DO NOW!

- Only things on desk:
  - Pencil
  - Handouts you picked up

- Work silently & independently

<u>DO NOW!:</u> Fill in the blank with *always*, *sometimes*, or *never*.

1. If two planes intersect, then they intersect at a line. **always**

2. If two lines intersect, then they intersect at two different points. **never**

3. $\overleftrightarrow{AB}$ is another name for $\overleftrightarrow{BA}$. **always**

4. Two lines intersect at one point. **sometimes**

5. One line can be drawn through three points. **sometimes**

6. In your own words, what does *intersect* mean?

To meet, touch, go/cut through, cross, etc.

7. Will $\overleftrightarrow{JM}$ and $\overleftrightarrow{LQ}$ ever intersect in space? (Lines that intersect on the page do not necessarily intersect in space.)

no

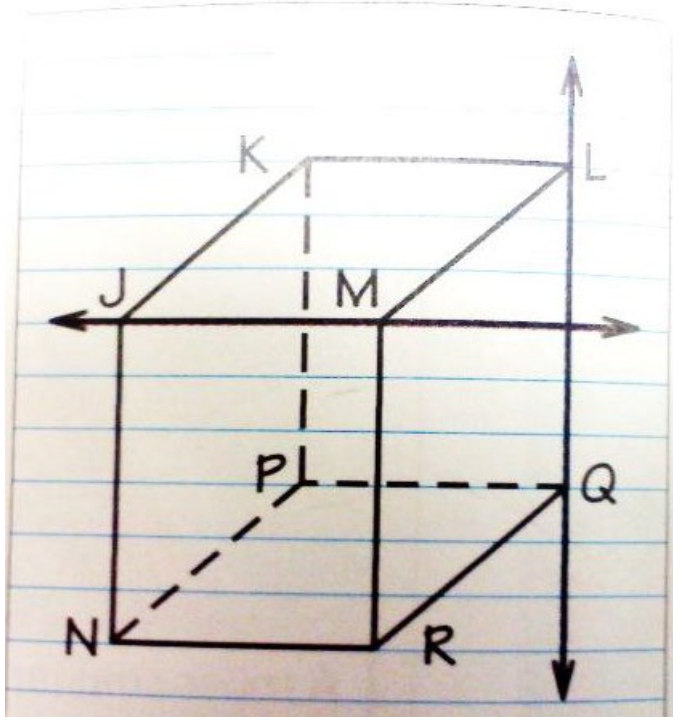
8. Will the following pairs of lines intersect in space?

a) $\overleftrightarrow{JK}$ and $\overleftrightarrow{NR}$ **no**

b) $\overleftrightarrow{LM}$ and $\overleftrightarrow{MR}$ **yes at point *M***

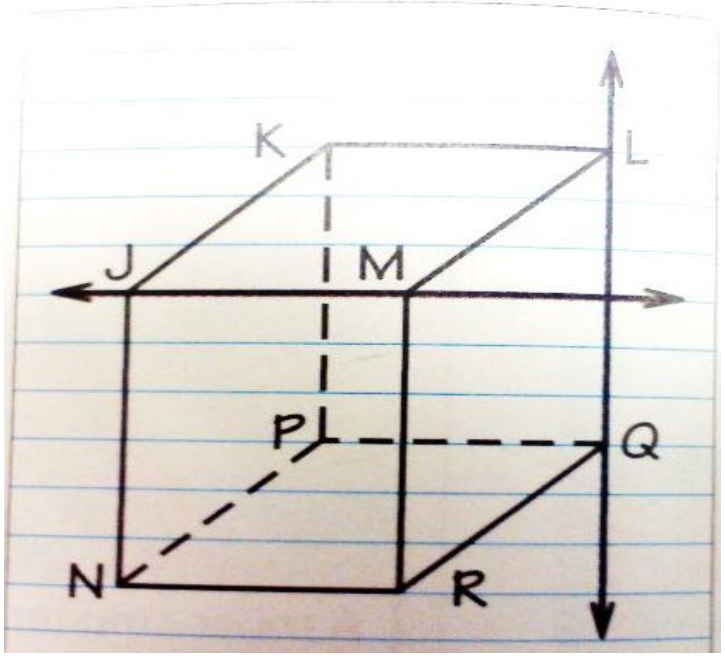
c) $\overleftrightarrow{MR}$ and $\overleftrightarrow{QR}$ **Yes at point R**

d) $\overleftrightarrow{KL}$ and $\overleftrightarrow{NQ}$ **no**



9. Are the following pairs of lines coplanar?

→ This means: **Can they lie in the same plane?**



a) $\overleftrightarrow{JK}$ and $\overleftrightarrow{RQ}$

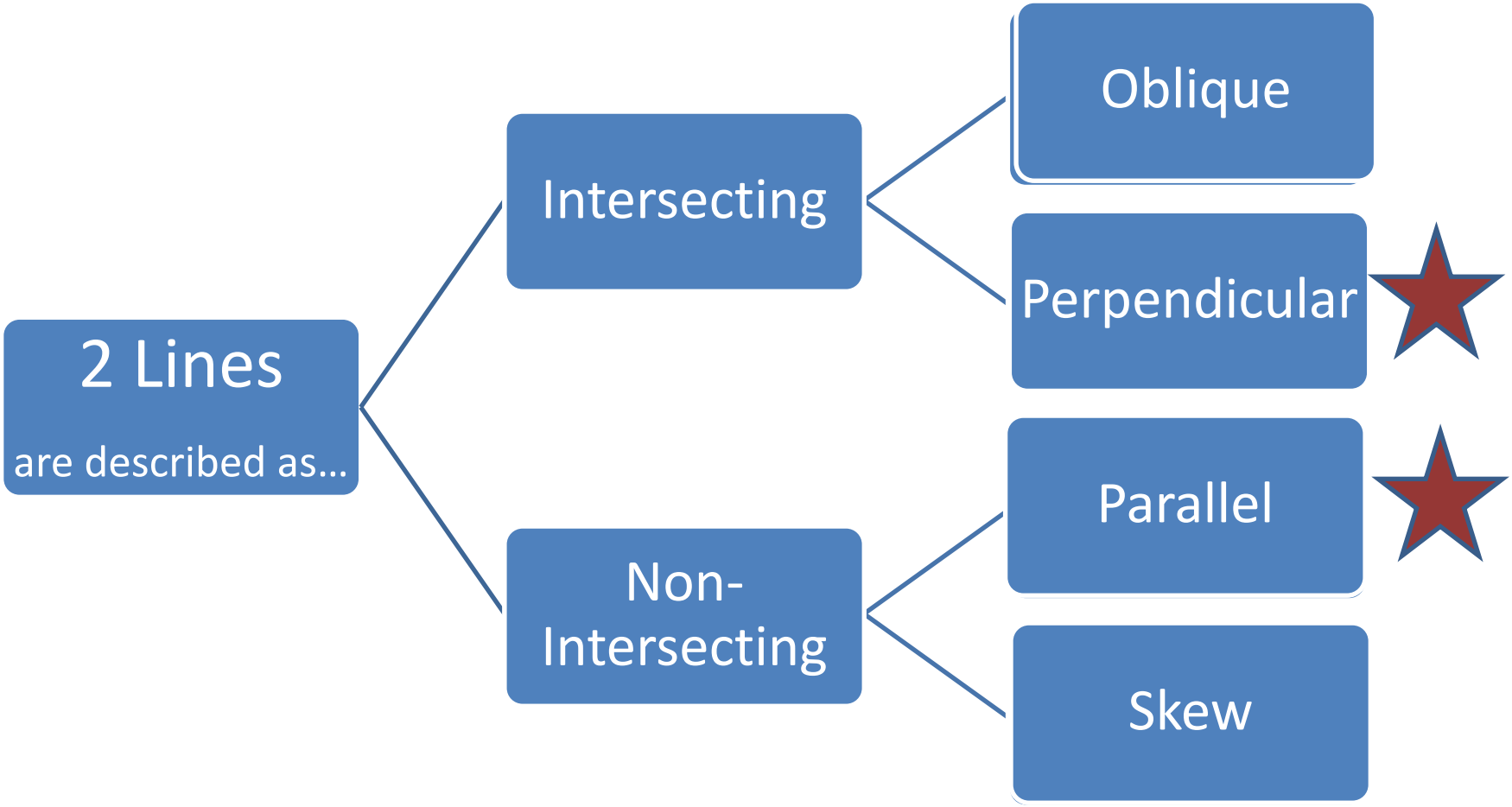
b) $\overleftrightarrow{JN}$ and $\overleftrightarrow{LR}$

c) $\overleftrightarrow{QR}$ and $\overleftrightarrow{MR}$

d) $\overleftrightarrow{JL}$ and $\overleftrightarrow{NQ}$

We will be able to:

- Name and describe the 4 different types of lines


2 Lines
are described as…
Intersecting
Non-Intersecting
Oblique
Perpendicular
Parallel
Skew

With your group, use the provided examples & non-examples to complete the table.

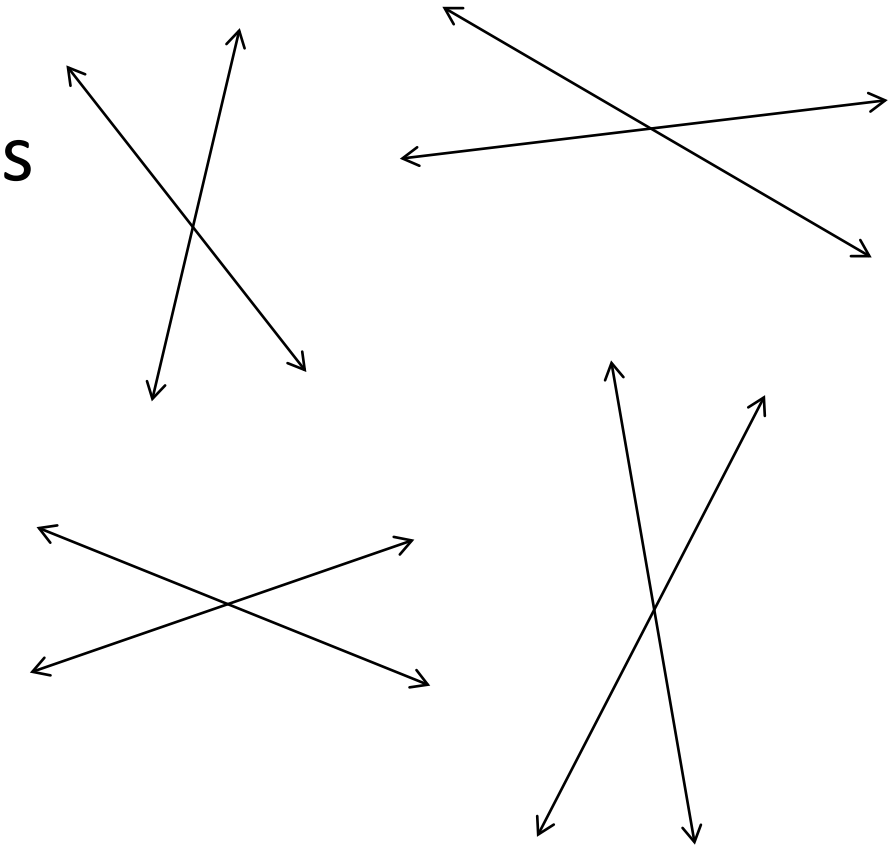
Type of Lines	Characteristics	Picture
OBLIQUE	•	
PERPENDICULAR	• • SYMBOL:	
PARALLEL	• • • SYMBOL:	
SKEW	• •	

Think about which are coplanar and which are not

Intersecting Oblique Lines

- Intersect to form

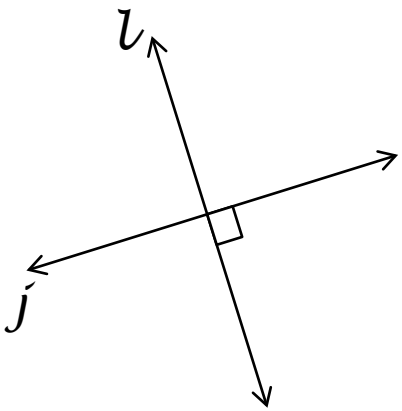
  acute or obtuse angles

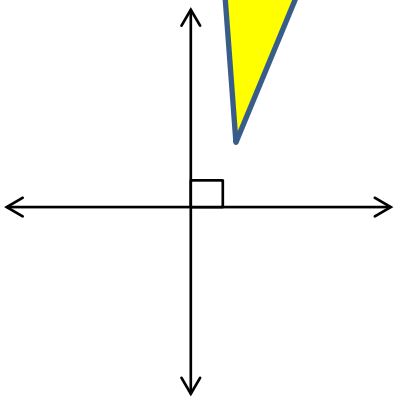


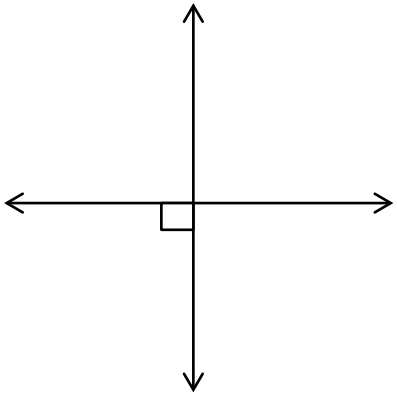
Perpendicular Lines

- Intersect to form a **right** angle
- *Symbol:* $\perp$
- *Example:* $j \perp l$

"Look for the box in a picture!





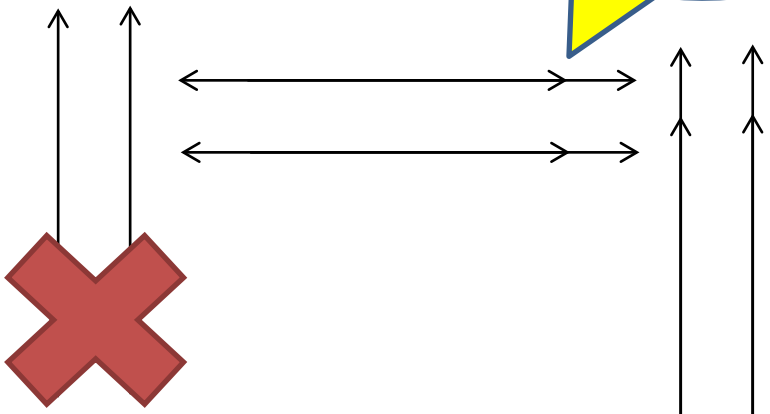


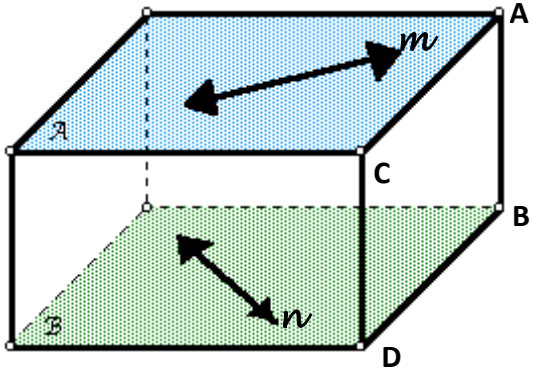
"Line *j* is perpendicular to line *l*"

Parallel Lines

- NEVER intersect
- Coplanar
- Symbol: $\parallel$
- Example: $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$

"Look for the double arrow in a picture!



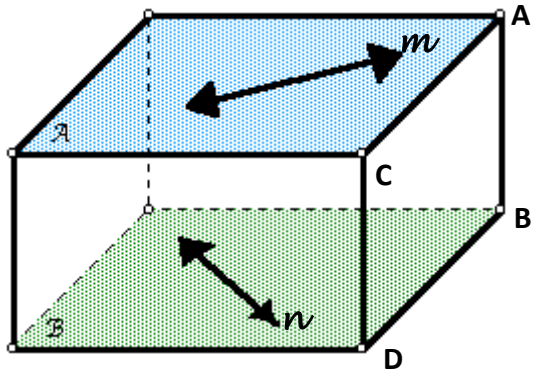


$\overleftrightarrow{AB}$ is parallel to $\overleftrightarrow{CD}$

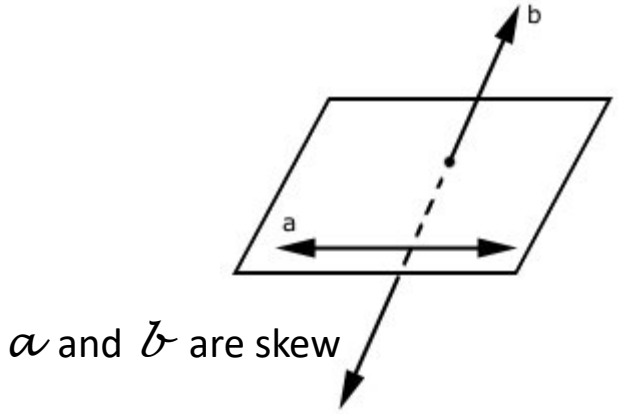
"Line *AB* is parallel to line *CD*"

Skew Lines

- NEVER intersect
- **Non-**Coplanar

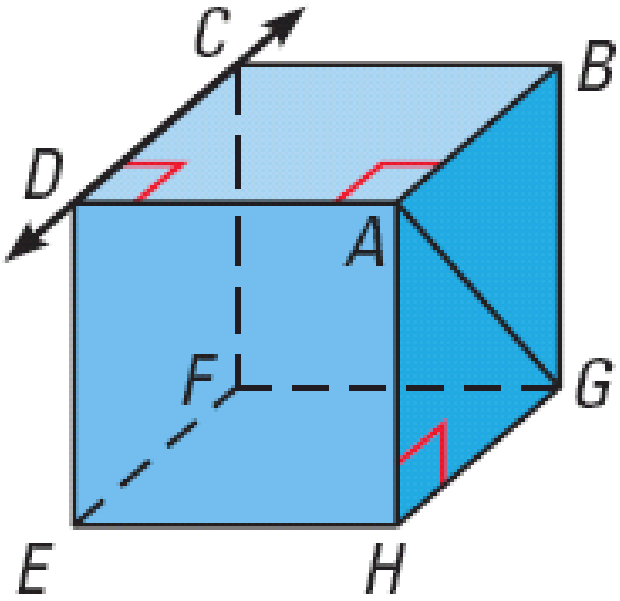


m and n are skew



a and b are skew

Example 1: **Think of the sides in the figure as planes.**



a) List all lines parallel to $\overleftrightarrow{CD}$.

b) List all lines parallel to $\overleftrightarrow{CD}$ containing point *A*.

c) List all lines skew to $\overleftrightarrow{CD}$.

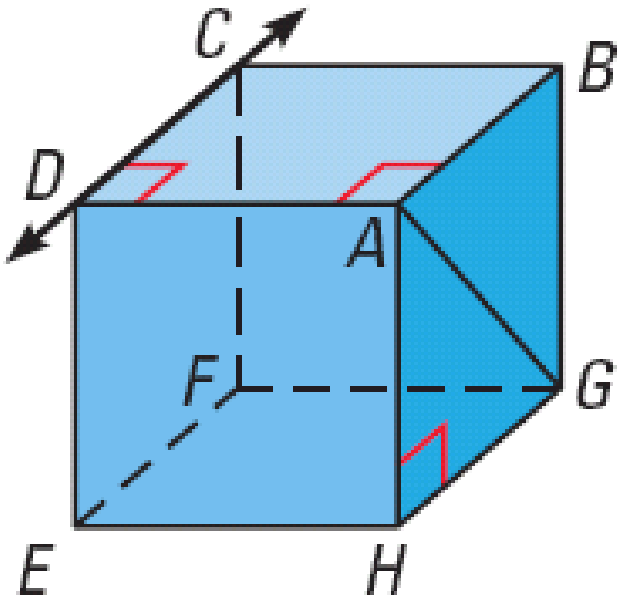
d) List all lines skew to $\overleftrightarrow{CD}$ containing point *A.*

e) List all lines perpendicular to $\overleftrightarrow{CD}$.

f) List all lines perpendicular to $\overleftrightarrow{CD}$ containing point *A*.

g) Extension: Name the plane that is parallel to Plane *EFG*.

Example 2: YOUR TURN!



a) List all lines parallel to $\overleftrightarrow{EH}$. $\overleftrightarrow{FG}$, $\overleftrightarrow{DA}$

b) List all lines parallel to $\overleftrightarrow{EH}$ containing point *F*. $\overleftrightarrow{FG}$

c) List all lines skew to $\overleftrightarrow{EH}$. $\overleftrightarrow{FC}$, $\overleftrightarrow{BG}$, $\overleftrightarrow{AG}$, $\overleftrightarrow{DC}$, $\overleftrightarrow{BA}$

d) List all lines skew to $\overleftrightarrow{EH}$ containing point *F*. $\overleftrightarrow{FC}$

e) List all lines perpendicular to $\overleftrightarrow{EH}$. $\overleftrightarrow{FE}$, $\overleftrightarrow{HG}$, $\overleftrightarrow{ED}$, $\overleftrightarrow{AH}$,

f) List all lines perpendicular to $\overleftrightarrow{EH}$ containing point *F*. $\overleftrightarrow{FE}$

g) Extension: Name the plane that is parallel to Plane *BAH*.

Plane *CDE*

Example 3: **Think of the sides of a figure as planes.**

a) List all lines parallel to $\overleftrightarrow{KN}$.

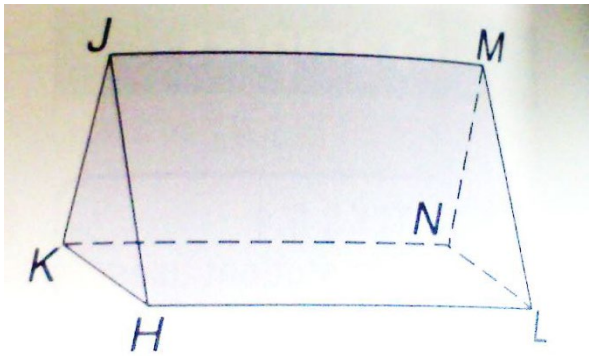
$\overleftrightarrow{JM}$ and $\overleftrightarrow{HL}$

b) List all lines skew to $\overleftrightarrow{JM}$.

$\overleftrightarrow{KH}$ and $\overleftrightarrow{NL}$

c) Describe $\overleftrightarrow{JK}$ and $\overleftrightarrow{NL}$.

skew



What is the best description of the horizontal bars in the photo?

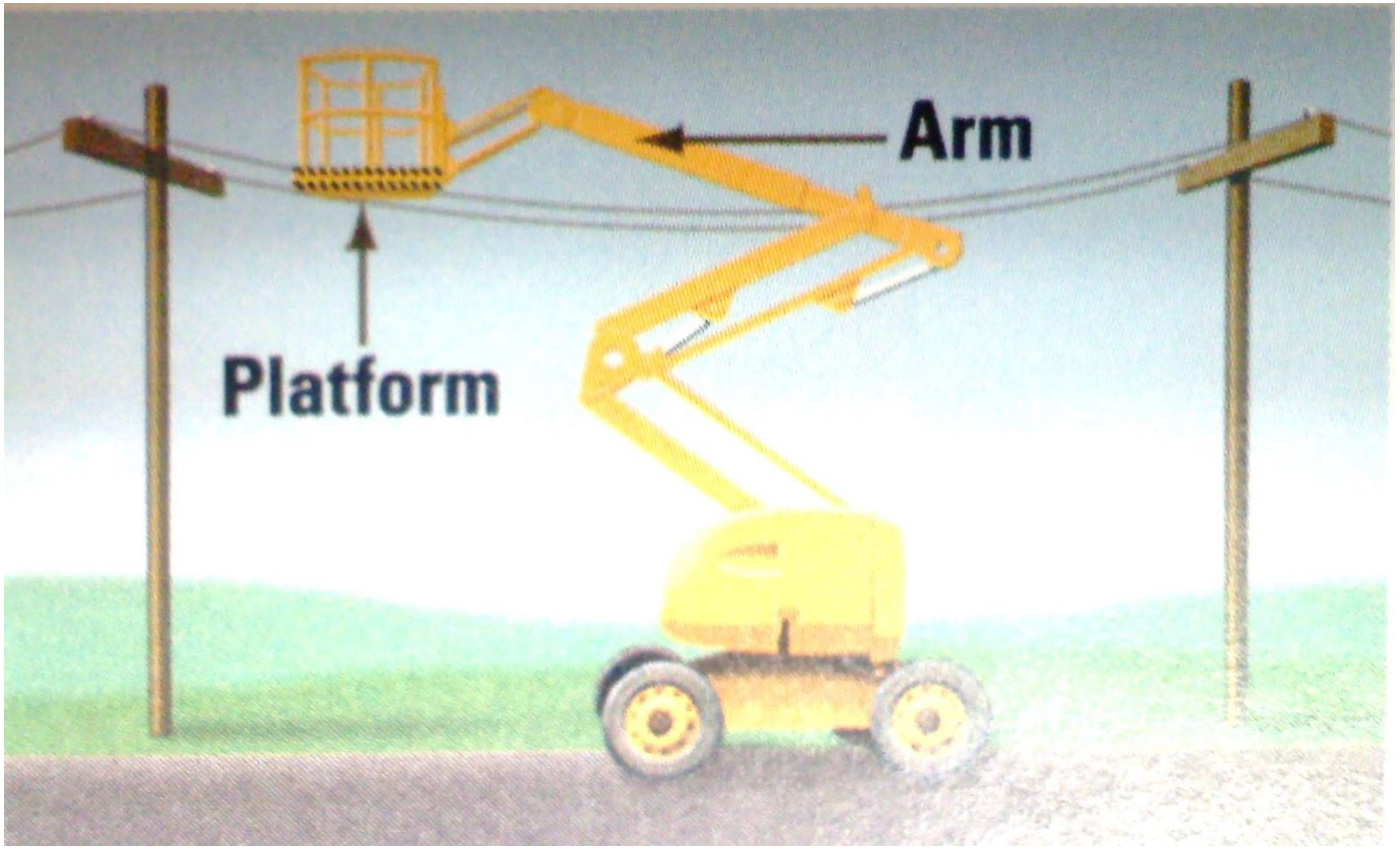
A. INTERSECTING

B. PERPENDICULAR

C. SKEW

D. PARALLEL

Is the platform *perpendicular*, *parallel*, or *skew* to the ground? **parallel**



Is the arm *perpendicular*, *parallel*, or *skew* to a telephone pole? **skew**