2.2 Analyze Conditional Statements Day 2

A **conditional statement** is a logical statement that has a **hypothesis** and a **conclusion**.

Not all conditional statements are true. Some can also be false.

You should also remember that Mr. Kenyon likes to write them in **If-Then** form:

If **hypothesis**, then **conclusion**.
With each conditional statement there are 4 additional statements related to it.

**Converse:** Exchange hypothesis and conclusion

**Inverse:** Negate both hypothesis and conclusion

**Contrapositive:** First write converse, and negate both hypothesis and conclusion.

**Biconditional Statement:** Conditional statement where the original statement and converse are both true and written together! Written with phrase "if and only if"
Two Examples of a biconditional statement:

**Statement:** If two lines intersect to form a right angle, then they are perpendicular lines.

**Converse:** If two lines are perpendicular, then they intersect to form a right angle.

**Biconditional Statement:**
Two lines are perpendicular if and only if they intersect to form a right angle.

Two lines intersect to form a right angle if and only if they are perpendicular.
Let's write a biconditional statement!

If you are a freshman, then you are in 9th grade.
You are a freshman iff you are in 9th grade.

If you are a sophomore, then you are in 10th grade.
You are a sophomore iff you are in 10th grade.

If you are a junior, then you are in 11th grade.
You are a junior iff you are in 11th grade.

If you are a senior, then you are in 12th grade.
You are a senior iff you are in 12th grade.
Look at the diagram and determine whether each statement about the diagram is true.

Explain your answer.

1. $\overline{AC} \perp \overline{BD}$  **FALSE!**

2. $\angle AEC$ and $\angle CEB$ are a linear pair  **TRUE!**

3. $\overrightarrow{EA}$ and $\overrightarrow{EB}$ are opposite rays.  **TRUE!**

4. $\angle AED$ and $\angle CEB$ are vertical angles.  **TRUE!**
Will you be tricked by this amazingly tricky man?

Check out that cool tie!
Analyze the following diagram. Decide whether each statement is true. Explain your answer using the definitions you have learned.

1. \(<JMF \text{ and } <FMG \text{ are supplementary}

2. \text{Point M is the midpoint of } \overrightarrow{FH}

3. \(<JMF \text{ and } <HMG \text{ are vertical angles.}

4. \overrightarrow{FH} \| \overrightarrow{JG}

\begin{align*}
\text{TRUE!} \\
\text{FALSE!} \\
\text{TRUE!} \\
\text{FALSE!}
\end{align*}
Assignment:
P75: 19-27, 32