

Decide whether or not the following is a statement.

- 1) $8 + 10 = 19$ 1) _____
 A) Not a statement B) Statement
- 2) This test is too hard. 2) _____
 A) Statement B) Not a statement

Write a negation for the statement.

- 3) Not all people like football. 3) _____
 A) All people like football. B) All people do not like football.
 C) Some people like football. D) Some people do not like football.
- 4) Some people don't like walking. 4) _____
 A) Some people don't like driving. B) Everyone likes walking.
 C) Some people like walking. D) Nobody likes walking.

Convert the symbolic compound statement into words.

- 5) p represents the statement "It's Monday."
 q represents the statement "It's raining today."
 Translate the following compound statement into words: 5) _____
 $\sim p \vee \sim q$
- A) It's not Monday and it's not raining today.
 B) It's Monday and it's raining today.
 C) It's Monday or it's raining today.
 D) It's not Monday or it's not raining today.

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

- 6) Jim does not play football and Michael does not play basketball. 6) _____
 A) $\sim p \wedge q$ B) $\sim p \vee \sim q$ C) $\sim(p \wedge q)$ D) $\sim p \wedge \sim q$
- 7) Jim does not play football and Michael plays basketball. 7) _____
 A) $\sim p \wedge q$ B) $\sim(p \wedge q)$ C) $\sim p \vee q$ D) $p \wedge q$

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

- 8) $\sim(p \vee \sim q)$ 8) _____
 A) True B) False

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

- 9) $\sim p \vee (q \wedge \sim r)$ 9) _____
 A) False B) True
- 10) $\sim[(\sim p \wedge q) \vee r]$ 10) _____
 A) False B) True

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

11) $\sim p \vee q$ 11) _____
 A) False B) True

12) $\sim(p \wedge q)$ 12) _____
 A) False B) True

Construct a truth table for the statement.

13) $\sim r \wedge \sim p$ 13) _____

A)

r	p	$(\sim r \wedge \sim p)$
T	T	F
T	F	F
F	T	F
F	F	T

B)

r	p	$(\sim r \wedge \sim p)$
T	T	F
T	F	T
F	T	T
F	F	T

C)

r	p	$(\sim r \wedge \sim p)$
T	T	F
T	F	F
F	T	F
F	F	F

D)

r	p	$(\sim r \wedge \sim p)$
T	T	T
T	F	F
F	T	F
F	F	T

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

14) A day late and a dollar short. 14) _____
 A) Not a day late or not a dollar short. B) A day late or not a dollar short.
 C) Not a day late and not a dollar short. D) Not a day late and a dollar short.

15) Cats are lazy or dogs aren't friendly. 15) _____
 A) Cats aren't lazy or dogs aren't friendly. B) Cats are lazy and dogs are friendly.
 C) Cats aren't lazy and dogs are friendly. D) Cats aren't lazy or dogs are friendly.

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

16) Cats chase mice. 16) _____
 A) If cats chase, then they chase mice. B) If it is a cat, then it chases mice.
 C) If a cat is chasing it, then it is a mouse. D) Cats chase mice.

17) All chocolate is good. 17) _____
 A) If it's good, then it's got to be chocolate. B) If it's chocolate, then it's good.
 C) If it isn't chocolate, then it isn't good. D) Chocolate is good.

Write the compound statement in symbols.

Let r = "The food is good."

p = "I eat too much."

q = "I'll exercise."

18) If I eat too much, then I'll exercise. 18) _____
 A) $p \vee q$ B) $r \rightarrow p$ C) $q \rightarrow p$ D) $p \rightarrow q$

19) If I exercise, then I won't eat too much. 19) _____
 A) $\sim(p \rightarrow q)$ B) $q \rightarrow \sim p$ C) $r \wedge p$ D) $p \rightarrow q$

Construct a truth table for the statement.

20) $p \rightarrow \sim q$

20) _____

A)

p	q	$p \rightarrow \sim q$
T	T	F
T	F	T
F	T	T
F	F	T

B)

p	q	$p \rightarrow \sim q$
T	T	T
T	F	T
F	T	F
F	F	F

C)

p	q	$p \rightarrow \sim q$
T	T	T
T	F	F
F	T	T
F	F	T

D)

p	q	$p \rightarrow \sim q$
T	T	F
T	F	F
F	T	T
F	F	T

Write the negation of the conditional. Use the fact that the negation of $p \rightarrow q$ is $p \wedge \sim q$.

21) If you can't take the heat, stay out of the kitchen.

21) _____

- A) You can take the heat and stay out of the kitchen.
- B) You can take the heat and do not stay out of the kitchen.
- C) You can take the heat but stay out of the kitchen.
- D) You can't take the heat and do not stay out of the kitchen.

True or false?

22) The statement $\sim p \wedge \sim q$ is equivalent to $\sim(p \vee q)$.

22) _____

- A) True
- B) False

23) The statement $q \wedge \sim p$ is equivalent to $\sim p \rightarrow \sim q$.

23) _____

- A) True
- B) False

Use an Euler diagram to determine whether the argument is valid or invalid.

24) All cats like fish.

24) _____

Henry does not like fish.

Henry is not a cat.

- A) Valid
- B) Invalid

25) Some investments are risky.

25) _____

Real estate is an investment.

Real estate is risky.

- A) Valid
- B) Invalid

26) All tigers are felines.

26) _____

All felines are mammals.

All mammals nurse their young.

All tigers nurse their young.

- A) Valid
- B) Invalid

Determine if the argument is valid or not.

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

27) _____

I'm not hungry.

I will not eat.

- A) Fallacy by fallacy of the inverse
- B) Valid by modus tollens
- C) Fallacy by fallacy of the converse
- D) Valid by modus ponens

28) If you eat well, you will be well. 28) _____
If you are well, you will be happy.
If you eat well, you will be happy.
A) Valid by modus tollens B) Fallacy by fallacy of the inverse
C) Valid by reasoning by transitivity D) Fallacy by fallacy of the converse

29) You get soup or you get salad. 29) _____
You did not get soup.
You got salad.
A) Fallacy by fallacy of the inverse B) Fallacy by fallacy of the converse
C) Valid by reasoning of transitivity D) Valid by disjunctive syllogism

Determine whether the argument is valid.

30) $p \rightarrow q$ 30) _____
 $\sim p$
 $\sim q$
A) Valid B) Invalid

Answer Key

Testname: PRACTICE02

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