

## CHAPTER 06 LINES AND ANGLES

**SUBJECT: MATHEMATICS**

**MAX. MARKS : 40**

**CLASS : IX**

**DURATION : 1½ hrs**

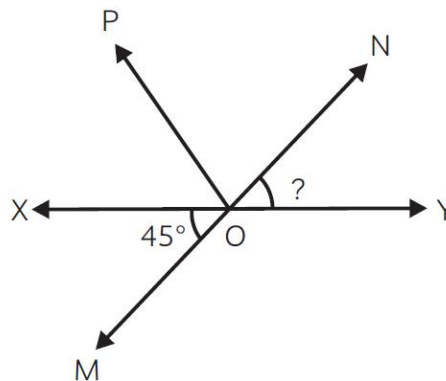
### General Instructions:

- All questions are compulsory.
- This question paper contains 20 questions divided into five Sections A, B, C, D and E.
- 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.
- There is no overall choice.
- Use of Calculators is not permitted

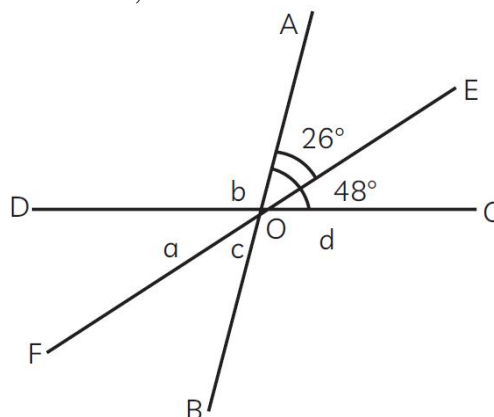
### SECTION – A

Questions 1 to 10 carry 1 mark each.

- Aditya was given a riddle by Pragya who stated that an angle is  $24^\circ$  less than its complementary angle. The angle's measure is:  
 (a)  $36^\circ$  (b)  $33^\circ$  (c)  $66^\circ$  (d)  $57^\circ$
- If the ratio of two co-interior angles on the same side of the transversal is  $7 : 8$ , the bigger angle of the two angles is:  
 (a)  $54^\circ$  (b)  $100^\circ$  (c)  $96^\circ$  (d)  $84^\circ$
- In the given figure, lines XY and MN intersect at O. If  $\angle XOP + \angle YON = 85^\circ$  and  $\angle XOM = 45^\circ$ ,  $\angle YON$  is:

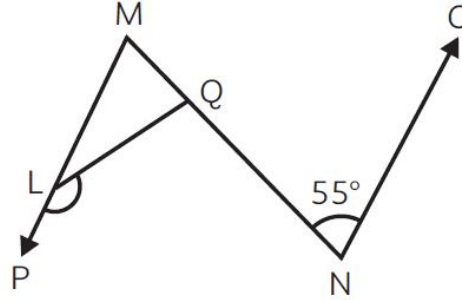


- (a)  $55^\circ$  (b)  $45^\circ$  (c)  $75^\circ$  (d)  $65^\circ$
- In the adjoining figure, if  $\angle AOC = 48^\circ$ , then the value of a is:



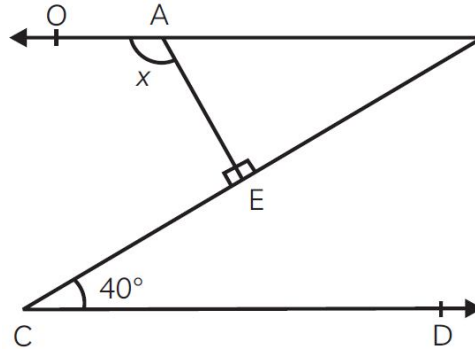
- (a)  $26^\circ$  (b)  $22^\circ$  (c)  $42^\circ$  (d)  $24^\circ$

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



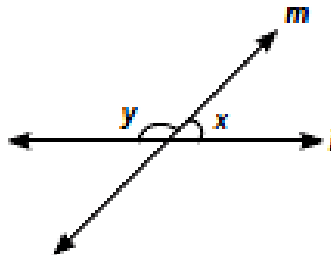
- (a)  $110^\circ$  (b)  $125^\circ$  (c)  $145^\circ$  (d)  $115^\circ$

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



- (a)  $110^\circ$  (b)  $135^\circ$  (c)  $130^\circ$  (d)  $115^\circ$

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



- (a)  $36^\circ$  and  $144^\circ$  (b)  $18^\circ$  and  $72^\circ$  (c)  $144^\circ$  and  $36^\circ$  (d)  $72^\circ$  and  $18^\circ$

8. An angle is  $20^\circ$  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.

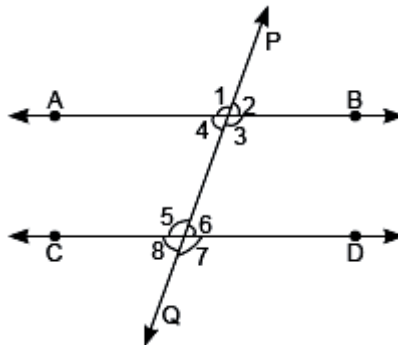
10. **Assertion (A):** If two interior angles on the same side of a transversal intersecting two parallel lines are in the ratio  $5 : 4$ , then the greater of the two angles is  $100^\circ$ .

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

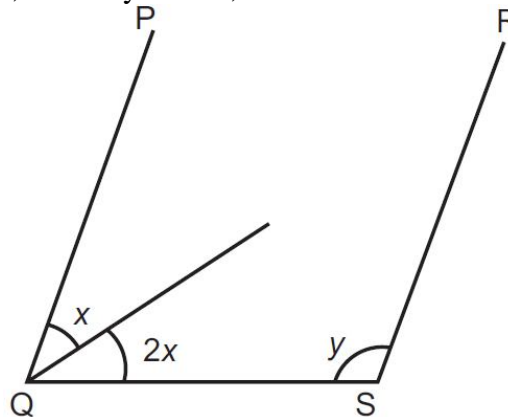
## SECTION – B

Questions 11 to 14 carry 2 marks each.

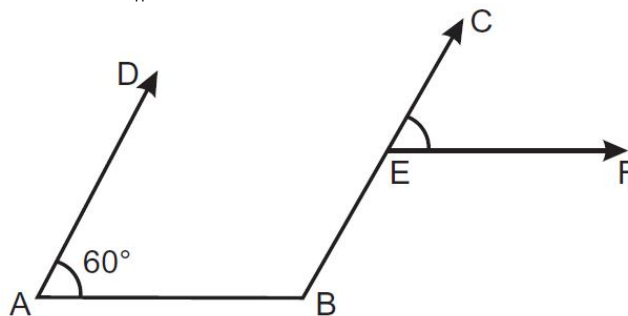
11. In the given figure,  $AB \parallel CD$ ,  $\angle 2 = 120^\circ + x$  and  $\angle 6 = 6x$ . Find the measure of  $\angle 2$  and  $\angle 6$ .



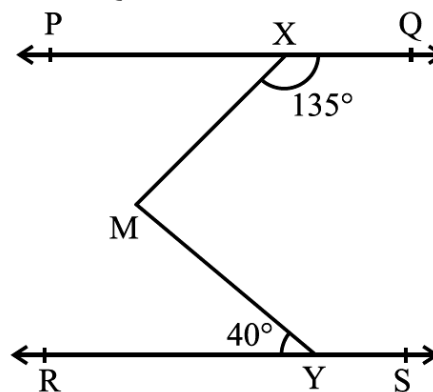
12. In the given figure,  $PQ \parallel RS$ , and  $x : y = 2 : 3$ , then find the value of  $y$ .



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



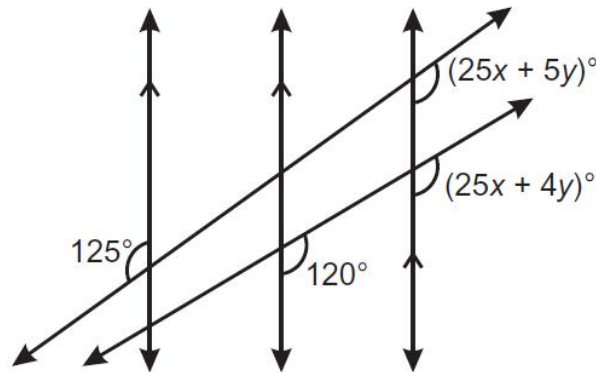
14. In the below figure, if  $PQ \parallel RS$ ,  $\angle MXQ = 135^\circ$  and  $\angle MYR = 40^\circ$ , find  $\angle XMY$ .



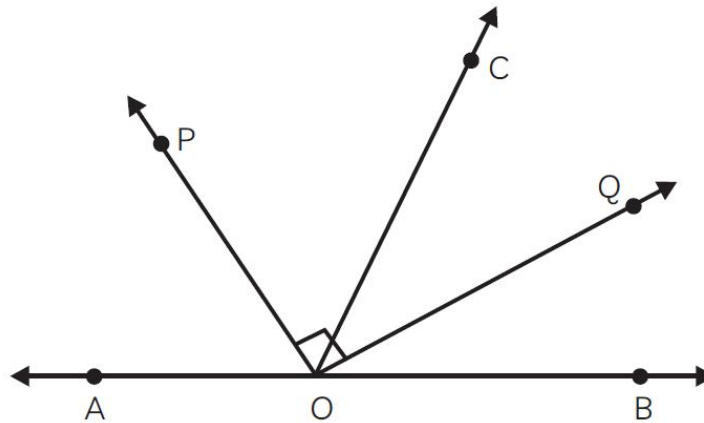
## SECTION – C

Questions 15 to 17 carry 3 marks each.

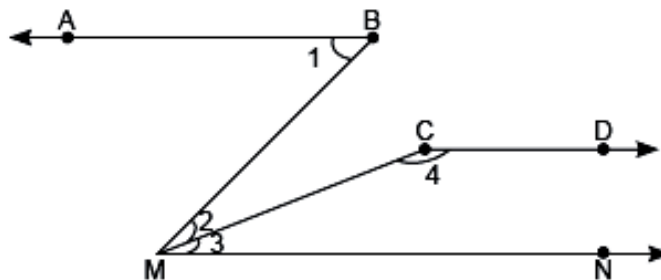
15. While playing piano Arijit Singh's daughter found that the treble strings of a grand piano are parallel. When view from the above, the bass strings are transversal. Find the  $x$  and  $y$  in the figure given below.



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.



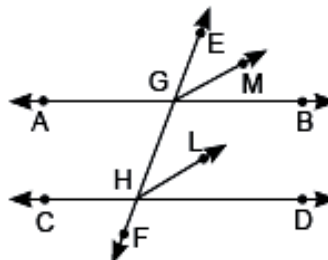
17. In the given figure,  $\angle 1 = 55^\circ$ ,  $\angle 2 = 20^\circ$ ,  $\angle 3 = 35^\circ$  and  $\angle 4 = 145^\circ$ . Prove that  $AB \parallel CD$ .



## SECTION – D

Questions 18 carry 5 marks.

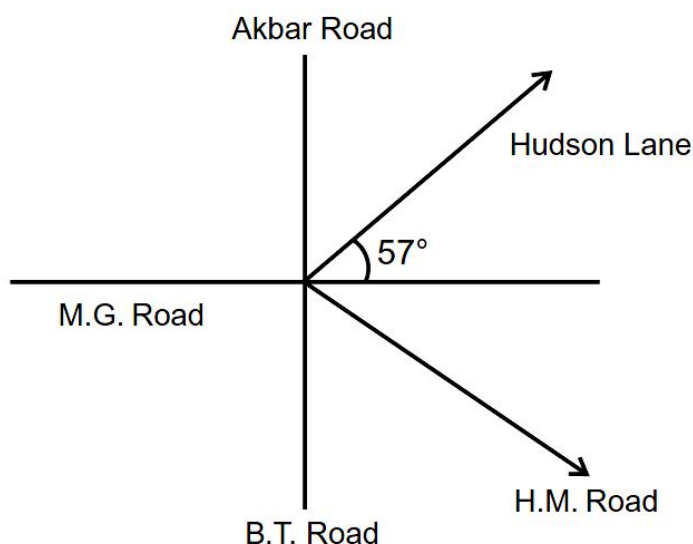
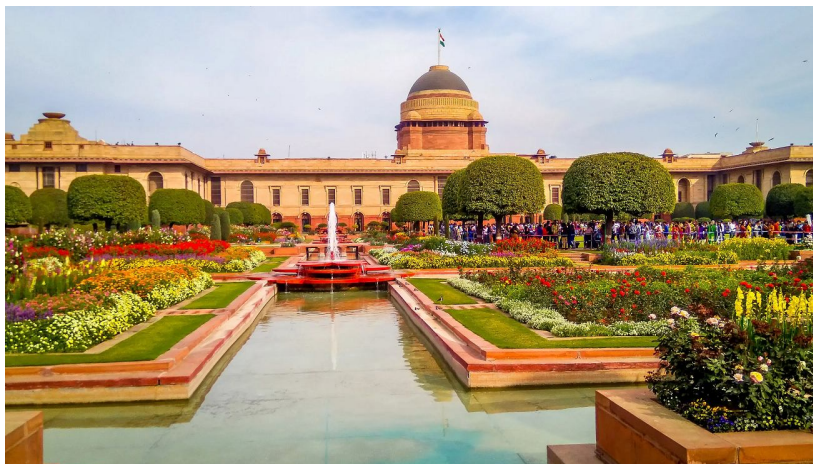
18. In the given figure,  $EF$  is the transversal to two parallel lines  $AB$  and  $CD$ .  $GM$  and  $HL$  are the bisectors of the corresponding angles  $EGB$  and  $EHD$ . Prove that  $GM \parallel HL$ .



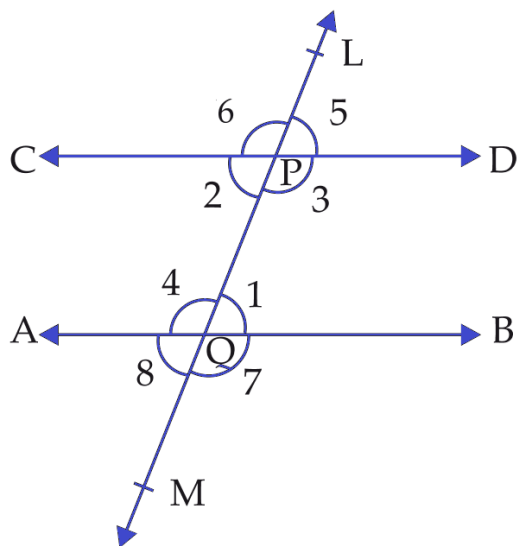
## SECTION – E (Case Study Based Questions)

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  $57^\circ$  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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