



MAHAVIR SENIOR MODEL SCHOOL
WINTER BREAK HOMEWORK
GRADE VII
SESSION 2025-26

ASSERTION-REASON WORKSHEET

Q1. For each part, choose the correct option:

- 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.**

- i) Assertion (A): When a transversal intersects two parallel lines, the corresponding angles are equal.**
Reason (R): Corresponding angles are formed on the same side of the transversal.
- ii) Assertion (A): Vertically opposite angles are always equal.**
Reason (R): They are formed when two lines intersect each other.
- iii) Assertion (A): If two lines are parallel, then the sum of interior angles on the same side of the transversal is 180° .**
Reason (R): These angles form a linear pair.
- iv) Assertion (A): The value of an algebraic expression depends on the value of the letters used.**
Reason (R): Letters represent fixed numbers in all situations.
- v) Assertion (A): An expression like $5x + 7$ has two terms.**
Reason (R): Terms are separated by addition or subtraction signs.
- vi) Assertion (A): All numbers divisible by 2 are even numbers.**
Reason (R): Even numbers leave remainder 1 when divided by 2.



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PRACTICE WORKSHEET

Q1. Simplify: $4a + 6b - 2a + 3b$.

Q2. If $x = 3$ and $y = -2$, find the value of: $2x - 5y + 4$.

Q3. Write an algebraic expression for: "Seven more than twice a number."

Q4. How many terms are there in the expression $7p - 3q + 5$?

Q5. The length of a rectangle is $(3x + 5)$ cm and its breadth is $(x + 2)$ cm.

(a) Write an expression for its perimeter.

(b) Find the perimeter when $x = 4$.

Q6. A shopkeeper sells x notebooks at ₹ $(10x - 5)$ each.

(a) Write an expression for the total cost.

(b) Find the total cost when $x = 6$.

Q7. Two complementary angles are such that one angle is 30° less than twice the other. Find the measure of the larger angle.

Q8. Form a 3×3 magic square with following conditions.

(a) Numbers from 7 to 15 are used once

(b) Magic sum is 54

(c) Centre number is 20

Q9. Identify the given pair of lines as either parallel, perpendicular, or intersecting.

(a) Lines FQ and HT are _____ lines.

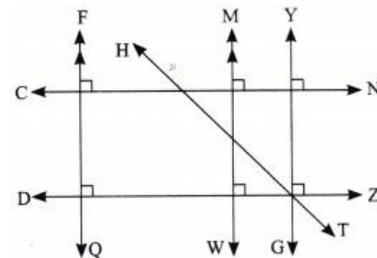
(b) Lines FQ and MW are _____ lines.

(c) Lines CN and FQ are _____ lines.

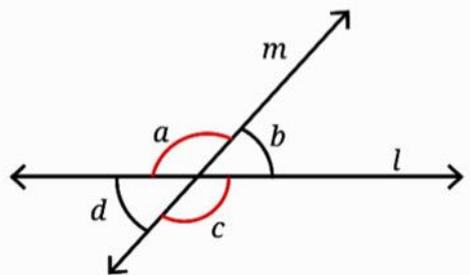
(d) Lines DZ and YG are _____ lines.

(e) Lines CN and YG are _____ lines.

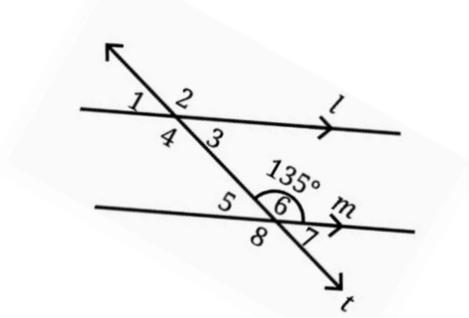
(f) Lines HT and MW are _____ lines.



Q10. In the adjoining figure, if $\angle a = 115^\circ$, find $\angle b$, $\angle c$ and $\angle d$.

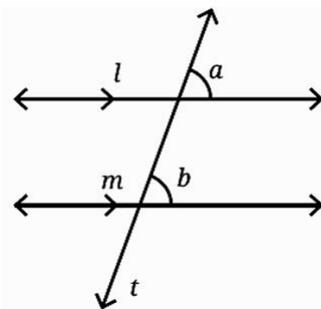


Q11. In the below left sided figure, $\angle 6 = 135^\circ$. Find measures of $\angle 1, \angle 2, \angle 3, \angle 4, \angle 5, \angle 7, \angle 8$.



CASE BASED QUESTIONS

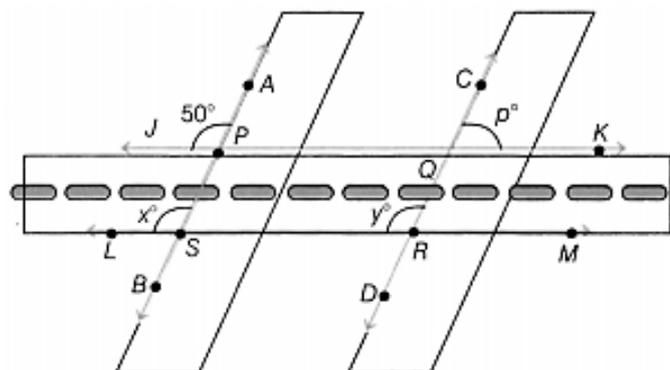
Q12. To alleviate rush hour congestion, City Planners are designing a new flyover over two major, parallel avenues, Elm Street and Oak Avenue. A crucial connector road is being added to link them, acting as a transversal line. For optimal traffic flow and driver safety, the engineers must rigorously measure the corresponding angles where the connector road meets the main avenues, ensuring they are equal to guarantee the smoothest possible transition between the parallel roads.



- (i) Which angles are corresponding angles in the above figure?
- (ii) If $\angle a = 65^\circ$, what is $\angle b$?
- (iii) Why must $\angle a = \angle b$ for parallelism?
- (iv) Write one real-life importance of parallel roads in city planning.

Q13. In the figure the road crossing the railroad tracks forms parallel lines & transversal. One corner side, the angle formed between the road and the rail track is given 50° .

- (a) The relation between x and y is
 - A. Alternate interior angle
 - B. Alternate exterior angle
 - C. vertically opposite angle
 - D. corresponding angles
- (b) Find the values of y, p and x





Q14. PUZZLE TIME

Place each number from 1 to 9 in the grid just once. To work out where each number goes, you must note the values at the end of each row and column. These indicate the sum of the numbers in that row or column.

○	5	○	10
○	3	○	17
○	○	○	18
17	17	11	

5	○	7	16
○	○	○	16
○	○	○	13
14	13	18	

○	○	6	10
○	○	○	19
○	○	9	16
10	12	23	

○	○	○	13
○	○	○	17
2	○	9	15
11	15	19	



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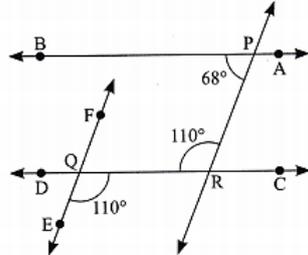
WINTER BREAK HOMEWORK

GRADE VII

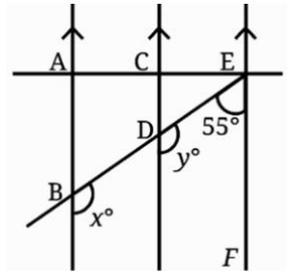
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COMPETENCY WORKSHEET

Q1. State which lines are parallel and why.

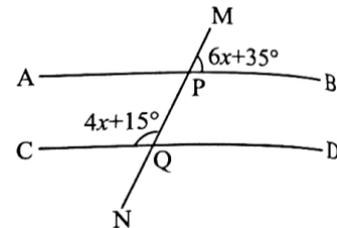


Q2. In the below figure, $AB \parallel CD \parallel EF$ and $EA \perp AB$. If $\angle BEF = 55^\circ$, find x and y .



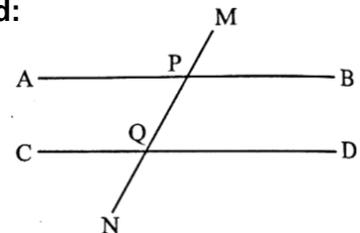
Q3. In the given figure, lines AB and CD are parallel. Line MN intersects line AB and CD at point P and Q respectively. Find the value of :

- a. $\angle APQ$
- b. $\angle PQD$
- c. $\angle PQC$



Q4. In the given figure $AB \parallel CD$ and $\angle MPB : \angle PQC = 5:7$. Find:

- a. $\angle PQD$
- b. $\angle MPA$



Q5. In the given figure $AB \parallel CD$, $\angle RPQ = 40^\circ$ and $\angle RPC = \angle QPD$. Find:

- a. $\angle NQB$
- b. $\angle MRQ$

