MATHEMATICS
WORKSHEET_010126 – CHAPTER 04,05 & 06 (2023–24)

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SUBJECT: MATHEMATICS	**MAX. MARKS : 40**
CLASS : IX	**DURATION : 1½ hrs**

General Instructions:
(i).   **All** questions are compulsory.
(ii). This question paper contains 2**0** 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.

1. If point (3, 0) lies on the graph of the equation $2x + 3y = k$, then the value of k is
   (a) 6   (b) 3   (c) 2   (d) 5

2. The graph of the linear equation $3x + 5y = 15$ cuts the x-axis at the point
   (a) (5, 0)   (b) (3, 0)   (c) (0, 5)   (d) (0, 3)

3. The graph of the linear equation $y = 2x$ passes through the point
   (a) (2, 1)   (b) (2, – 1)   (c) $\left(\dfrac{3}{2},-3\right)$ (d) $\left(\dfrac{3}{2},3\right)$

4. If a straight line falling on two straight lines makes the interior angles on the same side of it, whose sum is 120°, then the two straight lines, if produced indefinitely, meet on the side on which the sum of angles is
   (a) less than 120°   (b) greater than 120°   (c) equal to 120°   (d) greater than 180°

5. Euclid stated that all right angles are equal to each other in the form of
   (a) an axiom   (b) a definition   (c) a postulate   (d) a proof

6. In figure if x : y = 1 : 4, then values of x and y are respectively
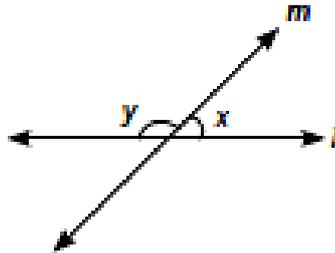
   (a) 36° and 144°   (b) 18° and 72°   (c) 144° and 36°   (d) 72° and 18°

7. An angle is 20° more than three times the given angle. If the two angles are supplementary, then the angles are
   (a) $\dfrac{70^0}{4},\dfrac{290^0}{4}$ (b) 40°, 140°   (c) 60°, 120°   (d) 40°, 50°

8. In the given figure, the relation between line l and line m is
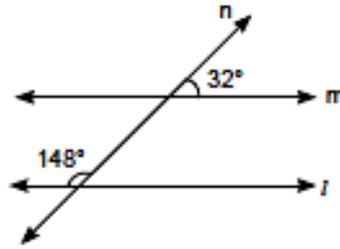
    (a) l || m   (b) l is not parallel to m
    (c) lines l and m, intersect when produced   (d) none of these

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):** 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 100^0.
   Reason (R): If a transversal intersects two parallel lines, then the sum of the interior angles on the same side of the transversal is 180^0.

10. **Assertion (A):** If x = 2k – 1 and y = k is a solution of the equation 3x – 5y – 7 = 0, then the value of k is 10
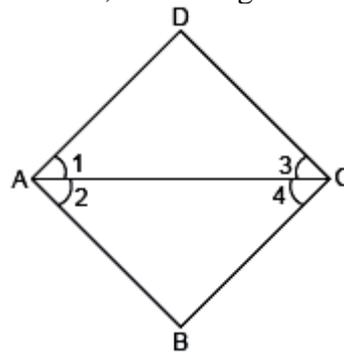   **Reason (R):** A linear equation in two variables has infinitely many solutions.
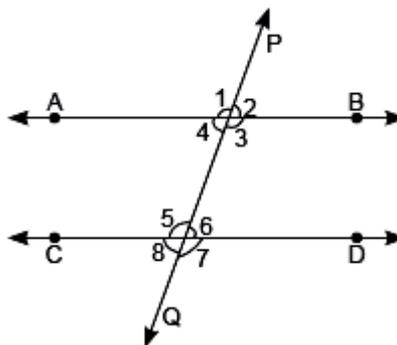
SECTION – B
Questions 11 to 14 carry 2 marks each.

11. Find the value of *a* and *b*, if the line $6bx + ay = 24$ passes through (2, 0) and (0, 2).
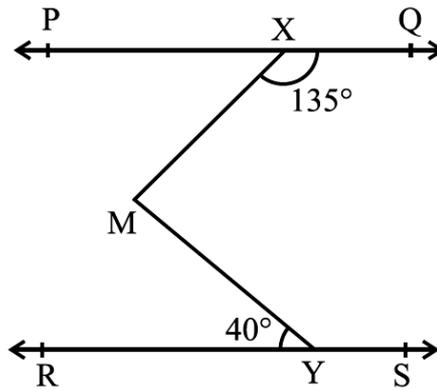
12. In the given figure, if $\angle 2 = \angle 4$ and $\angle 4 = \angle 1$, then using Euclid's axiom prove that $\angle 1 = \angle 2$.

13. In the given figure, AB || CD, $\angle 2 = 120° + x$ and $\angle 6 = 6x$. Find the measure of $\angle 2$ and $\angle 6$.

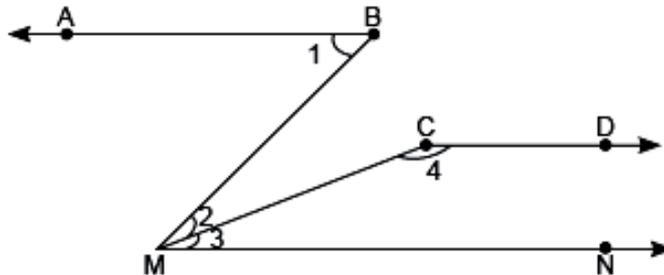**14.** In the below figure, if PQ || RS, ∠ MXQ = 135° and ∠ MYR = 40°, find ∠ XMY.

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

15. Find the value of a, if the line $3y = ax + 7$, will pass through:
(i) (3, 4), (ii) (1, 2), (iii) (2, –3)

16. In the given figure, ∠1 = 55°, ∠2 = 20°, ∠3 = 35° and ∠4 = 145°. Prove that AB || CD.
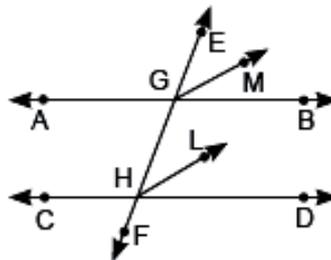

17. Write the statement of fifth Euclid's postulates and explain with the help of diagram.

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 || HL.

## SECTION – E (Case Study Based Questions)
Questions 19 to 20 carry 4 marks each.

19. On his birthday, Manoj planned that this time he celebrates his birthday in a small orphanage centre. He bought apples to give to children and adults working there. Manoj donated 2 apples to each child and 3 apples to each adult working there along with Birthday cake. He distributed 60 total apples.

(a) How to represent the above situation in linear equations in two variables by taking the number of children as 'x' and the number of adults as 'y'?   (1)
(b) If the number of children is 15, then find the number of adults?   (1)
(c) If the number of adults is 12, then find the number of children?   (1)
(d) Find the value of b, if $x = 5$, $y = 0$ is a solution of the equation $3x + 5y = b$ (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.
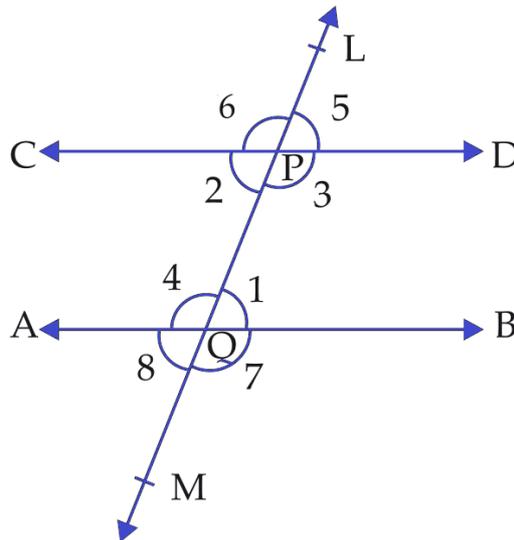
Answer the following questions:
(a) If $\angle 5 = 65°$. Then what is the $\angle 8$?   (1)
(b) If $\angle 6 = 2x$ and $\angle 1 = 70°$. Then find the value of x. (1)
(c) If $\angle 6 : \angle 5 = 2 : 3$ then find the value of $\angle 7$. (2)