

G.CO.C.9: Inverse, Converse, Contrapositive and Conditional Statements 1b

- 1 What is the inverse of the statement "If two triangles are not similar, their corresponding angles are not congruent"?
- 2 What is the inverse of the statement "If it is sunny, I will play baseball"?
- 3 What is the inverse of the statement "If Mike did his homework, then he will pass this test"?
- 4 What is the inverse of the statement "If Julie works hard, then she succeeds"?
- 5 What is the inverse of the statement "If I do not buy a ticket, then I do not go to the concert"?
- 6 Which statement is the inverse of "If the waves are small, I do not go surfing"?
- 7 Which statement is the inverse of "If $x + 3 = 7$, then $x = 4$ "?
- 8 What is the converse of the statement "If it is sunny, I will go swimming"?
- 9 Which statement is the converse of "If it is a 300 ZX, then it is a car"?
- 10 What is the converse of the statement "If it is Sunday, then I do not go to school"?
- 11 What is the converse of the statement "If Alicia goes to Albany, then Ben goes to Buffalo"?
- 12 What is the converse of the statement "If the Sun rises in the east, then it sets in the west"?
- 13 What is the converse of the statement "If Bob does his homework, then George gets candy"?
- 14 Which statement is the converse of "If the sum of two angles is 180° , then the angles are supplementary"?
- 15 What is the converse of the statement "If x is an even integer, then $(x + 1)$ is an odd integer"?
- 16 What is the converse of the statement "If $a^2 + b^2 = c^2$, then $\triangle ABC$ is a right triangle"?
- 17 What is the converse of "If an angle measures 90 degrees, then it is a right angle"?
- 18 Lines m and n are in plane \mathcal{A} . What is the converse of the statement "If lines m and n are parallel, then lines m and n do not intersect"?
- 19 The converse of the statement "If a triangle has one right angle, the triangle has two acute angles" is
- 20 What is the contrapositive of the statement, "If I am tall, then I will bump my head"?
- 21 What is the contrapositive of the statement "If I study, then I pass the test"?
- 22 Given the statement, "If a number has exactly two factors, it is a prime number," what is the contrapositive of this statement?
- 23 Given: "If a polygon is a triangle, then the sum of its interior angles is 180° ." What is the contrapositive of this statement?
- 24 Which statement is logically equivalent to "If I eat, then I live"?
- 25 Which statement is logically equivalent to "If I did not eat, then I am hungry"?
- 26 Which statement is logically equivalent to "If the team has a good pitcher, then the team has a good season"?
- 27 Given the true statement: "If a person is eligible to vote, then that person is a citizen." Which statement must also be true?

- 28 Which statement is logically equivalent to “If it is Saturday, then I am not in school”?
- 29 Which statement is logically equivalent to “If a triangle is an isosceles triangle, then it has two congruent sides”?
- 30 Which statement is logically equivalent to "If I am in a mathematics class, then I am having fun"?
- 31 Which statement is logically equivalent to the statement “If you are an elephant, then you do not forget”?
- 32 Which statement is logically equivalent to the statement "If Corey worked last summer, he buys a car"?
- 33 Which statement is logically equivalent to "If it is warm, then I go swimming"
- 34 “If Tom and Mary are classmates, then they go to the same school.” Which statement below is logically equivalent?
- 35 Which statement is logically equivalent to “If I sleep, then I will not eat”?
- 36 A conditional statement is always logically equivalent to its

- 39 In the spaces provided below, write the converse, the inverse, and the contrapositive of the statement "If I run, then I am tired."

Converse:

Inverse:

Contrapositive:

- 40 Given the statement: "If I live in Albany, then I am a New Yorker." In the spaces provided below, write the inverse, the converse, and the contrapositive of this statement.

Inverse:

Converse:

Contrapositive:

Which conditional is logically equivalent to its original statement?

inverse converse contrapositive

- 37 Consider the relationship between the two statements below.

$$\text{If } \sqrt{16+9} \neq 4+3, \text{ then } 5 \neq 4+3$$

$$\text{If } \sqrt{16+9} = 4+3, \text{ then } 5 = 4+3$$

These statements are

- 1) inverses
 - 2) converses
 - 3) contrapositives
 - 4) biconditionals
- 38 Write a statement that is logically equivalent to the statement “If two sides of a triangle are congruent, the angles opposite those sides are congruent.” Identify the new statement as the converse, inverse, or contrapositive of the original statement.

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Answer Section**

1 ANS:

If two triangles are similar, their corresponding angles are congruent.

REF: 011028ge

2 ANS:

If it is not sunny, I will not play baseball.

REF: 060006a

3 ANS:

If Mike did not do his homework, then he will not pass this test.

REF: 010303a

4 ANS:

If Julie does not work hard, then she does not succeed.

REF: 060317a

5 ANS:

If I buy a ticket, then I go to the concert.

REF: 080416a

6 ANS:

If the waves are not small, I go surfing.

REF: 010616a

7 ANS:

If $x + 3 \neq 7$, then $x \neq 4$.

REF: 061526ge

8 ANS:

If I go swimming, it is sunny.

REF: 080014a

9 ANS:

If it is a car, then it is a 300 ZX.

REF: 080116a

10 ANS:

If I do not go to school, then it is Sunday.

REF: 060520a

11 ANS:

If Ben goes to Buffalo, then Alicia goes to Albany.

REF: 080521a

- 12 ANS:
If the Sun sets in the west, then it rises in the east.

REF: 060717a
- 13 ANS:
If George gets candy, then Bob does his homework.

REF: 061009ge
- 14 ANS:
If two angles are supplementary, then their sum is 180° .

REF: 010415a
- 15 ANS:
If $(x + 1)$ is an odd integer, then x is an even integer.

REF: 060816a
- 16 ANS:
If $\triangle ABC$ is a right triangle, then $a^2 + b^2 = c^2$.

REF: 080813a
- 17 ANS:
If an angle is a right angle, then it measures 90 degrees.

REF: 061314ge
- 18 ANS:
If lines m and n do not intersect, then lines m and n are parallel.

REF: 081318ge
- 19 ANS:
If a triangle has two acute angles, the triangle has one right angle.

REF: 011605ge
- 20 ANS:
If I do not bump my head, then I am not tall.

REF: 060913ge
- 21 ANS:
If I do not pass the test, then I do not study.

REF: 080427a
- 22 ANS:
If a number is not a prime number, then it does not have exactly two factors.

REF: 011517ge
- 23 ANS:
"If the sum of the interior angles of a polygon is not 180° , then it is not a triangle."

REF: 081513ge

- 24 ANS:
If I do not live, then I do not eat.

REF: 060112a
- 25 ANS:
If I am not hungry, then I did eat.

REF: 080104a
- 26 ANS:
If the team does not have a good season, then the team does not have a good pitcher.

REF: 010220a
- 27 ANS:
Kayla is not a citizen; therefore, she is not eligible to vote.

REF: 010308a
- 28 ANS:
If I am in school, then it is not Saturday.

REF: 060308a
- 29 ANS:
If a triangle does not have two congruent sides, then it is not an isosceles triangle.

REF: 060405a
- 30 ANS:
If I am not having fun, then I am not in a mathematics class.

REF: 010930a
- 31 ANS:
If you forget, then you are not an elephant.

REF: 010513a
- 32 ANS:
If Corey does not buy a car, he did not work last summer.

REF: 080629a
- 33 ANS:
If I do not go swimming, then it is not warm.

REF: 081026ge
- 34 ANS:
If Mary and Tom do not go to the same school, then they are not classmates.

REF: spring9812a
- 35 ANS:
If I eat, then I will not sleep.

REF: 080829a

36 ANS:
contrapositive

REF: 060823a

37 ANS: 1 REF: 011320ge

38 ANS:
Contrapositive-If two angles of a triangle are not congruent, the sides opposite those angles are not congruent.

REF: fall0834ge

39 ANS:
INVERSE: If I do not run, then I am not tired. CONVERSE: If I am tired, then I run. CONTRAPOSITIVE: If I am not tired, then I do not run.

REF: 010837a

40 ANS:
INVERSE: If I do not live in Albany, then I am not a New Yorker. CONVERSE: If I am a New Yorker, then I live in Albany. CONTRAPOSITIVE: If I am not a New Yorker, then I do not live in Albany. The contrapositive is logically equivalent.

REF: 080739a