

CHAPTER 06 LINES AND ANGLES

SUBJECT: MATHEMATICS

MAX. MARKS : 40

CLASS : IX

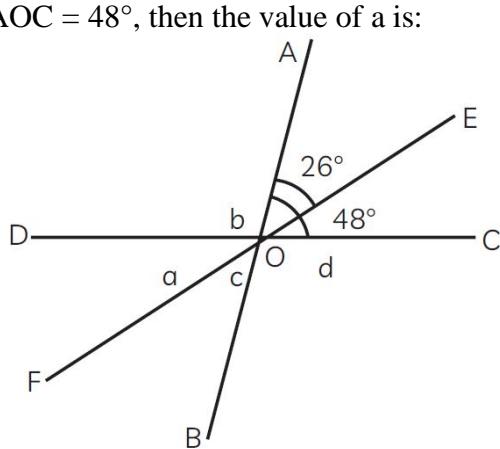
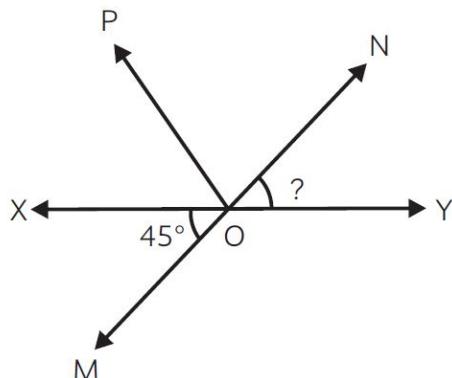
DURATION : 1½ hrs

General Instructions:

- (i). All questions are compulsory.
- (ii). This question paper contains 20 questions divided into five Sections A, B, C, D and E.
- (iii). **Section A** comprises of 10 MCQs of 1 mark each. **Section B** comprises of 4 questions of 2 marks each. **Section C** comprises of 3 questions of 3 marks each. **Section D** comprises of 1 question of 5 marks each and **Section E** comprises of 2 Case Study Based Questions of 4 marks each.
- (iv). There is no overall choice.
- (v). Use of Calculators is not permitted

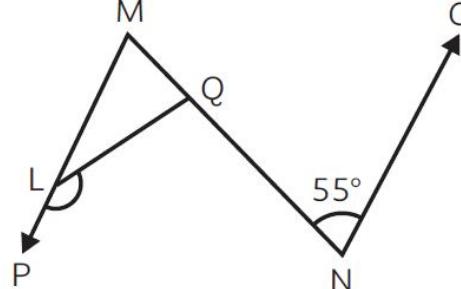
SECTION – A

Questions 1 to 10 carry 1 mark each.



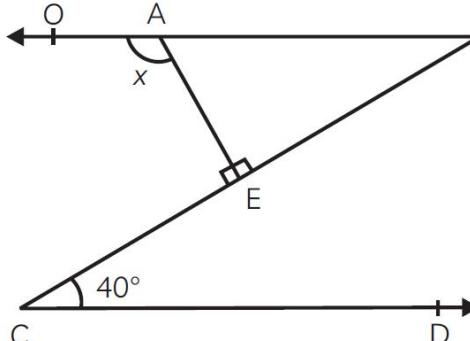
(a) 26° (b) 22° (c) 42° (d) 24°

5. In the given figure, if $PM \parallel NO$, $\angle MNO = 55^\circ$, and $LQ \perp MN$, then $\angle PLQ$ is equal to:



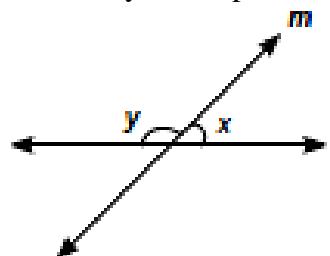
(a) 110° (b) 125° (c) 145° (d) 115°

6. In the given figure, if $OB \parallel CD$, $\angle BCD = 40^\circ$ and $AE \perp BC$ then $\angle OAE$ is equal to:



(a) 110° (b) 135° (c) 130° (d) 115°

7. In figure if $x : y = 1 : 4$, then values of x and y are respectively



(a) 36° and 144° (b) 18° and 72° (c) 144° and 36° (d) 72° and 18°

8. An angle is 20° more than three times the given angle. If the two angles are supplementary, then the angles are

(a) $\frac{70^\circ}{4}, \frac{290^\circ}{4}$ (b) $40^\circ, 140^\circ$ (c) $60^\circ, 120^\circ$ (d) $40^\circ, 50^\circ$

In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

(a) Both A and R are true and R is the correct explanation of A.
 (b) Both A and R are true but R is not the correct explanation of A.
 (c) A is true but R is false.
 (d) A is false but R is true.

9. **Assertion (A):** Two adjacent angles always form a linear pair.

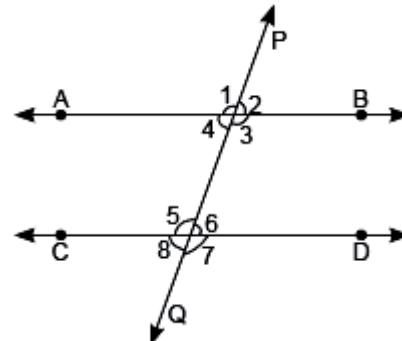
Reason (R): In a linear pair of angles, two non-common arms are opposite rays.

10. **Assertion (A):** If two interior angles on the same side of a transversal intersecting two parallel lines are in the ratio $5 : 4$, then the greater of the two angles is 100° .

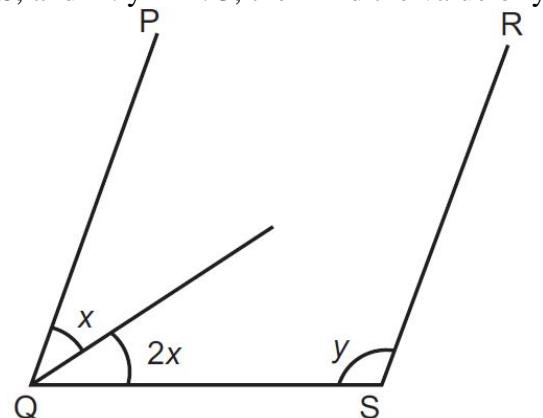
Reason (R): If a transversal intersects two parallel lines, then the sum of the interior angles on the same side of the transversal is 180° .

SECTION – B
Questions 11 to 14 carry 2 marks each.

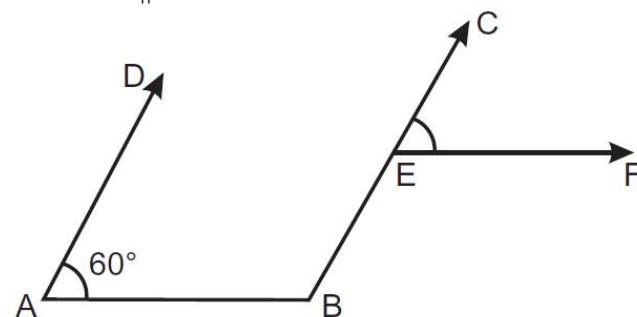
11. In the given figure, $AB \parallel CD$, $\angle 2 = 120^\circ + x$ and $\angle 6 = 6x$. Find the measure of $\angle 2$ and $\angle 6$.



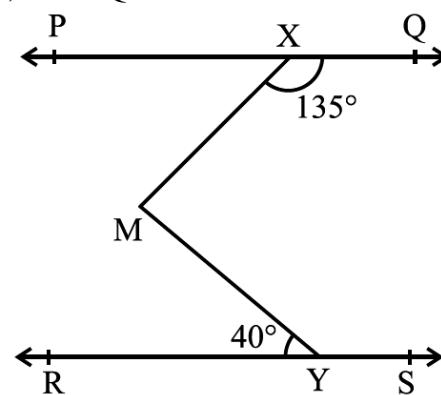
12. In the given figure, $PQ \parallel RS$, and $x : y = 2 : 3$, then find the value of y .



13. In given figure, $AD \parallel BC$ and $EF \parallel AB$. $\angle DAB = 60^\circ$. Find $\angle CEF$.

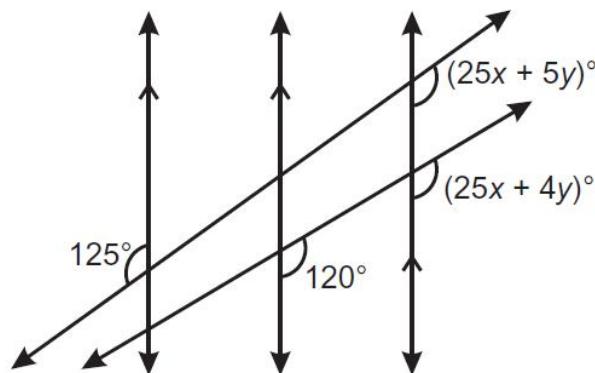


14. In the below figure, if $PQ \parallel RS$, $\angle MXQ = 135^\circ$ and $\angle MYR = 40^\circ$, find $\angle XMY$.

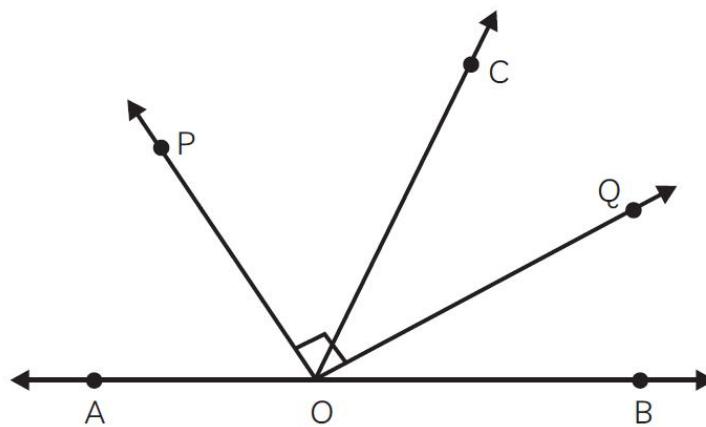


SECTION – C
Questions 15 to 17 carry 3 marks each.

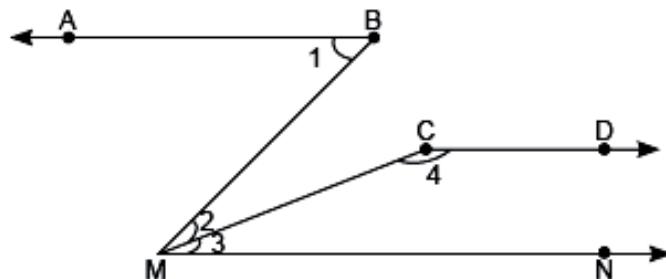
15. While playing piano Arijit Singh's daughter found that the treble strings of a grand piano are parallel. When view from the above, the bass strings are transversal. Find the x and y in the figure given below.



16. In figure, OP bisects $\angle AOC$, OQ bisects $\angle BOC$ and $OP \perp OQ$. Show that the points A , O and B are collinear.

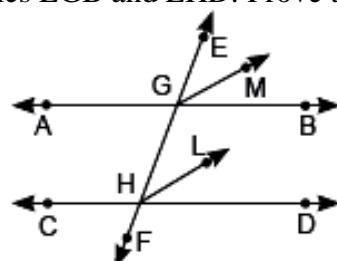


17. In the given figure, $\angle 1 = 55^\circ$, $\angle 2 = 20^\circ$, $\angle 3 = 35^\circ$ and $\angle 4 = 145^\circ$. Prove that $AB \parallel CD$.



SECTION – D
Questions 18 carry 5 marks.

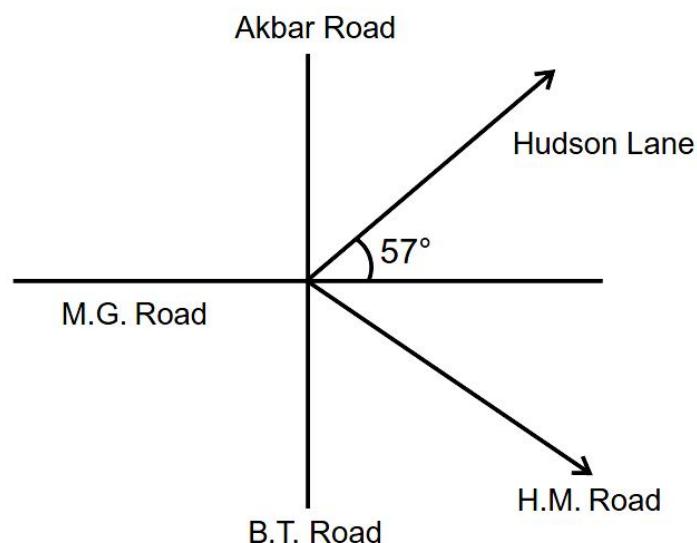
18. In the given figure, EF is the transversal to two parallel lines AB and CD . GM and HL are the bisectors of the corresponding angles EGB and EHD . Prove that $GM \parallel HL$.



SECTION – E (Case Study Based Questions)

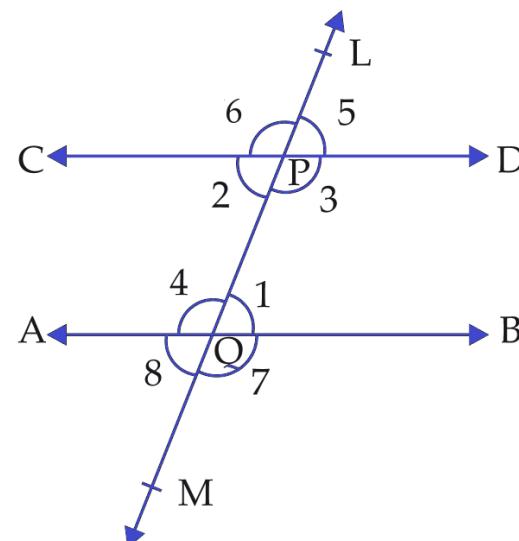
Questions 19 to 20 carry 4 marks each.

19. Ritesh and Sheetal are cousins and both went to visit Mughal Garden. Before going, they searched the location of their destination on a map. During searching, they found on map that Akbar Road and M.G. road form a right angle at their intersection point and Hudson lane form 57° angle with M.G. road.



(a) What is the measure of acute angle between Akbar Road and Hudson lane? [1]
 (b) If Ritesh is standing on M.G Road in the west direction and Sheetal is on H.M road, what is the shortest angle they can cover in order to meet? [2]
 (c) Find the measure of reflex angle formed between M.G Road [in east direction] with Hudson lane. [1]

20. Two lines are parallel to each other, if the distance between these 2 lines always remains constant throughout and they never meet. There are various examples of parallel lines that we see in our daily life like railway line, 2 steps of ladder, opposite sides of a table etc. A line which cuts a pair of parallel lines is called a transversal as shown in the figure.



Answer the following questions:

- (a) If $\angle 5 = 65^\circ$. Then what is the $\angle 8$? (1)
- (b) If $\angle 6 = 2x$ and $\angle 1 = 70^\circ$. Then find the value of x . (1)
- (c) If $\angle 6 : \angle 5 = 2 : 3$ then find the value of $\angle 7$. (2)

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