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Geometry
Biconditional Statements – Good Definitions

Name: _____
Date: _____

1) A statement combining a conditional and its converse is called a _____.

The following conditional statements are true. If the converse is also true, combine the statements as a biconditional.

2) If $3x - 2 = 13$, then $x = 5$.

3) If two angles have equal measures, then they are congruent.

4) If $x = 4$, then $|x| = 4$.

5) If three points are collinear, then they lie on the same line.

Write each biconditional as two conditionals that are converses of each other.

6) An angle is a right angle if and only if its measure is 90.

7) $AB = CD$ if and only if $\overline{AB} \cong \overline{CD}$.

8) B is on $\overline{AC}$ if and only if B is on $\overline{AC}$ and $\overrightarrow{CA}$

Identify each statement below as a *good definition* or *not a good definition*. Explain your answer.

9) A triangle is a polygon with exactly three sides.

10) A square is a figure with four right angles.

11) A circle is a shape that is round.

12) A right angle is an angle whose measure is 90.

Answer Key

1) Biconditional
2) $3x - 2 = 13$ if and only if $x = 5$
3) Two angles have equal measures if and only if they are congruent.
4) Converse is not true.
5) Three points are collinear if and only if they lie on the same line.
6) If an angle is a right angle, then its measure is 90. If the measure of an angle is 90, then it is a right angle.
7) If $AB = CD$ then $\overline{AB} \cong \overline{CD}$. If $\overline{AB} \cong \overline{CD}$ then $AB = CD$.
8) If B is on $\overline{AC}$ then B is on $\overleftrightarrow{AC}$ and $\overleftrightarrow{CA}$.
   If B is on $\overleftrightarrow{AC}$ and $\overleftrightarrow{CA}$ then B is on $\overline{AC}$.
9) Good definition – both conditional and converse are true.
10) Not a good definition – all rectangles have four right angles.
11) Not a good definition – other shapes (like spheres) are also round.
12) Good definition – both conditional and converse are true.

