

## Theorems on Perpendicular Lines

**Perpendicular Lines:** two lines that meet to form congruent adjacent angles

**Parallel Lines:** lines that lie in the same plane and have no point in common

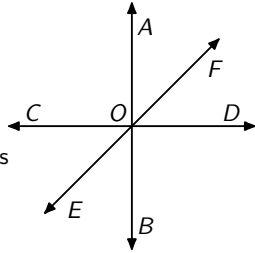
### Theorems on Perpendicular Lines:

1. If two lines are perpendicular, then they form four right angles.
2. If two lines meet to form a right angle, the lines are perpendicular.
3. In a plane, through a given point of a line, there is exactly one line perpendicular to the line.

## Practice Exercises

The adjoining figure consists of 3 coplanar lines passing through  $O$  with  $\overline{AB} \perp \overline{CD}$ . Determine each statement as true or false.

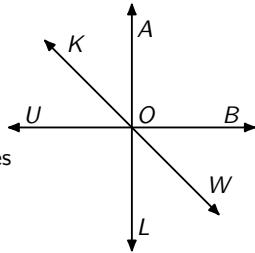
- $m\angle AOC = 90^\circ$
- $m\angle FOD = m\angle AOD - m\angle AOF$
- $\angle COF$  is an acute angle
- $\overleftrightarrow{EF} \perp \overleftrightarrow{CD}$
- $\overrightarrow{OC}$  and  $\overrightarrow{OF}$  are opposite rays
- $\angle AOF$  and  $\angle AOD$  are adjacent angles
- $\angle AOD$  is a right angle
- $\angle AOC$  and  $\angle AOD$  are congruent adjacent supplementary angles.
- The exterior sides of  $\angle AOF$  and  $\angle FOD$  lie in perpendicular lines.
- $\overrightarrow{OB} \perp \overrightarrow{OD}$



## Problem Set

The adjoining figure consists of 3 coplanar lines passing through  $O$  with  $\overline{AL} \perp \overline{UB}$ . Determine each statement as true or false.

- $m\angle AOB = 90^\circ$
  - $m\angle KOU = m\angle AOU - m\angle AOK$
  - $\angle KOB$  is an acute angle
  - $\overrightarrow{KW} \perp \overrightarrow{UB}$
  - $\overrightarrow{OB}$  and  $\overrightarrow{OK}$  are opposite rays
  - $\angle AOK$  and  $\angle AOU$  are adjacent angles
  - $\angle AOU$  is a right angle
  - $\angle AOB$  and  $\angle AOU$  are congruent adjacent supplementary angles.
  - The exterior sides of  $\angle AOK$  and  $\angle KOU$  lie in perpendicular lines.
  - $\overrightarrow{OL} \perp \overrightarrow{OU}$
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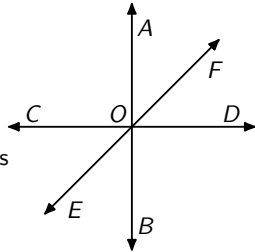
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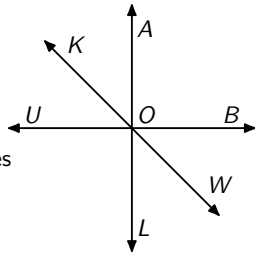
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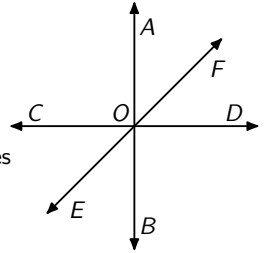
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