

## Logic

Decide whether or not the following is a statement.

1)  $0.2 = .02$

A) Statement

B) Not a statement

1) \_\_\_\_\_

Determine whether the sentence is a statement.

2) Does Rose always act like that in public?

A) not a statement

B) statement

2) \_\_\_\_\_

Write a negation for the statement.

3) No fifth graders play soccer.

A) All fifth graders play soccer.

C) At least one fifth grader plays soccer.

B) No fifth grader does not play soccer.

D) Not all fifth graders play soccer.

3) \_\_\_\_\_

4) Not all people like football.

A) Some people like football.

C) Some people do not like football.

B) All people do not like football.

D) All people like football.

4) \_\_\_\_\_

Convert the symbolic compound statement into words.

5)  $p$  represents the statement : " $x < 1$ "

$q$  represents the statement: " $y > 1$ "

Translate the following compound statement into words:

$$p \vee \sim q$$

A)  $x$  is less than 1 and  $y$  is not greater than 1.

C)  $x$  is less than 1 or  $y$  is not greater than 1.

B)  $x$  is not less than 1 and  $y$  is not less than 1.

D)  $x$  is less than 1 or  $y$  is less than 1.

5) \_\_\_\_\_

Let  $p$  represent the statement, "Jim plays football", and let  $q$  represent the statement "Michael plays basketball". Convert the compound statement into symbols.

6) It is not the case that Jim does not play football and Michael does not play basketball.

A)  $\sim(p \vee q)$

B)  $\sim p \wedge \sim q$

C)  $\sim(\sim p \vee \sim q)$

D)  $\sim(\sim p \wedge \sim q)$

6) \_\_\_\_\_

7) Jim plays football and Michael plays basketball.

A)  $\sim p \wedge q$

B)  $p \wedge q$

C)  $p \vee \sim q$

D)  $p \vee q$

7) \_\_\_\_\_

Let  $p$  represent a true statement and let  $q$  represent a false statement. Find the truth value of the given compound statement.

8)  $p \wedge (q \vee p)$

A) False

B) True

8) \_\_\_\_\_

9)  $\sim[(\sim p \wedge \sim q) \vee \sim q]$

A) False

B) True

9) \_\_\_\_\_

Let p represent a true statement, while q and r represent false statements. Find the truth value of the compound statement.

- 10)  $\sim[(\sim p \wedge q) \vee r]$  10) \_\_\_\_\_  
A) True B) False

Let p represent  $7 < 8$ , q represent  $2 < 5 < 6$ , and r represent  $3 < 2$ . Decide whether the statement is true or false.

- 11)  $\sim(\sim p \wedge \sim q) \wedge (\sim r \wedge \sim q)$  11) \_\_\_\_\_  
A) True B) False

Use De Morgan's laws to write the negation of the statement.

- 12) Denim is out and linen is in. 12) \_\_\_\_\_  
A) Denim is not out or linen is not in. B) Denim is not out and linen is out.  
C) Denim and linen are in. D) Denim is in and linen is out.

Rewrite the statement using the if...then connective. Rearrange the wording or words as necessary.

- 13) All children like stuffed toys. 13) \_\_\_\_\_  
A) If it is a child, then it likes stuffed toys.  
B) If it is not a stuffed toy, then children like it.  
C) If children like it, then it's a stuffed toy.  
D) All children like stuffed toys.

Tell whether the conditional statement is true or false.

- 14) Here T represents a true statement. 14) \_\_\_\_\_  
 $T \rightarrow (5 < 3)$   
A) True B) False

- 15)  $(52 \neq 25) \rightarrow (2 + 3 = 5)$  15) \_\_\_\_\_  
A) True B) False

Write the compound statement in symbols.

Let r = "The food is good."

p = "I eat too much."

q = "I'll exercise."

- 16) If the food is good and I eat too much, then I'll exercise. 16) \_\_\_\_\_  
A)  $r \wedge (p \rightarrow q)$  B)  $(r \wedge p) \rightarrow q$  C)  $p \rightarrow (r \wedge q)$  D)  $r \rightarrow (p \wedge q)$

Given p is true, q is true, and r is false, find the truth value of the statement.

- 17)  $\sim r \rightarrow \sim p$  17) \_\_\_\_\_  
A) True B) False

- 18)  $(q \vee r) \rightarrow (p \wedge q)$  18) \_\_\_\_\_  
A) True B) False

Construct a truth table for the statement.

19)  $\sim p \rightarrow (\sim p \wedge q)$

19) \_\_\_\_\_

A) 

p	q	$\sim p \rightarrow (\sim p \wedge q)$
T	T	F
T	F	F
F	T	T
F	F	F

B) 

p	q	$\sim p \rightarrow (\sim p \wedge q)$
T	T	T
T	F	T
F	T	T
F	F	F

C) 

p	q	$\sim p \rightarrow (\sim p \wedge q)$
T	T	T
T	F	F
F	T	T
F	F	F

D) 

p	q	$\sim p \rightarrow (\sim p \wedge q)$
T	T	T
T	F	T
F	T	T
F	F	T

Write the converse, inverse, or contrapositive of the statement as requested.

20) If I pass, I'll party.

20) \_\_\_\_\_

Contrapositive

A) I'll party if I pass.

B) If I don't party, I didn't pass.

C) If I don't pass, I won't party.

D) If I party, then I passed.

21) He who laughs last, laughs loudest.

21) \_\_\_\_\_

Inverse

A) If he doesn't laugh last, he doesn't laugh loudest.

B) If he laughs last, he doesn't laugh loudest.

C) If he doesn't laugh loudest, he doesn't laugh last.

D) If he laughs loudest, he laughs last.

Determine if the argument is valid or a fallacy. Give a reason to justify answer.

22) If I'm hungry, then I will eat.

22) \_\_\_\_\_

I'm not hungry.

I will not eat.

A) Valid by modus ponens

B) Fallacy by fallacy of the inverse

C) Valid by modus tollens

D) Fallacy by fallacy of the converse

23) If it's Tuesday, then this must be Paris.

23) \_\_\_\_\_

Today is Wednesday.

This cannot be Paris.

A) Valid by modus tollens

B) Valid by reasoning of transitivity

C) Fallacy by fallacy of the inverse

D) Fallacy by fallacy of the converse

24) You get soup or you get salad.

24) \_\_\_\_\_

You did not get soup.

You got salad.

A) Fallacy by fallacy of the converse

B) Valid by disjunctive syllogism

C) Fallacy by fallacy of the inverse

D) Valid by reasoning of transitivity

25) If it rains, then the squirrels hide.

25) \_\_\_\_\_

The squirrels are hiding.

It is raining.

A) Fallacy by fallacy of the converse

B) Valid by disjunctive syllogism

C) Fallacy by fallacy of the inverse

D) Valid by modus tollens

## Answer Key

Testname: REVIEW02

- 1) A
- 2) A
- 3) C
- 4) D
- 5) C
- 6) D
- 7) B
- 8) B
- 9) A
- 10) A
- 11) B
- 12) A
- 13) A
- 14) B
- 15) A
- 16) B
- 17) B
- 18) A
- 19) B
- 20) B
- 21) A
- 22) B
- 23) C
- 24) B
- 25) A