

G.G.26: Contrapositive 1: Identify and write the inverse, converse, and contrapositive of a given conditional statement and note the logical equivalences

- 1 What is the contrapositive of the statement, "If I am tall, then I will bump my head"?
 - 1) If I bump my head, then I am tall.
 - 2) If I do not bump my head, then I am tall.
 - 3) If I am tall, then I will not bump my head.
 - 4) If I do not bump my head, then I am not tall.
- 2 What is the contrapositive of the statement "If I study, then I pass the test"?
 - 1) I pass the test if I study.
 - 2) If I do not study, then I do not pass the test.
 - 3) If I do not pass the test, then I do not study.
 - 4) If I pass the test, then I study.
- 3 Given the statement, "If a number has exactly two factors, it is a prime number," what is the contrapositive of this statement?
 - 1) If a number does not have exactly two factors, then it is not a prime number.
 - 2) If a number is not a prime number, then it does not have exactly two factors.
 - 3) If a number is a prime number, then it has exactly two factors.
 - 4) A number is a prime number if it has exactly two factors.
- 4 Given: "If a polygon is a triangle, then the sum of its interior angles is 180° ." What is the contrapositive of this statement?
 - 1) "If the sum of the interior angles of a polygon is not 180° , then it is not a triangle."
 - 2) "A polygon is a triangle if and only if the sum of its interior angles is 180° ."
 - 3) "If a polygon is not a triangle, then the sum of the interior angles is not 180° ."
 - 4) "If the sum of the interior angles of a polygon is 180° , then it is a triangle."
- 5 Which statement is logically equivalent to "If I eat, then I live"?
 - 1) If I live, then I eat.
 - 2) If I eat, then I do not live.
 - 3) I live if and only if I eat.
 - 4) If I do not live, then I do not eat.
- 6 Which statement is logically equivalent to "If I did not eat, then I am hungry"?
 - 1) If I am not hungry, then I did not eat.
 - 2) If I did not eat, then I am not hungry.
 - 3) If I am not hungry, then I did eat.
 - 4) If I am hungry, then I did eat.
- 7 Which statement is logically equivalent to "If the team has a good pitcher, then the team has a good season"?
 - 1) If the team does not have a good season, then the team does not have a good pitcher.
 - 2) If the team does not have a good pitcher, then the team does not have a good season.
 - 3) If the team has a good season, then the team has a good pitcher.
 - 4) The team has a good pitcher and the team does not have a good season.
- 8 Given the true statement: "If a person is eligible to vote, then that person is a citizen." Which statement must also be true?
 - 1) Kayla is not a citizen; therefore, she is not eligible to vote.
 - 2) Juan is a citizen; therefore, he is eligible to vote.
 - 3) Marie is not eligible to vote; therefore, she is not a citizen.
 - 4) Morgan has never voted; therefore, he is not a citizen.

- 9 Which statement is logically equivalent to "If it is Saturday, then I am not in school"?
- 1) If I am not in school, then it is Saturday.
 - 2) If it is not Saturday, then I am in school.
 - 3) If I am in school, then it is not Saturday.
 - 4) If it is Saturday, then I am in school.
- 10 Which statement is logically equivalent to "If a triangle is an isosceles triangle, then it has two congruent sides"?
- 1) If a triangle does not have two congruent sides, then it is an isosceles triangle.
 - 2) If a triangle does not have two congruent sides, then it is not an isosceles triangle.
 - 3) If a triangle is not an isosceles triangle, then it has two congruent sides.
 - 4) If a triangle is an isosceles triangle, then it does not have two congruent sides.
- 11 Which statement is logically equivalent to "If I am in a mathematics class, then I am having fun"?
- 1) If I am not in a mathematics class, then I am not having fun.
 - 2) If I am having fun, then I am in a mathematics class.
 - 3) If I am not having fun, then I am not in a mathematics class.
 - 4) If I am in a mathematics class, then I am not having fun.
- 12 Which statement is logically equivalent to the statement "If you are an elephant, then you do not forget"?
- 1) If you do not forget, then you are an elephant.
 - 2) If you do not forget, then you are not an elephant.
 - 3) If you are an elephant, then you forget.
 - 4) If you forget, then you are not an elephant.
- 13 Which statement is logically equivalent to the statement "If Corey worked last summer, he buys a car"?
- 1) If Corey does not buy a car, he did not work last summer.
 - 2) If Corey buys a car, he worked last summer.
 - 3) If Corey did not work last summer, he does not buy a car.
 - 4) If Corey buys a car, he did not work last summer.
- 14 Which statement is logically equivalent to "If I sleep, then I will not eat"?
- 1) If I do not sleep, then I will eat.
 - 2) If I eat, then I will not sleep.
 - 3) If I eat, then I will sleep.
 - 4) If I do not eat, then I will sleep.
- 15 Which statement is logically equivalent to "If it is warm, then I go swimming"?
- 1) If I go swimming, then it is warm.
 - 2) If it is warm, then I do not go swimming.
 - 3) If I do not go swimming, then it is not warm.
 - 4) If it is not warm, then I do not go swimming.
- 16 "If Tom and Mary are classmates, then they go to the same school." Which statement below is logically equivalent?
- 1) If Mary and Tom do not go to the same school, then they are not classmates.
 - 2) If Mary and Tom are not classmates, then they do not go to the same school.
 - 3) If Mary and Tom go to the same school, then they are classmates.
 - 4) If Mary and Tom go to the same school, then they are not classmates.

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1	ANS: 4	REF: 060913ge
2	ANS: 3	REF: 080427a
3	ANS: 2	REF: 011517ge
4	ANS: 1	REF: 081513ge
5	ANS: 4	REF: 060112a
6	ANS: 3	REF: 080104a
7	ANS: 1	REF: 010220a
8	ANS: 1	REF: 010308a
9	ANS: 3	REF: 060308a
10	ANS: 2	REF: 060405a
11	ANS: 3	REF: 010930a
12	ANS: 4	REF: 010513a
13	ANS: 1	REF: 080629a
14	ANS: 2	REF: 080829a
15	ANS: 3	REF: 081026ge
16	ANS: 1	REF: spring9812a