

2 Chapter 2 Mid-Chapter Test

SCORE _____

(Lessons 2-1 through 2-5)

Part I Write the letter for the correct answer in the blank at the right of each question.

1. Make a conjecture given that points A, B, and C are collinear and $AC + CB = AB$.
- A C is between A and B. C B is between A and C.
 B A is between B and C. D $\triangle ABC$ is equilateral.

1. A

For Exercises 4 and 5, use the statement *If a ray bisects an angle then it divides the angle into two congruent angles* and the given choices.

- F If a ray divides an angle into two congruent angles, then it bisects the angle.
 G A ray bisects an angle if and only if it divides it into two congruent angles.
 H If a ray does not bisect an angle, then it does not divide the angle into two congruent angles.
 J If a ray does not divide an angle into two congruent angles, then it does not bisect the angle.

4. Which choice is the inverse of the given statement?
 5. Which choice is the contrapositive of the given statement?

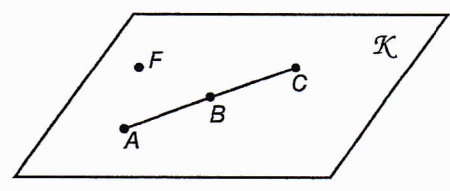
4. H
 5. J

Part II

6. Given: $2a^2 = 72$. Conjecture: $a = 6$
 Write a counterexample.
 7. Write the statement *All right angles are congruent* in if-then form.
 8. Use the Law of Detachment to write a valid conclusion for statements (1) and (2).
 (1) All fish can swim.
 (2) Charlie is a fish.

6. $a = -6$
 IF two angles are right angles, then they are congruent.
 7. right angles, then they are congruent.
 8. Charlie can swim

For Exercises 9–10, refer to the figure at the right.



9. If $\overline{AB} \cong \overline{BC}$ describe a relationship between the points A, B, and C.
 10. Name points that determine the plane K.

9. B is the midpoint of \overline{AC} .
 10. A F + B
 ($\overline{AC} = \overline{AB} + \overline{BC}$, they're collinear)

Copyright © Glencoe/McGraw-Hill, a division of The McGraw-Hill Companies, Inc.

Assessment

Activity Sheet 3: Logic and Conditional Statements

Name Key Date 9-6-16

1. Write each of the following statements as a conditional statement. Then, circle the hypothesis, and underline the conclusion.

a. Mark Twain wrote, "If you tell the truth, you don't have to remember anything."

If you tell the truth, then you don't have to remember anything

b. Helen Keller wrote, "One can never consent to creep when one feels the impulse to soar."

If one feels the impulse to soar, then one can never consent to creep.

c. Mahatma Ghandi wrote, "Freedom is not worth having if it does not include the freedom to make mistakes."

If it does not include the freedom to make mistakes, then freedom is not worth having.

d. Benjamin Franklin wrote, "Early to bed and early to rise makes a man healthy, wealthy, and wise."

If a man is early to bed and early to rise, then he is made healthy, wealthy and wise.

2. Write the converse, inverse, and contrapositive for each of the following conditional statements. Determine whether each is true or false.

a. "If I win, then you don't lose."

Converse: If you don't lose, then I win.

Inverse: If I don't win, then you do lose.

Contrapositive: If you do lose, then I don't win

~~True or false:~~ _____

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

Converse: If two segments have the same length, then they are congruent

Inverse: If two segments are not congruent, then they don't have the same length

Contrapositive: If two segments don't have the same length, then they are not congruent.

~~True or false:~~ _____

3. Use the Law of Detachment to reach a logical conclusion about the following statement: "If it is raining, then Sam and Sarah will not go to the football game." This is a true conditional, and it is raining.

Sam and Sarah will not go to the football game.

4. Statement 1: "If two adjacent angles form a linear pair, then the sum of the measures of the angles is 180° ."

Statement 2: "If the sum of the measures of two angles is 180° , then the angles are supplementary."

By the Law of Syllogism, which statement below follows from Statements 1 and 2? C

- If the sum of the measures of two angles is 180° , then the angles form a linear pair.
 - If two adjacent angles form a linear pair, then the sum of the measures of the angles is 180° .
 - If two adjacent angles form a linear pair, then the angles are supplementary.
 - If two angles are supplementary, then the sum of the measures of the angles is 180° .
5. Let p : you see lightning and q : you hear thunder. Write each of the following statements in symbolic notation:

- If you see lightning, then you hear thunder. $p \rightarrow q$
- If you hear thunder, then you see lightning. $q \rightarrow p$
- If you don't see lightning, then you don't hear thunder. $\sim p \rightarrow \sim q$
- If you don't hear thunder, then you don't see lightning. $\sim q \rightarrow \sim p$

6. Let p : two planes intersect and q : the intersection is a line. Write each of the following statements in symbolic notation:

- If two planes don't intersect, then the intersection is a line. $\sim p \rightarrow q$
- If the intersection is not a line, then two planes do not intersect. $\sim q \rightarrow \sim p$

- ~~7. Draw a Venn Diagram below for each of the following statements:~~

- ~~All squares are rhombi.~~
- ~~Some rectangles are squares.~~
- ~~No trapezoids are parallelograms.~~

