2.3 Conditional Statements

... A statement that can be written in IF-THEN form.

IF (hypothesis), THEN (conclusion).

Ex. IF it rains on Sunday, then we won't have a picnic.
2-3 Skills Practice

Conditional Statements

Identify the hypothesis and conclusion of each statement.

1. If you purchase a computer and do not like it, then you can return it within 30 days.
   \[ H \text{ purchase a computer and do not like it, then } C \text{ you can return it within 30 days.} \]

2. If \( x + 8 = 4 \), then \( x = -4 \).
   \[ H \text{ if } x + 8 = 4, \text{ then } C x = -4 \]

3. If the drama class raises $2000, then they will go on tour.
   \[ H \text{ if the drama class raises } 2000, \text{ then } C \text{ they will go on tour.} \]
Write the following as conditional statements:

Ex. Everyone who came to class on Monday gets a bonus point.

IF you came to class on Monday,
THEN you get a bonus point.

Ex. Another performance will be scheduled if the first one is sold out.

IF the first perf. is sold out,
THEN another will be scheduled.
Write each statement in if-then form.

4. A polygon with four sides is a quadrilateral.
   \[ \text{If a polygon has 4 sides, then it is a quadrilateral.} \]

5. "Those who stand for nothing fall for anything." (Alexander Hamilton)
   \[ \text{If you stand for nothing, then you will fall for anything.} \]

6. An acute angle has a measure less than 90.
   \[ \text{If an angle is acute, then it has a measure < 90°.} \]
Determine the hypothesis and conclusion of each conditional statement.

1. If it is Saturday, then there is no school.

2. Pass in your test if you are finished.

3. All apes love bananas.

4. No one in this class likes backgammon.

   IF YOU ARE IN THIS CLASS,
   THEN YOU DON'T LIKE BACKGAMMON.
Determine the truth value of the following statement for each set of conditions.

If you finish your homework by 5 P.M., then you go out to dinner.

7. You finish your homework by 5 P.M. and you go out to dinner. \(\checkmark\)

8. You finish your homework by 4 P.M. and you go out to dinner. \(\checkmark\)

9. You finish your homework by 5 P.M. and you do not go out to dinner. \(x\)
For each statement, draw a Venn diagram. Then write the sentence in if-then form.

1. Every dog has long hair.  
2. All rational numbers are real.
3. People who live in Iowa like corn.  4. Staff members are allowed in the faculty lounge.
We can change the hypothesis and conclusion to form 3 related conditional statements.

- CONVERSE
- INVERSE
- CONTRAPOSITIVE
Ex.

Given that the original conditional statement is true, write the related conditional statements.

Original: If you are an ape, then you like bananas.

Converse: If you love bananas, then you are an ape.

Inverse: If you are not an ape, then you do not love bananas.

Contrapositive:

If you do not like bananas, then you are not an ape.