

Bell Ringer

Section B-3

What is the converse of the following true conditional? If the converse is true, rewrite as a biconditional.
 "If 2 angles have equal measure, then the angles are congruent."

1. Converse:

If 2 \angle 's are \cong , then they have = measure

2. Biconditional:

Review.

3. Find the inverse matrix.

$$\begin{matrix} 8 - b = 2 \\ \swarrow \\ \begin{bmatrix} 4 & 2 \\ 3 & 2 \end{bmatrix} \begin{bmatrix} a \\ b \end{bmatrix} = \begin{bmatrix} 8 \\ 7 \end{bmatrix} \end{matrix}$$

$$\frac{1}{\det \begin{bmatrix} d & -b \\ -c & a \end{bmatrix}} = \frac{1}{2} \begin{bmatrix} 2 & -2 \\ -3 & 4 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ -\frac{3}{2} & 2 \end{bmatrix}$$

Solutions

Section B-3

What is the converse of the following true conditional? If the converse is true, rewrite as a biconditional. "If 2 angles have equal measure, then the angles are congruent."

1. Converse:

If 2 angles are congruent, then they have equal measure.

2. Biconditional:

2 angles are congruent if and only if the angles have equal measure.

Review.

3. Find the inverse matrix. $\begin{bmatrix} 4 & 2 \\ 3 & 2 \end{bmatrix}$ $\begin{bmatrix} 1 & -1 \\ -\frac{3}{2} & 2 \end{bmatrix}$

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pH82

**Solve It: Getting Ready!**

You want to use the coupon to buy three different pairs of jeans. You have narrowed your choices to four pairs. The costs of the different pairs are \$24.99, \$39.99, \$40.99, and \$50.00. If you spend as little as possible, what is the average amount per pair of jeans that you will pay? Explain.

BUY TWO PAIRS OF JEANS
Get a THIRD Free*

*Free jeans must be of equal or lesser value.



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$$\frac{\$39.99 + \$40.99}{3} = \$26.99$$

Answer:

The three lowest priced jeans are \$24.99, \$39.99, and \$40.99. The lowest priced pair of the three is free. The average amount you spend is the sum of the two higher priced pairs divided by 3, or \$26.99.



Deductive Reasoning...

In the Solve It, you drew a conclusion based on several facts. You used deductive reasoning. **Deductive reasoning** (sometimes called logical reasoning) is the process of reasoning logically from given statements or facts to a conclusion.

Essential Understanding Given true statements, you can use deductive reasoning to make a valid or true conclusion.

take note

Property Law of Detachment

Law

If the hypothesis of a true conditional is true, then the conclusion is true.

Symbols

If $p \rightarrow q$ is true
 And p is true,
 Then q is true.

If you put D5 in the vending machine, then you will get chitos

To use the Law of Detachment, identify the hypothesis of the given true conditional. If the second given statement matches the hypothesis of the conditional, then you can make a valid conclusion.

Law of Detachment

Take note

Property	Law of Detachment
Law If the hypothesis of a true conditional is true, then the conclusion is true.	Symbols If $p \rightarrow q$ is true Conditional: And p is true, Statement: Then q is true. Conclusion:



Problem 1

not in book

Using the Law of Detachment



What can you conclude from the given true statement?

A Given: If a student gets an A on a final exam, then the student will pass the course.

Statement: Felicia got an A on her history final exam

Conditional:

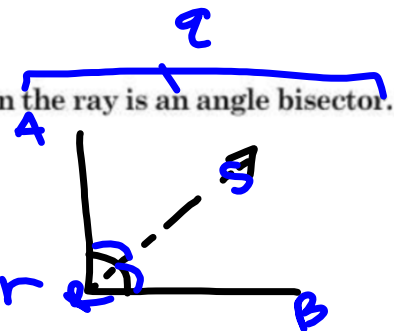
Conclusion: She passes history

What can you conclude from the given true statement?

B Given: If a ray divides an angle into two congruent angles, then the ray is an angle bisector.
RS divides $\angle ARB$ so that $\angle ARS \cong \angle SRB$.

Conclusion:

The ray is an angle bisector



What can you conclude from the given true statement?

C Given: If two angles are adjacent, then they share a common vertex.
 $\angle 1$ and $\angle 2$ share a common vertex.

Conclusion:

Nothing



"p"
yell → time out
yells

"p"
rob/caught

"q"
jail

Got It? What can you conclude from the given information?

pg H83

- a. If there is lightning, then it is not safe to be out in the open.
Marla sees lightning from the soccer field.

Conclusion:

It's not safe!

- b. If a figure is a square, then its sides have equal length.
Figure *ABCD* has sides of equal length.

Conclusion:

Nothing

Con: $P \rightarrow Q$ (true)
State P (true)
Conclusion Q .

Come up with your own example!

Law of Syllogism... pg H83

fake note

Property		Law of Syllogism	
Symbols		Example	
If	$p \rightarrow q$	is true	If it is July, then you are on <u>summer vacation</u> .
and	$q \rightarrow r$	is true,	If you are <u>on summer vacation</u> , then you work at a smoothie shop.
then	$p \rightarrow r$	is true.	You conclude: <u>If it is July, then you work at a smoothie shop.</u>



Problem 2

Using the Law of Syllogism

not in book



What can you conclude from the given information?

- A Given:** If a figure is a square, then the figure is a rectangle.
If a figure is a rectangle, then the figure has four sides.

Conclusion:

If □, has 4 sides

What can you conclude from the given information?

- B Given:** If you do gymnastics, then you are flexible.
If you do ballet, then you are flexible.

Conclusion:

Nothing

Got It?
pg H84

What can you conclude from the given information? What is your reasoning?

- a. ^p If a whole number ends in 0, ^q then it is divisible by 10. If a whole number is divisible by 10, then it is divisible by 5.

a.
 If ends in 0, \div by 5

- b. ^p If \vec{AB} and \vec{AD} are opposite rays, then the two rays form a straight angle.
 a. If two rays are opposite rays, then the two rays form a straight angle.

Nothing

pH84

Come up with your own example!

You can use the Law of Syllogism and the Law of Detachment together to make conclusions.



Problem 3 Using the Laws of Syllogism and Detachment

What can you conclude from the given information?
Given: If you live in Accra, then you live in Ghana.
If you live in Ghana, then you live in Africa.
Aissa lives in Accra.

Got It?
pg H85

- a. What can you conclude from the given information? What is your reasoning?

If a river is more than 4000 mi long, then it is longer than the Amazon.

If a river is longer than the Amazon, then it is the longest river in the world. The Nile is 4132 mi long.

B4 #s 7-10, 13-18, 20-25