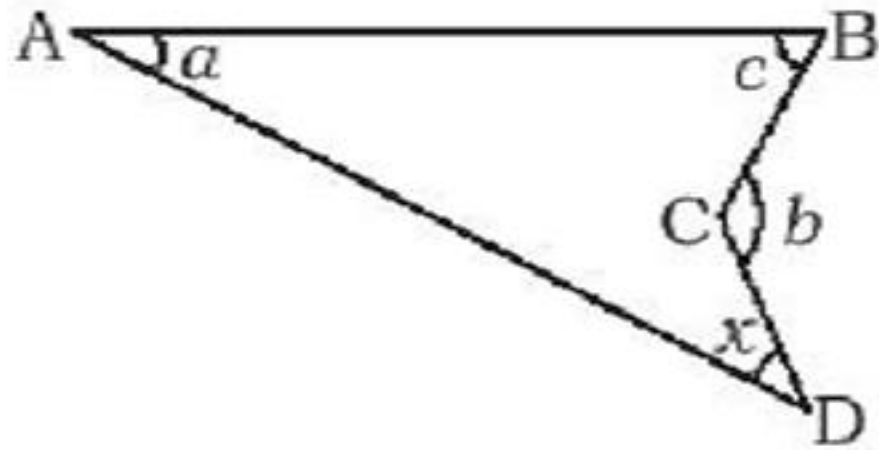
$$\alpha + \beta + \gamma = \underline{\underline{360^\circ}}$$



Ans. (c)

✓ Sub

Q10.



2 min

Find the value of x in above figure.

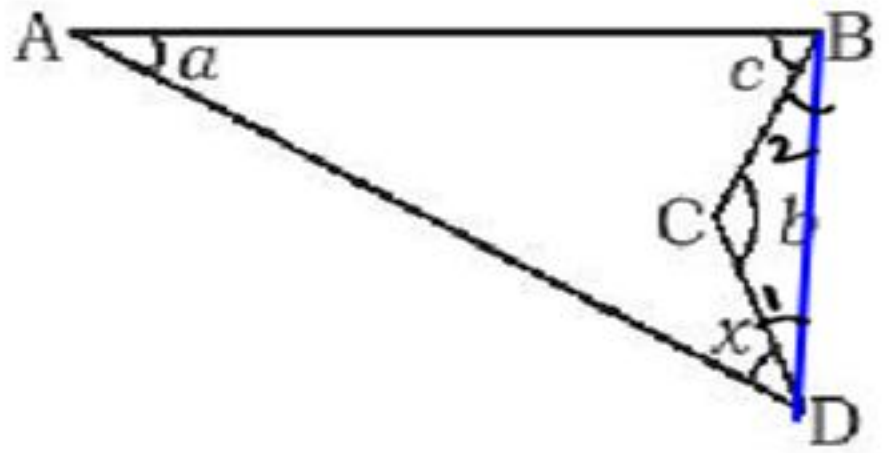
(a) $b - a - c$

(b) $b - a + c$

(c) $b + a - c$

(d) $\pi - (a + b + c)$

Ist



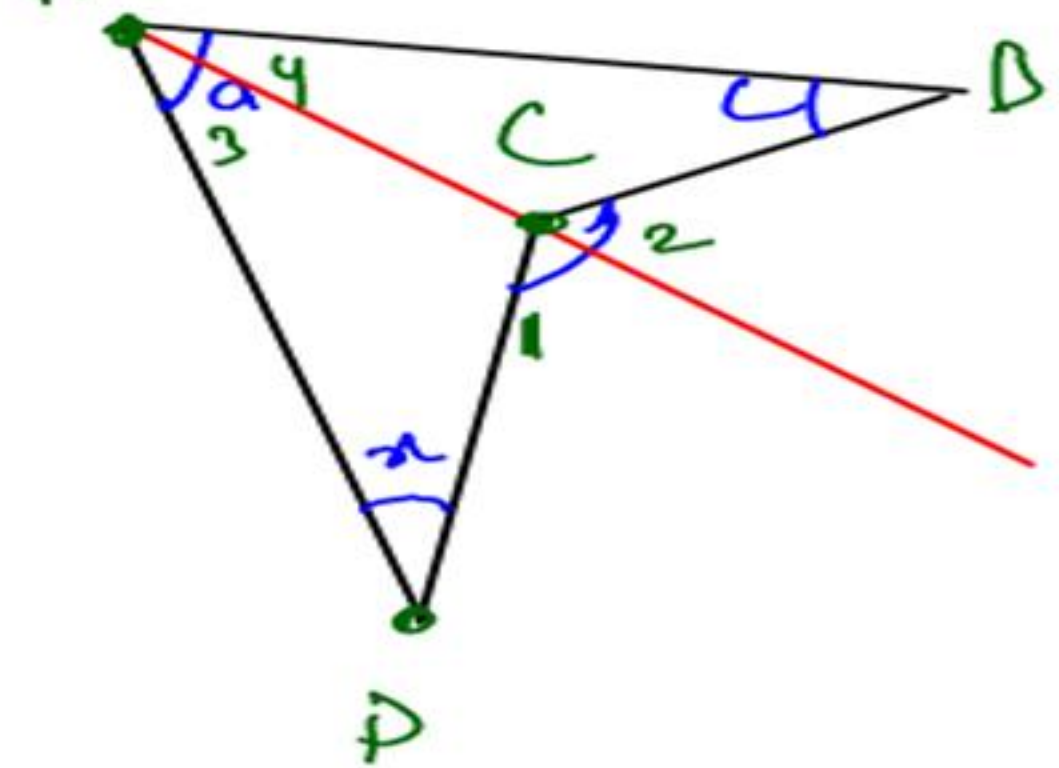
$$\angle 1 + \angle 2 + b = 180^\circ$$

$$a + x + \angle 1 + \angle 2 + c = 180^\circ$$

$$\cancel{\angle 1 + \angle 2} + b = a + x + \cancel{\angle 1 + \angle 2} + c$$

$$x = b - a - c$$

IInd



$$\angle 1 = \angle 3 + x \quad \text{--- (1)}$$

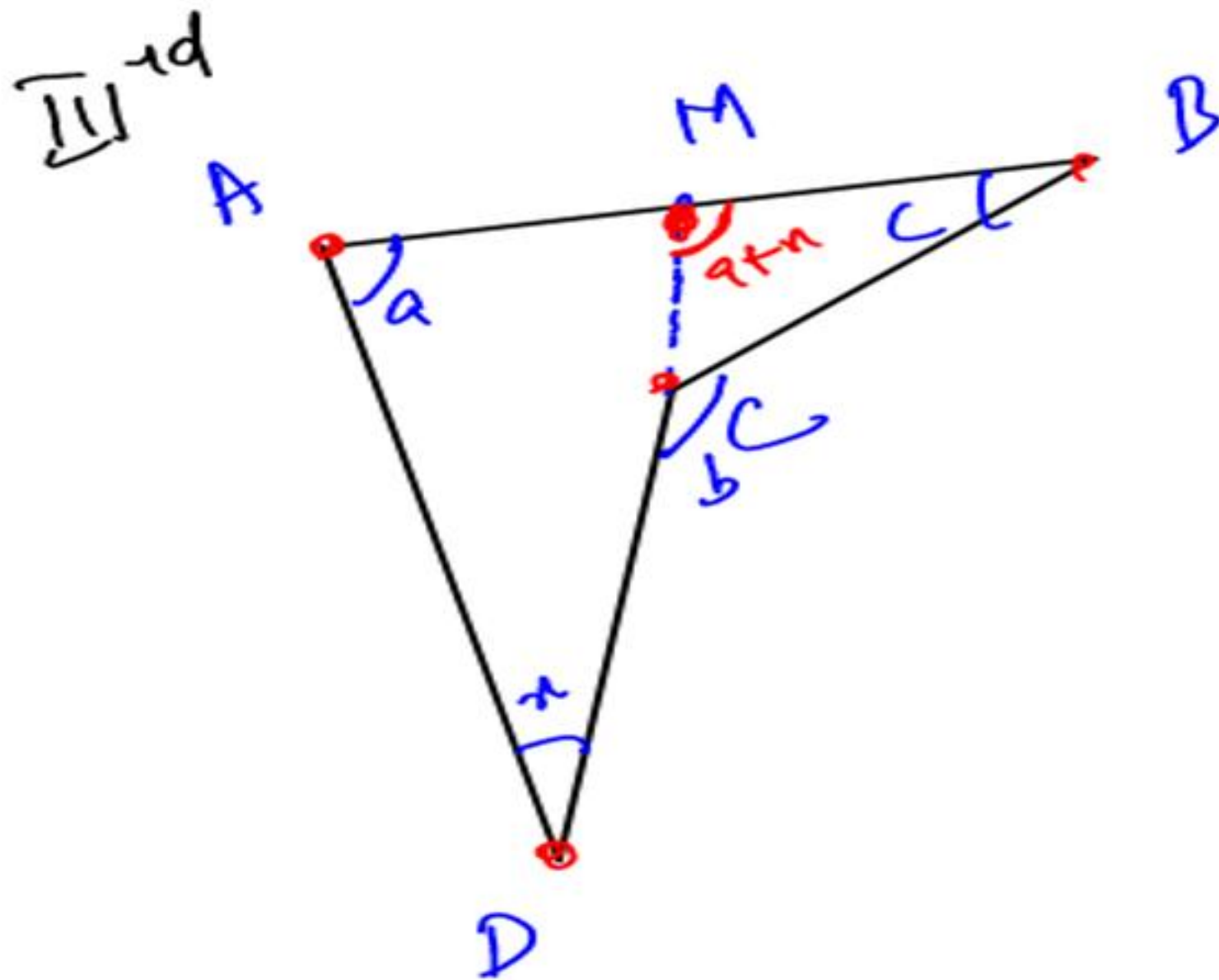
$$\angle 2 = \angle 4 + c \quad \text{--- (2)}$$

$$\angle 1 + \angle 2 = \angle 3 + \angle 4 + c + x$$

$$b = a + c + x$$

$$x = b - a - c$$

Ans. (a)



$$b = a + x + c$$

$$\underline{\underline{x = b - a - c}}$$

Q11. If a straight line L makes an angle θ ($\theta > 90^\circ$) with the positive direction of x -axis then the acute angle made by a straight line L_1 Perpendicular to L , with the y -axis is

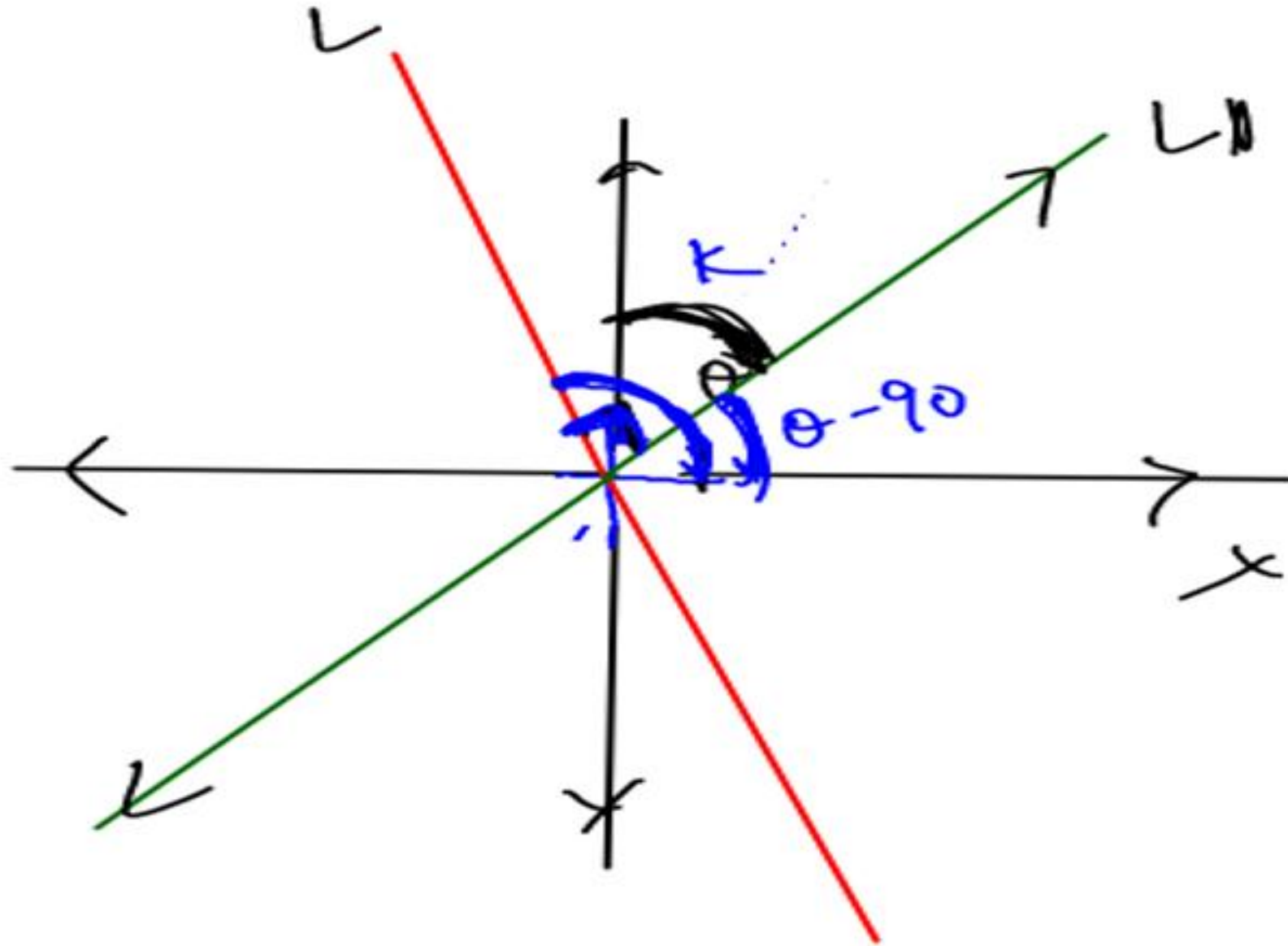
(a) $\frac{\pi}{2} + \theta$ ✗

(b) $\frac{\pi}{2} - \theta$ ✗

(c) $\pi + \theta$ ✗

(d) $\pi - \theta$ ✓

Qosec



$$\theta - 90 + K = 90$$

$$K = 180 - \theta$$

$$\boxed{K = \pi - \theta}$$

Ans. (d)

Q12. In Regular Polygon, the exterior and interior angles are in the ratio 1:4. The number of sides of the polygon is :

45sec

- ~~(a) 10~~
(c) 15

- (b) 12
(d) 16

Exterior : Interior

1 : 4

36°

5 $\rightarrow 180^\circ$

1 $\rightarrow 36^\circ$

$$\frac{360}{n} = 36$$

$$n = 10$$

Ans. (a)

Q13. The difference between the interior angle and the exterior angle at a vertex of a regular polygon is 150° . The number of sides of the polygon is :

(a) 10

(b) 15

☒ (c) 24

(d) 30

$$I - E = 150^\circ \quad \text{--- (1)}$$

$$I + E = 180^\circ \quad \text{--- (2)}$$

$$\text{(2)} - \text{(1)}$$

$$2 \cdot E = 30$$

$$E = 15^\circ$$

$$\frac{360}{n} = 15$$

$$n = 24$$

Ans. (c)

Q14. Each interior angle of a regular polygon is 144° . The number of sides of the polygon is :

(a) 8

(b) 9

☒ (c) 10

10

(d) 11

$$144 + E = 180$$

$$E = 36$$

$$\frac{360}{n} = 36$$

Ans. (c)

Q15. The number of sides in two regular polygons are in the ratio 5 : 4 and the difference between each interior angle of the polygon is 6° . Then the number of sides are :

~~(a) 15, 12~~

(b) 5, 4

(c) 10, 8

(d) 20, 16

✓ Ans

Ist

No. of sides

A
5x

B
4x

90sec

$$\frac{360}{4x} - \frac{360}{5x} = 6$$

$$\frac{90}{x} - \frac{72}{x} = 6$$

$$\frac{18}{x} = 6$$

$$x = 3$$

Today

1st



Theory

2nd



15Q

9971658659



Ans. (a)

$$\text{Exterior Angle} = \frac{360}{n}$$

$$\text{Exterior} \propto \frac{1}{\text{no. of sides}}$$

Given

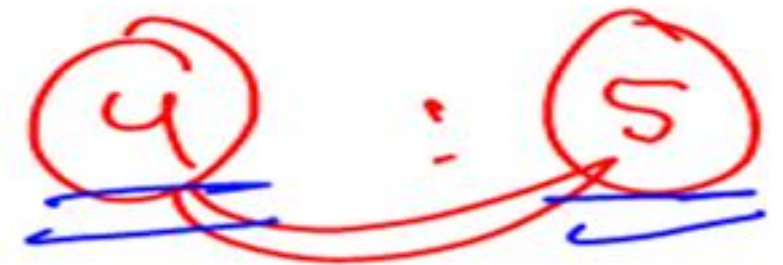
No. of sides

Exterior

$$1 \rightarrow 6^\circ$$

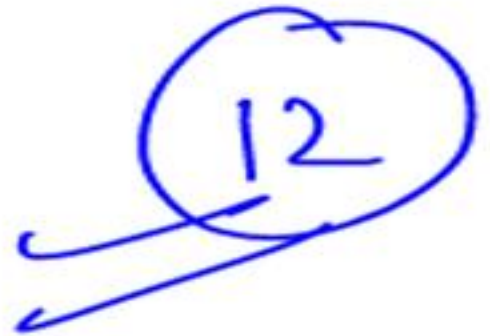
A B

5 : 4



24°

30°



$$\angle A + \angle A = 180^\circ$$

$$\angle B + \angle B = 180^\circ$$

$$\angle A + \angle A = \angle B + \angle B$$

$$\angle A - \angle B = \angle B - \angle A$$

Eg. Number of sides of 2 polygons are in the ratio $5 : 2$ and difference between the interior angles is 27° . Find the number of sides in the 2 polygons.

Q16. Which of the following cannot be measure of an interior angle of a regular polygon

(a) 150°

(b) 105°

(c) 108°

(d) 144°

Ans. (b)

Q17. The ratio of sides of two regular polygon is $1:2$ and ratio of their internal angles is $2:3$, what is the number of sides of polygon having more sides.

(a) 4

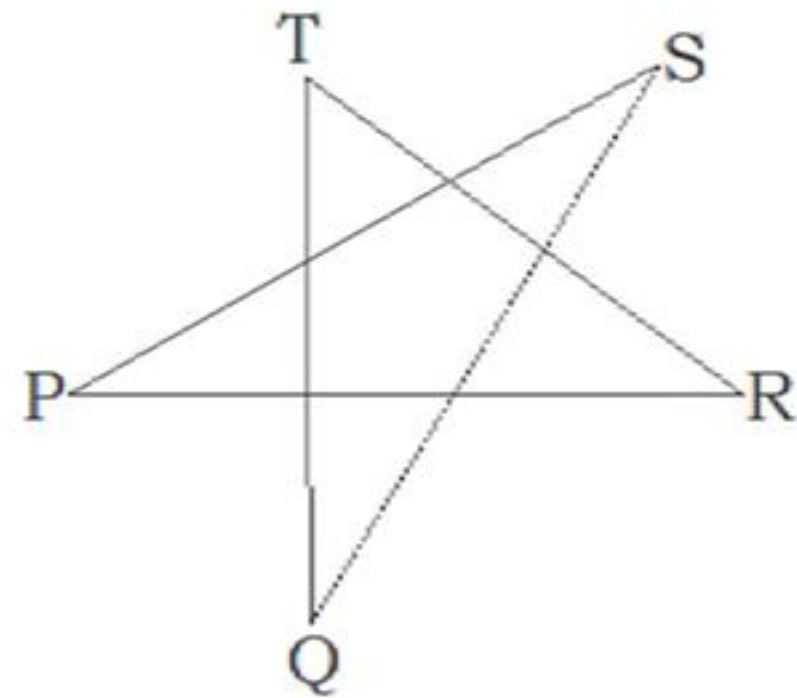
(b) 8

(c) 6

(d) 12

Ans. (b)

Q18. Find the value of $\angle P + \angle Q + \angle R + \angle S + \angle T$ in the given figure :

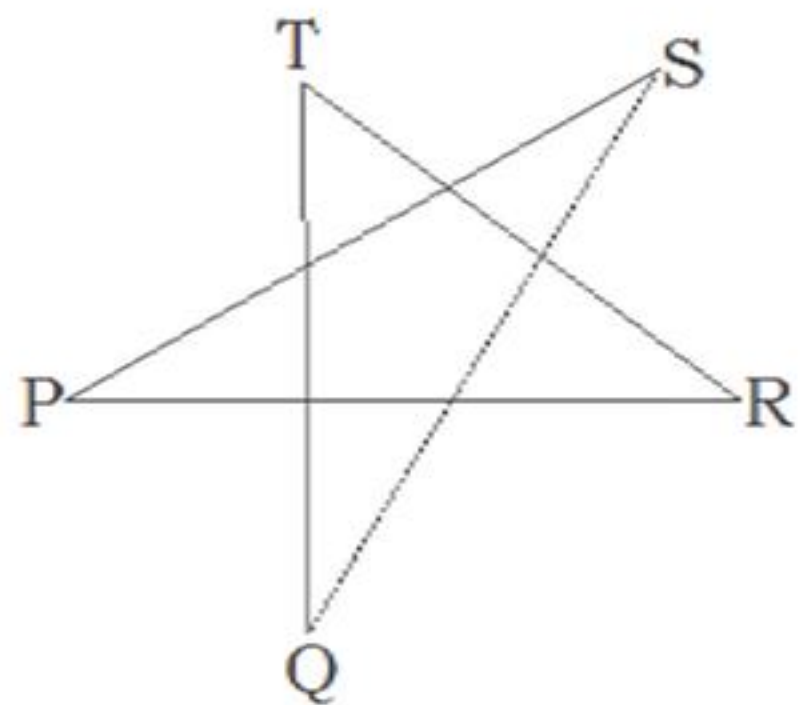


(a) 180

(b) 270

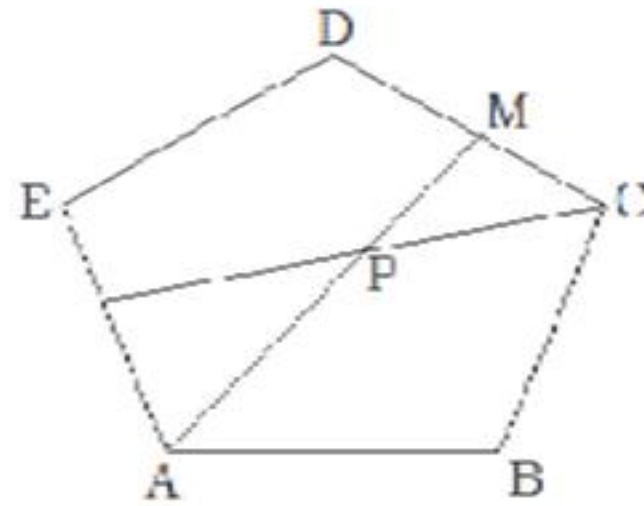
(c) 300

(d) 360



Ans. (a)

Q19. In Regular Pentagon ABCDE, angle bi-sector of A meets at side CD on point M and angle bi-sector of C meets side AM at point P, then find the value of $\angle CPM$.

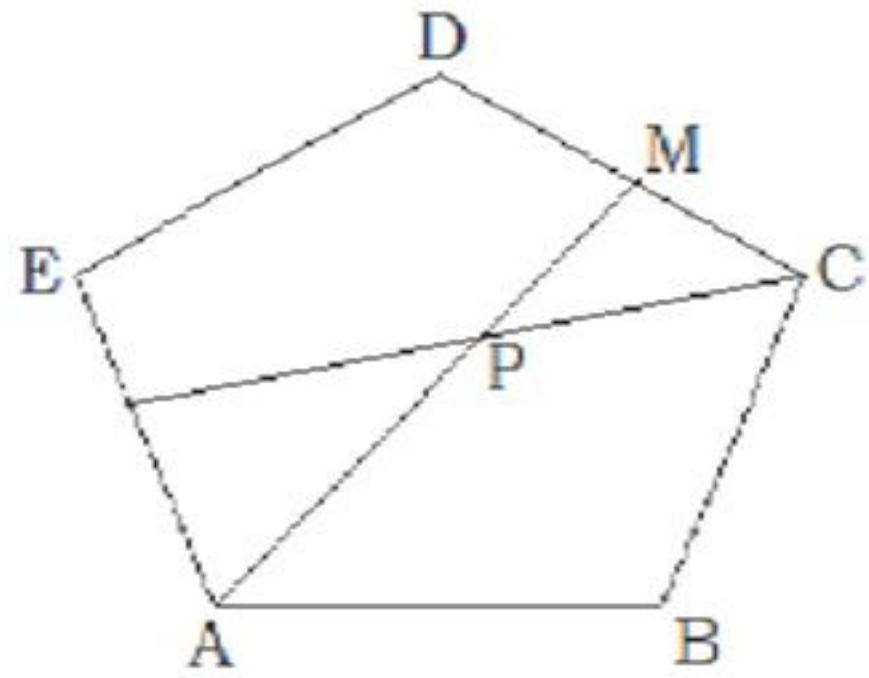


(a) 18

(b) 36

(c) 54

(d) 72



Ans. (b)

HOMework

Q1. Let OA , OB , OC and OD are rays in the anticlockwise direction such that $\angle AOB = \angle COD = 100^\circ$, $\angle BOC = 82^\circ$ and $\angle AOD = 78^\circ$.

Consider the following statements:

- 1) AOC and BOD are lines.
- 2) $\angle BOC$ and $\angle AOD$ are supplementary.

Which of the above statements is/are correct?

- | | |
|-----------------|--------------------|
| A. 1 only | B. 2 only |
| C. Both 1 and 2 | D. Neither 1 nor 2 |

Ans. D

Q2. . The length of a line segment AB is 2 units. It is divided into two parts at the point C such that $AC^2 = AB \times CB$. What is the length of CB?

- A. $3 + \sqrt{5}$ units B. $3 - \sqrt{5}$ units
 C. $2 - \sqrt{5}$ units D. $\sqrt{3}$ units

Ans. B

Q3. AB is a straight line, C is point whose distance from AB is 3 cm. What is the number of points which are at a distance of 1 cm from AB and 5 cm from C?

A. 1

B. 2

C. 3

D. 4

Ans. D

Q4. Two transversals S and T cut a set of distinct parallel lines. S cuts the parallel lines in points A, B, C and D and T cuts the parallel lines in points E, F, G, H respectively. If $AB = 4$, $CD = 3$ and $EF = 12$, then what is length of GH?

A. 4

B. 6

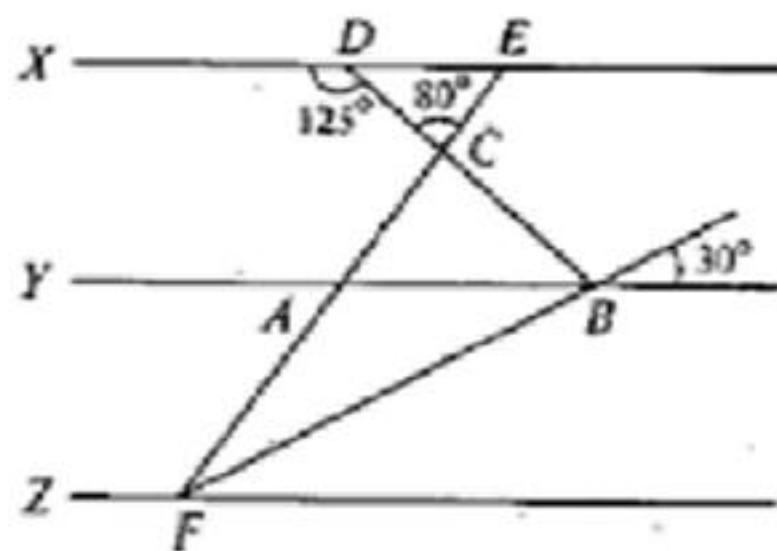
C. 8

D. 9

Ans. D

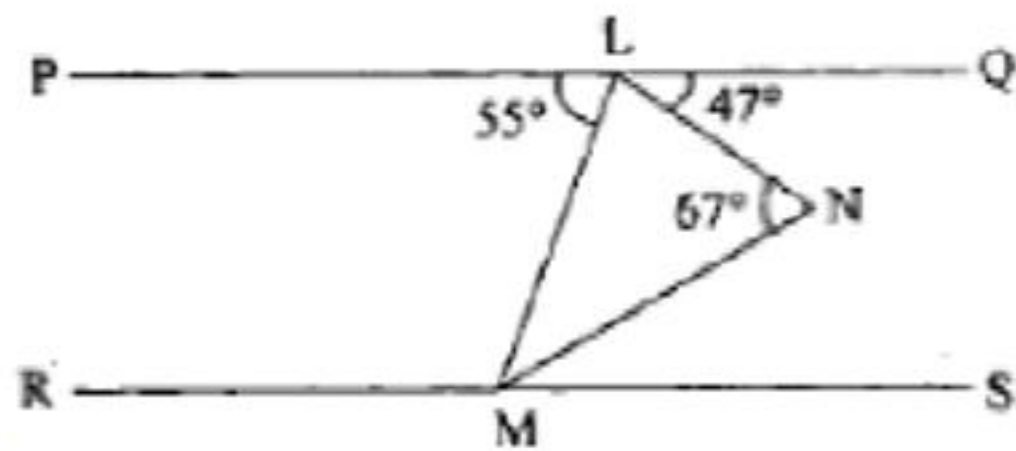
Q5. Three straight lines X , Y and Z are parallel and the angles are as shown in the figure above. What is $\angle AFB$ equal to?

- A. 20°
- B. 15°
- C. 30°
- D. 10°



Ans. B

Q6. In the figure given above PQ is parallel to RS. What is $\angle NMS$ equal to?



A. 20°

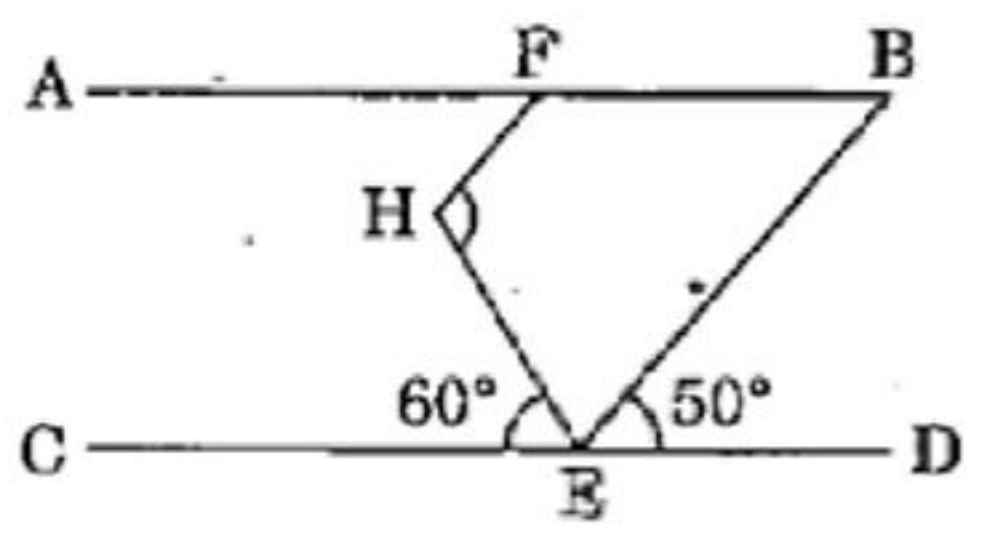
B. 23°

C. 27°

D. 47°

Ans. A

Q7. In the figure AB is parallel to CD and BE is Parallel to FH. What is $\angle FHE$ equal to?



A. 110°

B. 120°

C. 125°

D. 130°

Ans. A

Q8. If a transversal intersects four parallel straight lines, then the number of distinct values of the angles formed will be

A. 2

B. 4

C. 8

D. 16

Ans. A

Q9. In the given figure , $AM=AD$, $\angle B = 63^{\circ}$ and CD is an angle bisector of $\angle C$, then $\angle MAC = ?$

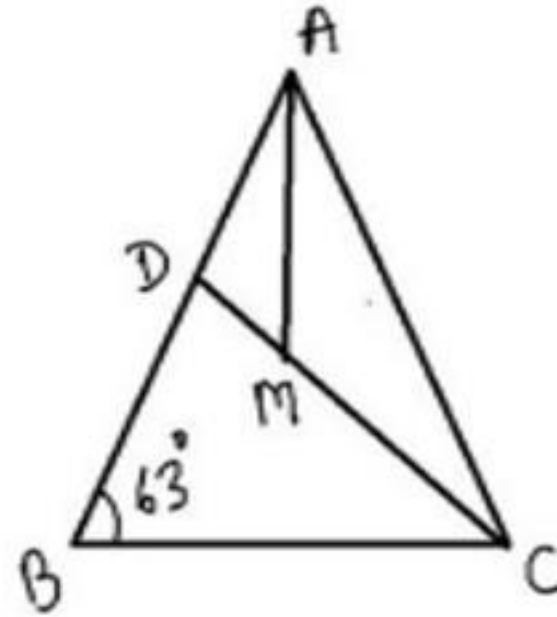
A. 63°

B. 27°

C. 37°

D. none of these

Ans. A



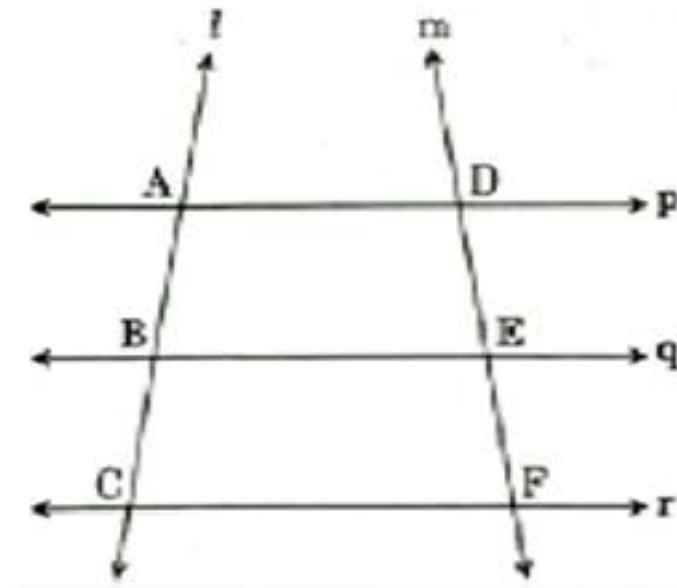
Q10. In the figure given below, p, q, r are parallel lines; l and m are two transversals.

1) $AB : AC = DE : DF$ 2) $AB \times EF = BC \times DE$

Which of the above is/are correct?

- A. 1 only B. 2 only
C. Both 1 and 2 D. Neither 1 nor 2

Ans. C



Q11. Given that the angles of a polygon are all equal and each angle is a right angle.

Statement-1 : The polygon has exactly four sides.

Statement-2: The sum of the angles of a polygon having n sides is $(3n - 8)$ right angles.

Which one of the following is correct in respect of the above statements?

- A. Both Statement-1 and Statement-2 are true and Statement-2 is the correct explanation of Statement-1.**
- B. Both Statement-1 and Statement-2 are true but Statement-2 is not the correct explanation of Statement-1.**
- C. Statement-1 is true but Statement-2 is false.**
- D. Statement-1 is false but Statement-2 is true.**

Ans. C

Q12. There are 8 lines in a plane, no two of which are parallel. What is the maximum number of points at which they can intersect?

A. 15

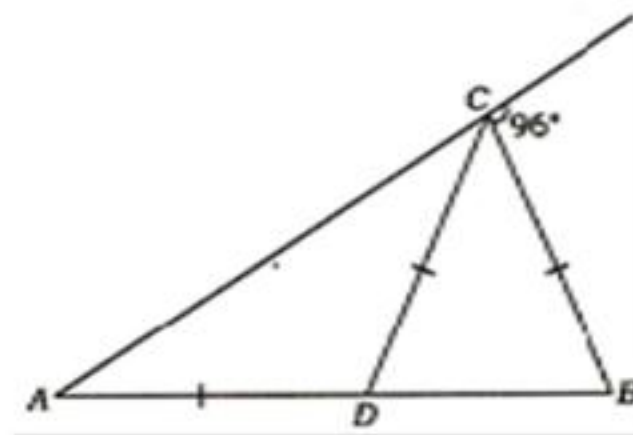
B. 21

C. 28

D. None of the above

Ans. C

Q13. In the figure given above, $AD = CD = BC$.
What is the value of $\angle CDB$?



A. 32°
C. 78°

B. 64°
D. Cannot be determined due to insufficient data

Ans. B

Q14. . The line segments AB and CD intersect at O. OF is the internal bisector of obtuse angle BOC and OE is the internal bisector of acute angle AOC.

If $\angle BOC = 130^{\circ}$, what is the measure of $\angle FOE$?

A. 90°

B. 110°

C. 115°

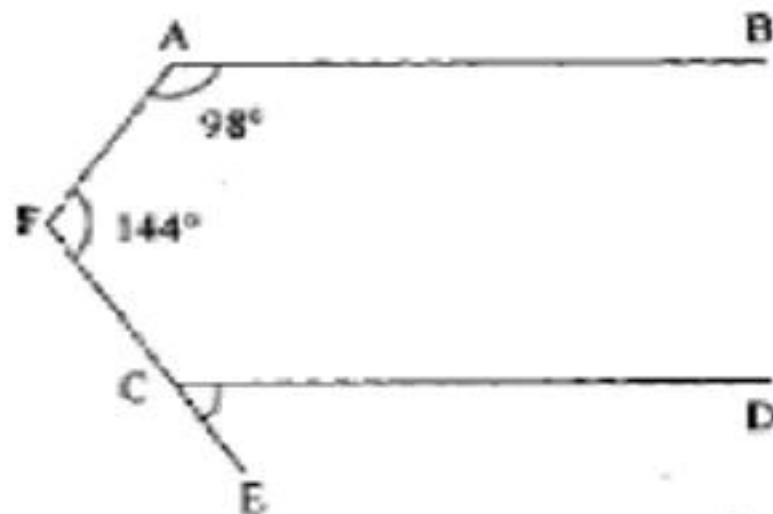
D. 120°

Ans. A

Q15. In the figure above, AB is parallel to CD. If $\angle BAF = 98^\circ$ and $\angle AFC = 144^\circ$, then what is $\angle ECD$ equal to?

- A. 62°
- B. 64°
- C. 82°
- D. 84°

Ans. A



Q16. Angles are shown in the given figure. What is value of $\angle 1 + \angle 2 + \angle 3 + \angle 4 + \angle 5 + \angle 6 + \angle 7 + \angle 8$?

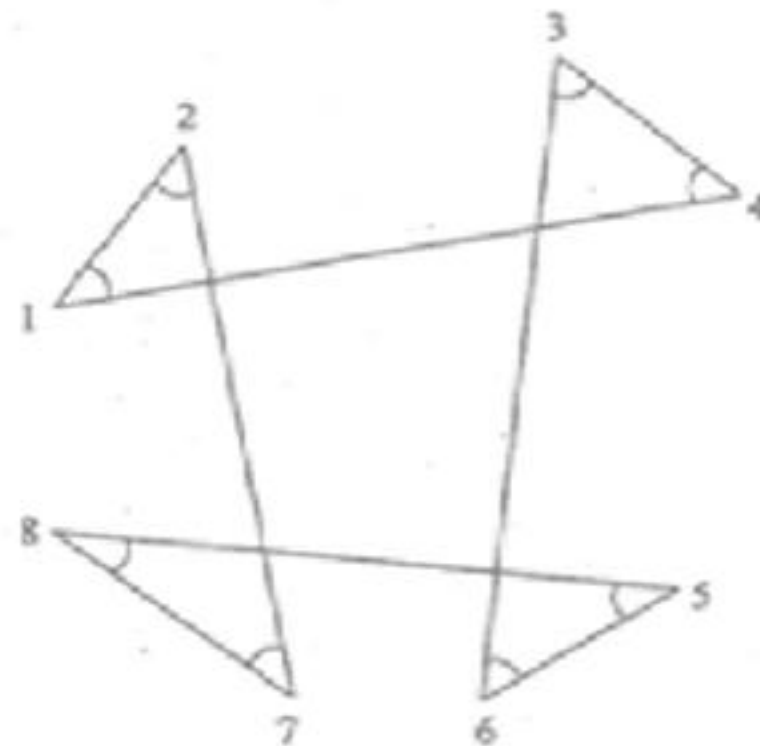
A. 240°

B. 360°

C. 540°

D. 720°

Ans. B



Q17. If each interior angle of a regular polygon is 135° , then the number of diagonals of the polygon is equal to

A. 54

B. 48

C. 20

D. 18

Ans. C

Q18. If each side of a regular octagon is 5 cm then find its area?

A. $25(\sqrt{2} + 1)$

B. $50(\sqrt{2} + 1)$

C. $75(\sqrt{2} + 1)$

D. None of these

Ans. B

Q19. The number of sides of two regular polygons are in the ratio 5 : 4. The difference between their interior angles is 9° . Consider the following statements :

- 1) One of them is a pentagon and the other is a rectangle.
- 2) One of them is a decagon and the other is an octagon.
- 3) The sum of their exterior angles is 720° .

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. 1 and 3

D. 2 and 3

Ans. D

Q20. . Consider the following statements:

- 1) There exists a regular polygon whose exterior angle is 70° .
- 2) Let $n \geq 5$. Then the exterior angle of any regular polygon of n sides is acute.

Which of the above statements is/are correct?

- | | |
|-----------------|--------------------|
| A. 1 only | B. 2 only |
| C. Both 1 and 2 | D. Neither 1 nor 2 |

Ans. B

Q21. Find the measure of an angle which is 20° more than its complement.

(a) 55

(b) 35

(c) 45

(d) 25

Ans. (a)

Q22. Sides AB and AC of a triangle ABC are equal side BC is produced to point D. From a point E on AC, line EF is drawn parallel to AB. Consider the quadrilateral ECDF thus formed. If $\angle ABC = 65^\circ$ and $\angle EFD = 80^\circ$, then what is the value of $\angle FDC$

(a) 43°

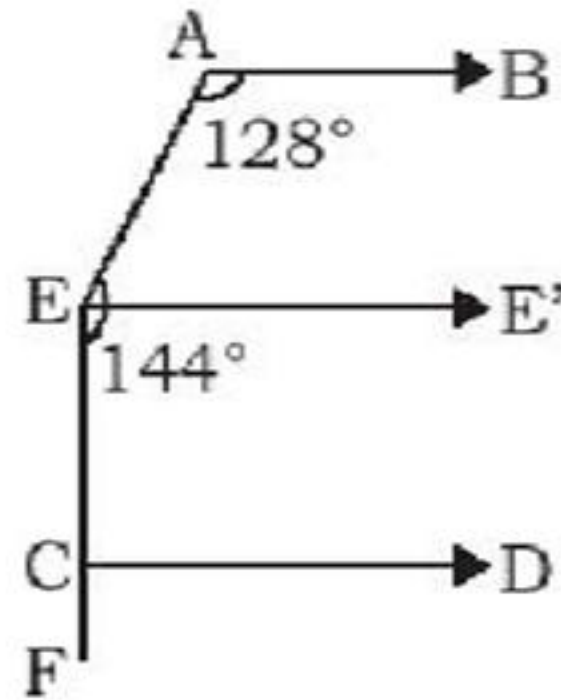
(b) 41°

(c) 37°

(d) 35°

Ans. (d)

Q23. In the given figure $AB \parallel CD$, $\angle A = 128^\circ$, $\angle AEC = 144^\circ$ then $\angle FCD = ?$



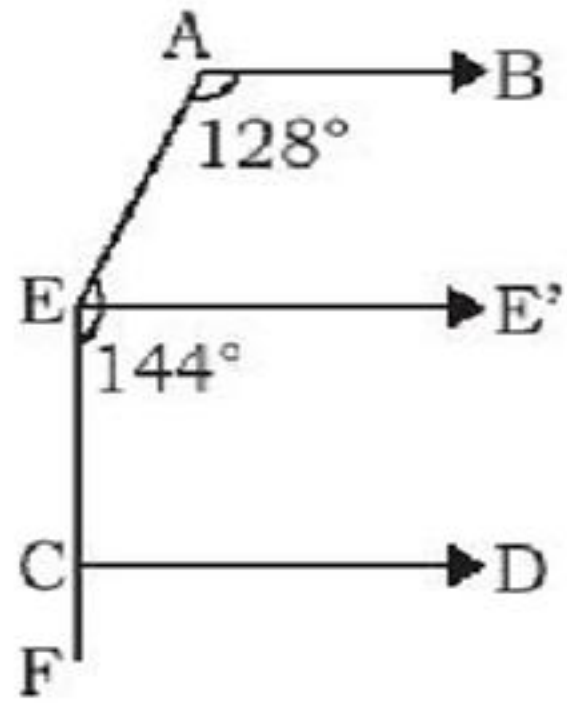
(a) 72°

(b) 64°

(c) 136°

(d) 92°

Ans. (d)



Q24. The sum of the interior angles of a polygon is 1440° . The number of sides of the polygon is :

(a) 6

(b) 9

(c) 10

(d) 12

Ans. (c)

Q25. A polygon has 35 diagonals. The number of sides in the polygon is :

(a) 6

(b) 9

(c)

10

(d) 12

Ans. (c)

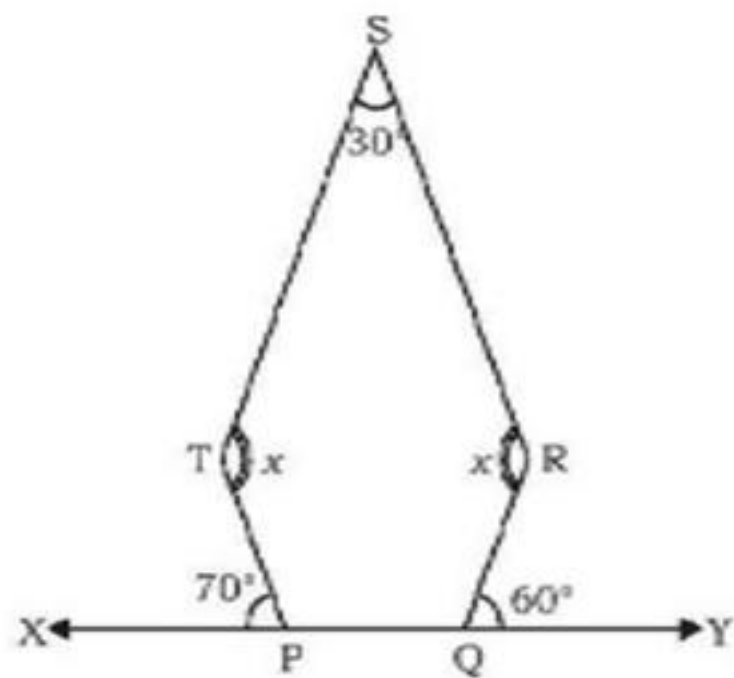
Q26. Find the value of x in following figure :

(a) 120

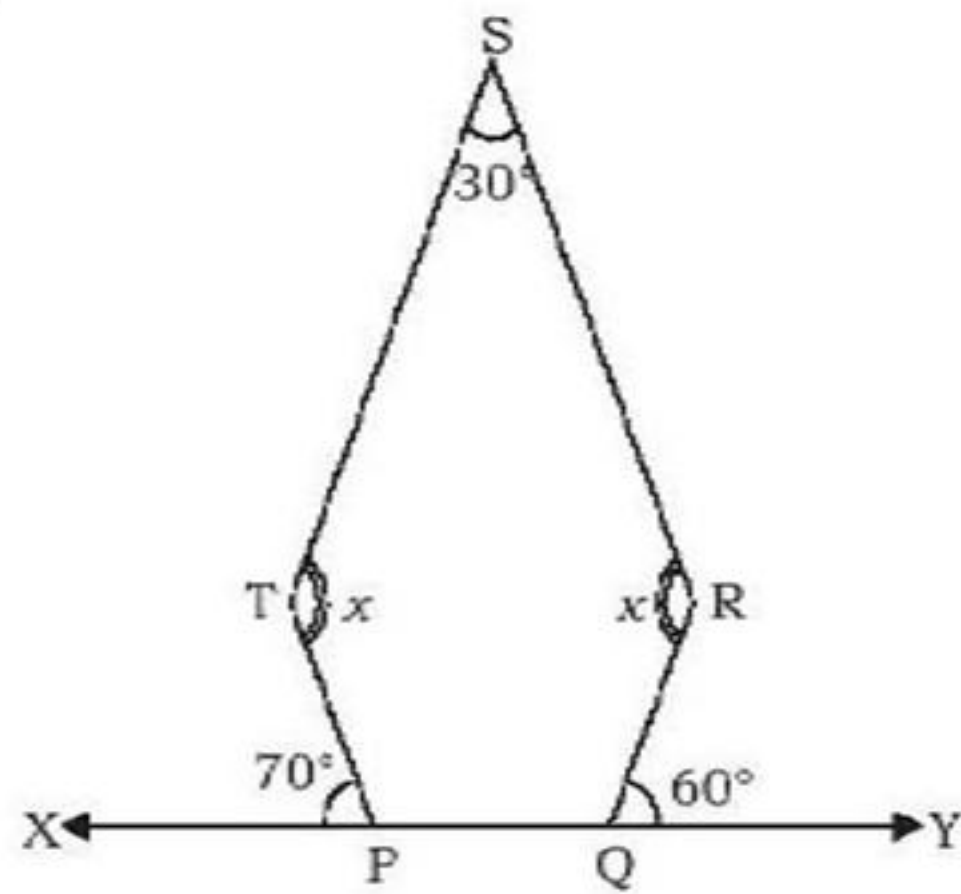
(b) 130

(c) 140

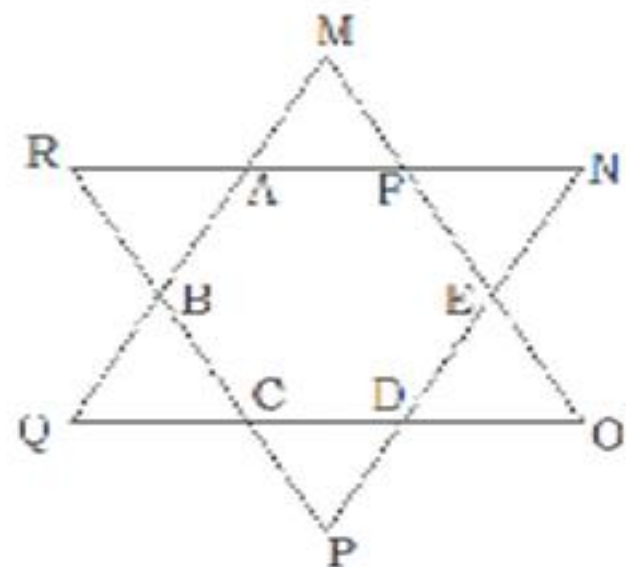
(d) 160



Ans. (c)



- Q27. The sides of a hexagon are produced to meet so as to form a star shaped figure, as shown. The sum of the angles at the vertices of the star i.e ($\angle M + \angle N + \angle O + \angle P + \angle Q + \angle R$)



- (a) 2 rightangle
(c) 4 rightangle

- (b) 8 rightangle
(d) 6 rightangle

Ans. (c)



gradeup

Sahi Prep Hai Toh Life Set Hai

Practise
topic-wise quizzes

Keep attending
live classes

