

1

Let $A = \{2, 5, 6, 7, 8, 10\}$ and $B = \{5, 7, 10\}$. Indicate if each statement is true or false.

$9 \in A$

$B \subset A$

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False

True

2

Let S be the universal set, where:

$$S = \{1, 2, 3, \dots, 18, 19, 20\}$$

Let sets A and B be subsets of S , where:

$$\text{Set } A = \{3, 7, 8, 12, 13, 15, 16, 18, 19\}$$

$$\text{Set } B = \{1, 2, 3, 4, 8, 10, 12, 14, 15, 16, 17, 20\}$$

Find the following:

LIST the elements in the set $(A \cup B)$:

$$(A \cup B) = \{ \text{ } \}$$

Enter the elements as a list, separated by commas. If the result is the empty set, enter **DNE**

LIST the elements in the set $(A \cap B)$:

$$(A \cap B) = \{ \text{ } \}$$

Enter the elements as a list, separated by commas. If the result is the empty set, enter **DNE**

You may want to draw a Venn Diagram to help answer this question.

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1,2,3,4,7,8,10,12,13,14,15,16,17,18,19,20

3,8,12,15,16

3

Let the Universal set be the letters a through j: $U = \{a, b, \dots, i, j\}$.

Let $A = \{b, d, e, j\}$, $B = \{a, d, f, j\}$, and $C = \{a, b, h, j\}$

List the elements of the set $(A \cap B) \cup C$

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[Show Answer](#) a, b, d, h, j

4 In the last several weeks, 10 days saw rain and 88 days saw high winds. In that same time period, 94 days saw either rain or high winds. How many days saw both rain and high winds?

Answer = days

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[Show Answer](#) 4

5

In a survey of 62 pet owners, 20 said they own a dog, and 31 said they own a cat. 18 said they own both a dog and a cat? How many owned a dog but not a cat?

Answer = owners

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[Show Answer](#) 2

6 Complete the truth table for the statement $R \vee \sim Q$.

R	Q	$R \vee \sim Q$
T	T	? <input type="button" value="v"/>
T	F	? <input type="button" value="v"/>
F	T	? <input type="button" value="v"/>
F	F	? <input type="button" value="v"/>

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Show Answer T

Show Answer T

Show Answer F

Show Answer T

7 For the statement $P \rightarrow S$, identify the Inverse, Converse, Contrapositive and original statement.

- $P \rightarrow S$

- $S \rightarrow P$

- $\sim P \rightarrow \sim S$

- $\sim S \rightarrow \sim P$

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Show Answer





Statement

Converse

Inverse

Contrapositive

8 Complete the truth table for the statement $R \vee S$.

R	S	$R \vee S$
T	T	? 
T	F	? 
F	T	? 
F	F	? 

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Show Answer T

Show Answer T

Show Answer T

Show Answer F

9 Complete the truth table for the statement $R \vee P$.

R	P	$R \vee P$
T	T	? 
T	F	? 
F	T	? 
F	F	? 

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Show Answer T

Show Answer T

Show Answer T

Show Answer F

Complete the truth table for the following compound statement.

$$\sim q \rightarrow \sim p$$

p	q	$\sim p$	$\sim q$	$\sim q \rightarrow \sim p$
T	T	? <input type="checkbox"/>	? <input type="checkbox"/>	? <input type="checkbox"/>
T	F	? <input type="checkbox"/>	? <input type="checkbox"/>	? <input type="checkbox"/>
F	T	? <input type="checkbox"/>	? <input type="checkbox"/>	? <input type="checkbox"/>
F	F	? <input type="checkbox"/>	? <input type="checkbox"/>	? <input type="checkbox"/>

Complete the truth table for the following compound statement.

$$\sim p \leftrightarrow \sim q$$

p	q	$\sim p$	$\sim q$	$\sim p \leftrightarrow \sim q$
T	T	? <input type="checkbox"/>	? <input type="checkbox"/>	? <input type="checkbox"/>
T	F	? <input type="checkbox"/>	? <input type="checkbox"/>	? <input type="checkbox"/>
F	T	? <input type="checkbox"/>	? <input type="checkbox"/>	? <input type="checkbox"/>
F	F	? <input type="checkbox"/>	? <input type="checkbox"/>	? <input type="checkbox"/>

Show Answer

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

p	q	$\sim p$	$\sim q$	$\sim p \leftrightarrow \sim q$
T	T	F	F	T
T	F	F	T	F
F	T	T	F	F
F	F	T	T	T

11

Determine if the conclusion follows logically from the premises.

Premise: All persons who worry are people who live in the future.

Premise: All persons who plan ahead are people who live in the future.

Conclusion: All persons who plan ahead are persons who worry.

Valid argument

Invalid argument

Show Answer Invalid argument

12

Determine if the conclusion follows logically from the premises.

Premise: Some perceptions of doubting are ideas of reflection.

Premise: All perceptions of doubting are operations of mind.

Conclusion: Some operations of mind are ideas of reflection.

Valid argument

Invalid argument

Show Answer Valid argument

13 Determine if the conclusion follows logically from the premises.

Premise: Squares have four sides

Premise: My yard has four sides

Conclusion: My yard has the shape of a square

Valid argument

Invalid argument

Show Answer Invalid argument

14 Determine if the conclusion follows logically from the premises.

Premise: If I upgrade my computer, then it will run faster

Premise: If my computer runs faster, I will be more productive

Conclusion: If I upgrade my computer, then I will be more productive

Valid argument

Invalid argument

Show Answer Valid argument

15 Categorize the following logical fallacy.

What is right is what is morally obligatory. What is morally obligatory is what you should do. Of course, you should do something because it is the right thing to do.

Select an answer

Show Answer Circular reasoning


16

Premise 1: All islands are tropical.


Premise 2: Iceland is an island.

Conclusion: Iceland is tropical.

Decide whether the above argument is inductive or deductive.


Select an answer 

If the above argument is inductive, decide if it is strong or weak. Select not applicable if the argument is deductive.

Select an answer 

If the above argument is deductive, decide if it is valid or invalid and if it is sound or unsound. Select not applicable if the argument is inductive.

Select an answer 

Select an answer 

Show Answer

Show Answer

Show Answer

Show Answer


17

Premise 1: Everyone who watches television eats tv dinners.


Premise 2: Alice does not eat tv dinners.

Conclusion: Alice does not watch television.


Decide whether the above argument is inductive or deductive.


Select an answer 

If the above argument is inductive, decide if it is strong or weak. Select not applicable if the argument is deductive.

Select an answer 

If the above argument is deductive, decide if it is valid or invalid and if it is sound or unsound. Select not applicable if the argument is inductive.

Select an answer 

Select an answer 

Show Answer

Show Answer

Show Answer

Show Answer

18 Determine whether the following deductive argument is valid or invalid by choosing the correct type of Venn diagram.

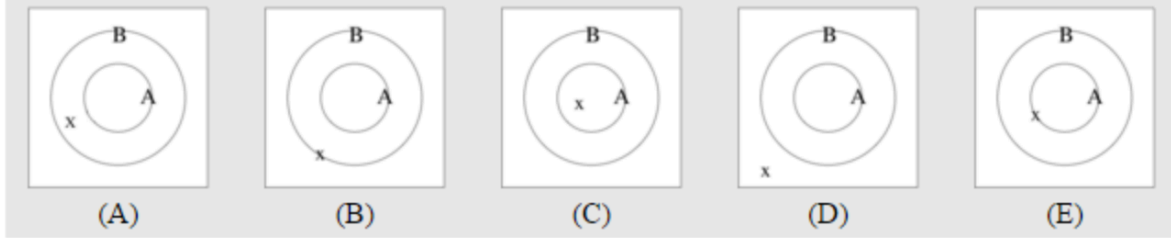
Premise 1: If you like the book, then you'll love the movie.

Premise 2: You did not like the book.

Conclusion: You will not love the movie.

Let A be the set of people who like the book, and B the set of people who love the movie.

(a) Which Venn diagram can be used to demonstrate the above information?



(b) Is this argument valid or invalid?

Think about it: If the argument is valid, is it sound?

Show Answer

Show Answer

19 Determine whether the following argument is inductive or deductive:

"The last mayor was honest. The current mayor is honest. All mayors are honest."

This argument is

Show Answer inductive

20 Determine whether the following argument is inductive or deductive:

"The sun rose yesterday, and it has risen every other day of my life. Therefore, the sun rises every day."

This argument is

Show Answer inductive