

## 2.1-2.3 Practice

Geometry

Name \_\_\_\_\_

1. Write a conditional statement from the given statement.

Hinsdale Central Students are involved in extracurricular activities.

If a person is a HC student, then they are involved in extracurricular activities.

2. State whether the conjecture is true or false. If false, provide a counterexample.

For any real numbers  $x$  and  $y$ , if  $x > y$ , then  $x^2 > y^2$ .

FALSE,  $x = -2$   
 $y = -3$

3. Circle the hypothesis and underline the conclusion of the conditional statement.

"If two segments are congruent then they have the same measure."

4. State the converse of the conditional statement.

"If two segments are congruent, then they have the same measure."

If two segments have the same measure, then they are  $\cong$

5. State the inverse of the conditional statement.

"If two segments are congruent, then they have the same measure."

If two segments are  $\neq$ , then they don't have the same measure

6. State the contrapositive of the statement.

"If two segments are congruent, then they have the same measure."

If two segments don't have the same measure, then the two segments are  $\neq$ .



Player A



Player Coach

Geometry

Name \_\_\_\_\_

1. Write a conditional statement from the given statement.

Three noncollinear points determine a plane.

If three points are noncollinear, then they determine a plane.

2. State whether the conjecture is true or false. If false, provide a counterexample.

The sum of a positive integer and negative integer is always negative.

False.

$$9 + -3 = 6$$

Ex:  $x = 9$  and  $y = -3$

3. Circle the hypothesis and underline the conclusion of the conditional statement.

"If a ray bisects an angle, then it divides the angle into two congruent angles."

4. State the converse of the conditional statement.

"If a ray bisects an angle, then it divides the angle into two congruent angles."

If a ray divides an angle into 2 congruent angles, then it bisects the angle.

5. State the inverse of the conditional statement.

"If a ray bisects an angle, then it divides the angle into two congruent angles."

If a ray does NOT bisect an angle, then it does NOT divide an angle into 2 congruent angles

6. State the contrapositive of the statement.

"If a ray bisects an angle, then it divides the angle into two congruent angles."

If a ray does NOT divide an angle into 2 congruent angles, then it does NOT bisect the angle.

7. A conditional statement has the same truth value as which other type of statement?

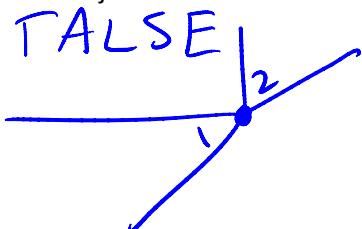
- a) inverse
- b) contrapositive**
- c) converse

7. An inverse statement has the same truth value as which other type of statement?

- a) inverse
- b) contrapositive
- c) converse**

8. Decide if the conditional statement is true or False. If False provide a counterexample.

If Two angles share a vertex, then they are adjacent.



9. Determine if the biconditional is true. If false, give a counterexample.

$$y = -5 \text{ if and only if } y^2 = 25$$

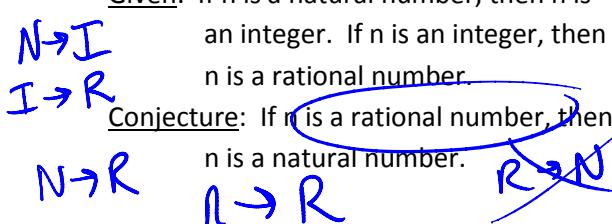
$$y = -5 \rightarrow y^2 = 25 \text{ TRUE}$$

$$y^2 = 25 \rightarrow y = -5 \text{ FALSE}$$

**FALSE** counterex:  $y = 5$

10. Determine if each conjecture is valid by the Law of Syllogism. invalid

Given: If  $n$  is a natural number, then  $n$  is an integer. If  $n$  is an integer, then  $n$  is a rational number.



11. Draw a conclusion from the given info.

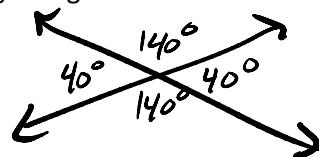
If it snows tonight, then you will have to shovel driveways. If you shovel driveways, then you will make \$150.

$S \rightarrow D$      $D \rightarrow M$   
**If it snows tonight, then you will make \$150.**

8. Decide if the conditional statement is true or False. If False provide a counterexample.

If two angles are vertical angles, then they are right angles.

**False!**



9. Determine if the biconditional is true. If false, give a counterexample.

**False**

$$x = 9 \text{ if and only if } x^2 = 81$$

**IF  $x=9$ , then  $x^2=81$ . (True)**

**IF  $x^2=81$ , then  $x=9$ . (False)**

**Counterexample:  $x=-9$**

10. Determine if each conjecture is valid by the Law of Law of Syllogism. Valid

Given: If you buy a car, then you can drive to school. If you can drive to school, then you will not ride the bus.  $\neg b$

$C \rightarrow d$   
 $d \rightarrow \neg b$   
 $C \rightarrow \neg b$

Conjecture: If you buy a car, then you will not ride the bus.  $C \rightarrow \neg b$

11. Draw a conclusion from the given info.

If you do your homework, then you will go to homecoming. If you go to homecoming, then you will meet the person of your dreams.

**If you do your homework, then you will meet the person of your dreams!**