

Geometry: Conditionals, Converses, and Biconditionals Practice Test

2.2.1: I can identify the parts of a conditional statement and write a converse statement.

- _____ 1. (1 point)
Underline the hypothesis with one line and circle the conclusion of this conditional statement:
- If two lines intersect at right angles, then the two lines are perpendicular.*
- Hypothesis: The two lines are perpendicular.
Conclusion: Two lines intersect at right angles.
 - Hypothesis: Two lines intersect at right angles.
Conclusion: The two lines are perpendicular.
 - Hypothesis: The two lines are not perpendicular.
Conclusion: Two lines intersect at right angles.
 - Hypothesis: Two lines intersect at right angles.
Conclusion: The two lines are not perpendicular.
- _____ 2. (1 point)
Which choice shows a true conditional, with the hypothesis and conclusion identified correctly?
- Yesterday was Monday if tomorrow is Thursday.***
Hypothesis: Tomorrow is Thursday.
Conclusion: Yesterday was Monday.
 - If tomorrow is Thursday, then yesterday was Tuesday.***
Hypothesis: Yesterday was Tuesday.
Conclusion: Tomorrow is not Thursday.
 - If tomorrow is Thursday, then yesterday was Tuesday.***
Hypothesis: Yesterday was Tuesday.
Conclusion: Tomorrow is Thursday.
 - Yesterday was Tuesday if tomorrow is Thursday.***
Hypothesis: Tomorrow is Thursday.
Conclusion: Yesterday was Tuesday.
- _____ 3. (1 point)
Another name for an *if-then* statement is a _____. Every conditional has two parts. The part following *if* is the _____, and the part following *then* is the _____.
- | | |
|--|--|
| a. conditional; conclusion; hypothesis | c. conditional; hypothesis; conclusion |
| b. hypothesis; conclusion; conditional | d. hypothesis; conditional; conclusion |
- _____ 4. (2 points)

Geometry: Conditionals, Converses, and Biconditionals Practice Test

Write this statement as a conditional in *if-then* form:

All triangles have three sides.

- a. If a triangle has three sides, then all triangles have three sides.
- b. If a figure has three sides, then it is not a triangle.
- c. If a figure is a triangle, then all triangles have three sides.
- d. If a figure is a triangle, then it has three sides.

_____ 5. (1 point)

What is the conclusion of the following conditional?

A number is divisible by 3 if the sum of the digits of the number is divisible by 3.

- a. The number is odd.
- b. The sum of the digits of the number is divisible by 3.
- c. If the sum of the digits of a number is divisible by 3, then the number is divisible by 3.
- d. The number is divisible by 3.

_____ 6. (1 point)

What is the converse of the following conditional?

If a point is in the first quadrant, then its coordinates are positive.

- a. If a point is in the first quadrant, then its coordinates are positive.
- b. If a point is not in the first quadrant, then the coordinates of the point are not positive.
- c. If the coordinates of a point are positive, then the point is in the first quadrant.
- d. If the coordinates of a point are not positive, then the point is not in the first quadrant.

_____ 7. (1 point)

What is the converse of the following conditional?

If a point is in the first quadrant, then its coordinates are positive.

- a. If a point is in the first quadrant, then its coordinates are positive.
- b. If a point is not in the first quadrant, then the coordinates of the point are not positive.
- c. If the coordinates of a point are positive, then the point is in the first quadrant.
- d. If the coordinates of a point are not positive, then the point is not in the first quadrant.

Geometry: Conditionals, Converses, and Biconditionals Practice Test

2.2.2: I can determine the truth value of a conditional and its related statements.

- _____ 8. (1 point)
Which statement is a counterexample for the following conditional?
If you live in Springfield, then you live in Illinois.
- a. Sara Lucas lives in Springfield.
 - b. Jonah Lincoln lives in Springfield, Illinois.
 - c. Billy Jones lives in Chicago, Illinois.
 - d. Erin Naismith lives in Springfield, Massachusetts.
9. (1 point)
Is the following conditional true or false? If it is true, explain why. If it is false, give a counterexample.
If it is snowing in Dallas, Texas, then it is snowing in the United States.
- _____ 10. (1 point)
What is the converse and the truth value of the converse of the following conditional?
If an angle is a right angle, then its measure is 90.
- a. If an angle is not a right angle, then its measure is 90.
False
 - b. If an angle is not a right angle, then its measure is not 90.
True
 - c. If an angle has a measure of 90, then it is a right angle.
False
 - d. If an angle has a measure of 90, then it is a right angle.
True

2.3.1: I can rewrite a true conditional and its true converse as a biconditional, making a “good” definition. I can also decide whether a definition is “good” or not good.

- _____ 11. (1 point)
When a conditional and its converse are true, you can combine them as a true ____.
- a. counterexample
 - b. biconditional
 - c. unconditional
 - d. hypothesis

Geometry: Conditionals, Converses, and Biconditionals Practice Test

- ____ 12. (1 point)
One way to show that a statement is NOT a good definition is to find a ____.
- a. converse
 - b. conditional
 - c. biconditional
 - d. counterexample
- ____ 13. (1 point)
Which biconditional is NOT a good definition?
- a. A whole number is odd if and only if the number is not divisible by 2.
 - b. An angle is straight if and only if its measure is 180.
 - c. A whole number is even if and only if it is divisible by 2.
 - d. A ray is a bisector of an angle if and only if it splits the angle into two angles.
14. (4 points)
Write the two conditional statements that form the given biconditional. Then decide whether the biconditional is a good definition. Explain.
- Three points are collinear if and only if they are coplanar.***
- ____ 15. (1 point)
Write the two conditional statements that make up the following biconditional.
I drink juice if and only if it is breakfast time.
- a. I drink juice if and only if it is breakfast time.
It is breakfast time if and only if I drink juice.
 - b. If I drink juice, then it is breakfast time.
If it is breakfast time, then I drink juice.
 - c. If I drink juice, then it is breakfast time.
I drink juice only if it is breakfast time.
 - d. I drink juice.
It is breakfast time.

Geometry: Conditionals, Converses, and Biconditionals Practice Test

- _____ 16. (1 point)
Which statement provides a counterexample to the following faulty definition?
A square is a figure with four congruent sides.
- a. A six-sided figure can have four sides congruent.
 - b. Some triangles have all sides congruent.
 - c. A square has four congruent angles.
 - d. A rectangle has four sides.
- _____ 17. (1 point)
Which biconditional is NOT a good definition?
- a. A whole number is odd if and only if the number is not divisible by 2.
 - b. An angle is straight if and only if its measure is 180.
 - c. A whole number is even if and only if it is divisible by 2.
 - d. A ray is a bisector of an angle if and only if it splits the angle into two angles.

Geometry: Conditionals, Converses, and Biconditionals Practice Test

Geometry: Conditionals, Converses, and Biconditionals Practice Test Answer Section

1. ANS: B PTS: 1 REF: 2-2 Conditional Statements
OBJ: 2-2.1 Recognize conditional statements and their parts DOK: DOK 2
2. ANS: D PTS: 1 REF: 2-2 Conditional Statements
OBJ: 2-2.1 Recognize conditional statements and their parts DOK: DOK 2
3. ANS: C PTS: 1 REF: 2-2 Conditional Statements
OBJ: 2-2.1 Recognize conditional statements and their parts DOK: DOK 1
4. ANS: D PTS: 2 REF: 2-2 Conditional Statements
OBJ: 2-2.1 Recognize conditional statements and their parts DOK: DOK 2
5. ANS: D PTS: 1 REF: 2-1 Conditional Statements
OBJ: 2-1.1 Conditional Statements
6. ANS: C PTS: 1 REF: 2-1 Conditional Statements
OBJ: 2-1.2 Converses
7. ANS: C PTS: 1 REF: 2-2 Conditional Statements
OBJ: 2-2.2 Write converses, inverses, and contrapositives of conditionals
DOK: DOK 2
8. ANS: D PTS: 1 REF: 2-2 Conditional Statements
OBJ: 2-2.1 Recognize conditional statements and their parts DOK: DOK 2
9. ANS:
True. Dallas, Texas is a city that lies within the United States.

PTS: 1 REF: 2-2 Conditional Statements
OBJ: 2-2.1 Recognize conditional statements and their parts DOK: DOK 2
10. ANS: D PTS: 1 REF: 2-2 Conditional Statements
OBJ: 2-2.2 Write converses, inverses, and contrapositives of conditionals
DOK: DOK 2
11. ANS: B PTS: 1 REF: 2-3 Biconditionals and Definitions
OBJ: 2-3.1 Write biconditionals and recognize good definitions
DOK: DOK 1
12. ANS: D PTS: 1 REF: 2-3 Biconditionals and Definitions
OBJ: 2-3.1 Write biconditionals and recognize good definitions
DOK: DOK 1
13. ANS: D PTS: 1 REF: 2-3 Biconditionals and Definitions
OBJ: 2-3.1 Write biconditionals and recognize good definitions
DOK: DOK 2
14. ANS:
If three points are collinear, then they are coplanar.
If three points are coplanar, then they are collinear.

The biconditional is not a good definition.
Three coplanar points might not lie on the same line.

PTS: 4 REF: 2-3 Biconditionals and Definitions
OBJ: 2-3.1 Write biconditionals and recognize good definitions
DOK: DOK 2
15. ANS: B PTS: 1 REF: 2-2 Biconditionals and Definitions
OBJ: 2-2.1 Writing Biconditionals

Geometry: Conditionals, Converses, and Biconditionals Practice Test

16. ANS: A PTS: 1 REF: 2-2 Biconditionals and Definitions
OBJ: 2-2.2 Recognizing Good Definitions
17. ANS: D PTS: 1 REF: 2-2 Biconditionals and Definitions
OBJ: 2-2.2 Recognizing Good Definitions