## Lines & Angles    Definitions
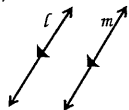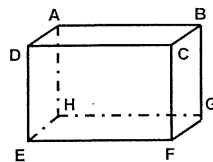
- Parallel lines (ll) – lines that are coplanar & do not intersect    $l$  $m$

  $l \parallel m$

- Skew lines – lines that are not coplanar & do not intersect.

- Parallel planes – 2 planes that do not intersect.
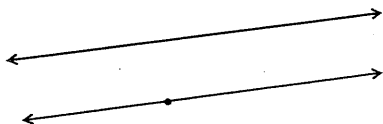  Example:  the floor & the ceiling

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1. Line AB & Line DC are _____.
2. Line AB & Line EF are _____.
3. Line BC & Line AH are _____.
4. Plane ABC & plane HGF are _____.
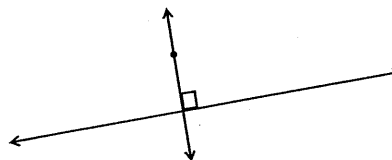
1. Parallel
2. Parallel
3. Skew
4. Parallel

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## Postulate: ll postulate

- If there is a line & a point not on the line, then there is exactly one line through the point ll to the given line.

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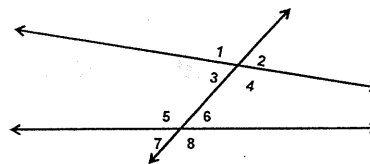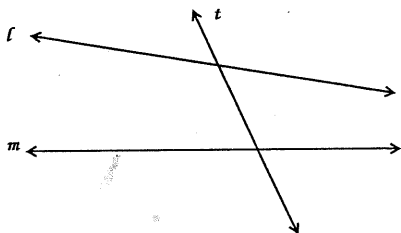## Postulate: ⊥ Postulate

- If there is a line & a point not on the line, then there is exactly one line through the point that is ⊥ to the given line.

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## Transversal

- A line that intersects 2 or more coplanar lines at different points.

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Interior <s - <3, <4, <5, <6   (inside $l$ & $m$)

Exterior <s - <1, <2, <7, <8   (outside $l$ & $m$)

Alternate Interior <s - <3 & <6, <4 & <5 (alternate –opposite sides of the transversal)

Alternate Exterior <s - <1 & <8, <2 & <7

Consecutive Interior <s - <3 & <5, <4 & <6 (consecutive – same side of transversal)

Corresponding <s - <1 & <5, <2 & <6, <3 & <7, <4 & <8 (same location)

## II Lines & Transversals
### Postulate– Corresponding ∠s Postulate

- If 2 ‖ lines are cut by a transversal, then the pairs of corresponding ∠s are ≅.
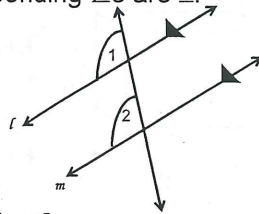
- i.e. If ℓ‖m, then ∠1≅∠2.

## Alternate Interior ∠s Theorem

- If 2 ‖ lines are cut by a transversal, then the pairs of alternate interior ∠s are ≅.
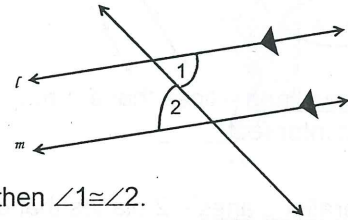
- i.e. If ℓ‖m, then ∠1≅∠2.

## Consecutive Int. ∠s theorem

- If 2 ‖ lines are cut by a transversal, then the pairs of consecutive int. ∠s are supplementary.
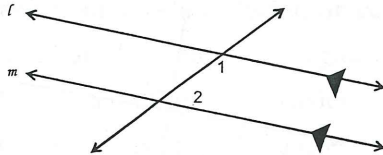
- i.e. If ℓ‖m, then ∠1 & ∠2 are supp.

$$\angle 1 + \angle 2 = 180$$

## Alterior Exterior. ∠s Theorem

- If 2 ‖ lines are cut by a transversal, then the pairs of alternate exterior ∠s are ≅.
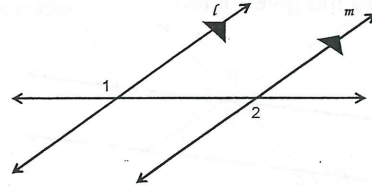
- i.e. If ℓ‖m, then ∠1≅∠2.

## ⊥ Transversal Theorem

- If a transversal is ⊥ to one of 2 ‖ lines, then it is ⊥ to the other.
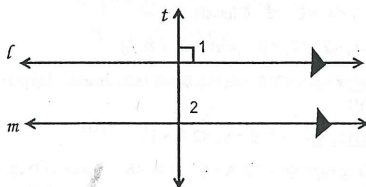
- i.e. If ℓ‖m, & t⊥ℓ, then t⊥m.
- ** ∠1 & 2 added for proof purposes.

**Ex:  Find:**
m∠1=55°
m∠2=125°
m∠3=55°
m∠4=125°
m∠5=55°
m∠6=125°
x=40°

x=

2

NAME _____ DATE _____
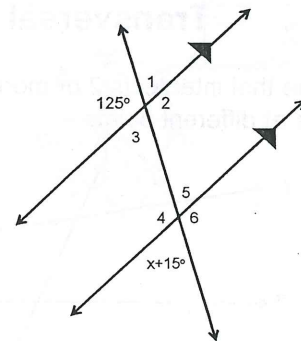
## Practice A

For use with pages 129–134

**Think of each segment in the diagram as part of a line. Fill in the blank with *parallel, skew,* or *perpendicular*.**

1. $\overleftrightarrow{AB}$ and $\overleftrightarrow{DC}$ are ___?___ .

2. $\overleftrightarrow{AB}$ and $\overleftrightarrow{BC}$ are ___?___ .

3. $\overleftrightarrow{BF}$ and $\overleftrightarrow{FG}$ are ___?___ .

4. $\overleftrightarrow{AB}$ and $\overleftrightarrow{FG}$ are ___?___ .

**Think of each segment in the diagram as part of a line. There may be more than one correct answer.**

5. Name a line parallel to $\overleftrightarrow{MN}$.
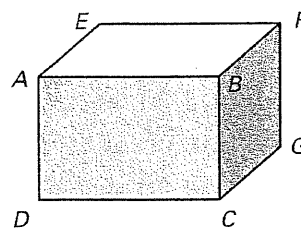
6. Name a line perpendicular to $\overleftrightarrow{PR}$.

7. Name a line skew to $\overleftrightarrow{SN}$.

8. Name a plane parallel to plane *RPL*.
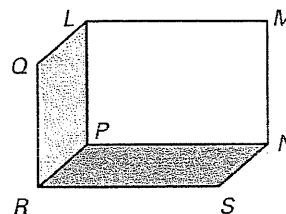
**Complete the statement with *corresponding, alternate interior, alternate exterior,* or *consecutive interior*.**

9. $\angle 3$ and $\angle 7$ are ___?___ angles.

10. $\angle 4$ and $\angle 10$ are ___?___ angles.

11. $\angle 5$ and $\angle 8$ are ___?___ angles.

12. $\angle 8$ and $\angle 6$ are ___?___ angles.

13. $\angle 9$ and $\angle 5$ are ___?___ angles.

14. $\angle 5$ and $\angle 7$ are ___?___ angles.

**Answer true or false.**

15. The hands of a clock are perpendicular at 3:00 and 9:00.

16. If two lines do not intersect, then they are parallel.

17. The perpendicular postulate states that for a point on a line, there is exactly one line through the point perpendicular to the line.

18. The parallel postulate states that for a point not on a line, there is exactly one line through the point parallel to the line.

**Use the diagram to answer the question.**

19. Name all pairs of vertical angles.

20. Name all pairs of corresponding angles.

21. Name all pairs of alternate interior angles.

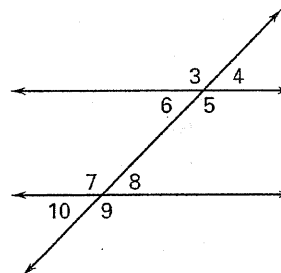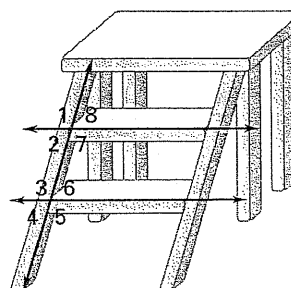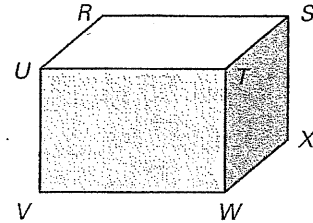# Practice B

**For use with pages 129–134**

**Think of each segment in the diagram as part of a line. Fill in the blank with *parallel, skew,* or *perpendicular.***

1. $\overleftrightarrow{UT}$ and $\overleftrightarrow{WT}$ are ___?___.

2. $\overleftrightarrow{RS}$ and $\overleftrightarrow{VW}$ are ___?___.

3. $\overleftrightarrow{TU}$ and $\overleftrightarrow{WX}$ are ___?___.

4. plane *VWT* and plane *RSX* are ___?___.

5. plane *RST* and plane *SXW* are ___?___.

**Think of each segment in the diagram as part of a line. There may be more than one correct answer.**

6. Name a line parallel to $\overleftrightarrow{HJ}$.

7. Name a line perpendicular to $\overleftrightarrow{LM}$.

8. Name a line skew to $\overleftrightarrow{GH}$.

9. Name a plane parallel to plane *GHJ*.

10. Name a plane perpendicular to plane *KLM*.
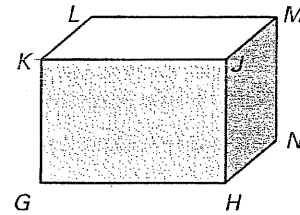
**Complete the statement with *corresponding, alternate interior, alternate exterior,* or *consecutive interior.***

11. $\angle 6$ and $\angle 10$ are ___?___ angles.

12. $\angle 7$ and $\angle 9$ are ___?___ angles.

13. $\angle 8$ and $\angle 9$ are ___?___ angles.

14. $\angle 12$ and $\angle 8$ are ___?___ angles.

15. $\angle 5$ and $\angle 11$ are ___?___ angles.

16. $\angle 8$ and $\angle 10$ are ___?___ angles.
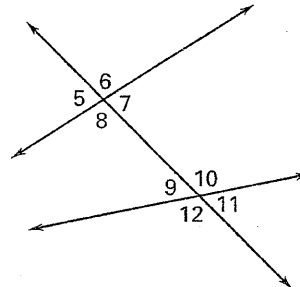
**Use the diagram of the Ferris wheel to decide whether the statement is *true* or *false*.**

17. At any position around the wheel, the line containing the crossbar, $\overleftrightarrow{AB}$, of each cart is parallel to the ground.

18. For any cart of the Ferris wheel, the line containing the back support, $\overleftrightarrow{CD}$, and the line containing the crossbar, $\overleftrightarrow{AB}$, are skew lines.

19. At any position around the wheel, the line containing the back support, $\overleftrightarrow{DC}$, is perpendicular to the ground.