O.P.JINDAL SCHOOL SAVITRI NAGAR

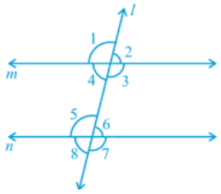
Class: IX **Worksheet (2020-21)** **Subject: Maths**

<u>Topic: Lines and Angles</u>

Parallel Lines and a Transversal

If a line passes through two distinct lines and intersects them at distant points then this line is called **Transversal Line**.

Here line "l" is transversal of line m and n.

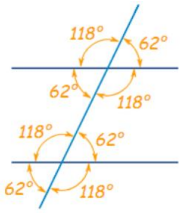


Exterior Angles - ∠1, ∠2, ∠7 and ∠8
Interior Angles - ∠3, ∠4, ∠5 and ∠6

Pairs of angles formed when a transversal intersects two lines-

1. Corresponding Angles:
∠ 1 and ∠ 5 ∠ 2 and ∠ 6 ∠ 4 and ∠ 8 ∠ 3 and ∠ 7
2. Alternate Interior Angles:
∠ 4 and ∠ 6 ∠ 3 and ∠ 5
3. Alternate Exterior Angles:
∠ 1 and ∠ 7 ∠ 2 and ∠ 8
4. Interior Angles on the same side of the transversal:
∠ 4 and ∠ 5 ∠ 3 and ∠ 6

Transversal Axioms



1. If a transversal intersects two parallel lines, then

- Each pair of corresponding angles will be equal.
- Each pair of alternate interior angles will be equal.
- Each pair of interior angles on the same side of the transversal will be supplementary.

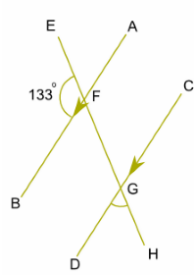
2. If a transversal intersects two lines in such a way that

- Corresponding angles are equal then these two lines will be parallel to each other.
- Alternate interior angles are equal then the two lines will be parallel.

- Interior angles on the same side of the transversal are supplementary then the two lines will be parallel.

Example

Find ∠DGH.



Solution

Here, AB ∥ CD and EH is transversal.

∠EFB + ∠BFG = 180° (Linear pair)

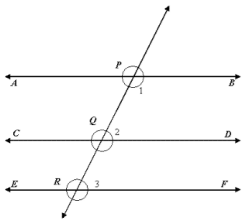
∠BFG = 180°- 133°

∠BFG = 47°

∠BFG =∠DGH (Corresponding Angles)

∠DGH = 47°

Lines Parallel to the Same Line



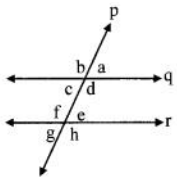
If two lines are parallel with a common line then these two lines will also be parallel to each other.

As in the above figure if AB ∥ CD and EF ∥ CD then AB ∥ EF.

<u>Assignment</u>

Q1. A transversal intersects two parallel lines. Prove that the bisectors of any pair of corresponding angles so formed are parallel.

Q2, In the given figure, if line q || line r, line p is their transversal and if a = 80°, find the values of f and g.



NOTE: This worksheet is prepared from home.