

High School Geometry Learning Plans

These plans are also available on our website:

www.accomack.k12.va.us

Please note: The online portion of these plans is optional.

High School Learning Plans



Activities to Support Instruction During Extended School Closures

The purpose of this document is to provide an overview of suggested activities available to ACPS students. These suggestions can be used by families to support the continuity of education. The learning experiences developed and provided will give students opportunities to go deeper into concepts, ideas, and skills independently. These activities do not require copies or additional supplies.

Skills:

- I can identify the converse, inverse, and contrapositive of a conditional statement.
- I can determine the validity of a logical argument.

Online:

Warm Up:

- Watch the following videos to activate your prior knowledge
 - o <u>https://www.youtube.com/watch?v=ghkaxFk-V4o</u>
 - <u>https://www.mathplanet.com/education/geometry/proof/if-then-statement</u>

Project Based Learning:

Description:

This project will give you practice using some of the principles of logic that are necessary in geometry.

- 1. Select THREE advertisements from a magazine or newspaper as the focus of this project. Please choose ads for things that are considered legal, moral, and appropriate for high school students.
- 2. Display your advertisements in a Google Slides presentation. Be creative!

Details:

- In this project, you are being asked to select 3 advertisements from a website, magazine, or newspaper. Using the
 three ads, you will create a Google Slides presentation. For each advertisement, you are being asked to write and label
 the
 - Conditional statement
 - Be sure this statement is in if-then form. For example: If I pop Pringles, then the fun won't stop.
 - Converse statement
 - Inverse statement
 - Contrapositive statement
 - of the sales pitch of each ad.
- For one of the ads, demonstrate the Laws of Syllogism and Detachment.
- Finally, determine if the inverse, converse, and contrapositive are true or false and determine if the advertisement was realistic.

Reflection: Write a paragraph answering two out of three of the following questions.

- What do you think about this advertisement after examining it as a conditional,converse, inverse, and contrapositive? Is each statement true or false?
- Is it a realistic advertisement? Does it make sense? Is it credible? Does it present a valid argument?
- What did you learn about the use of logic in this advertisement you selected?

Guidelines:

- Each advertisement and the following reflection should have its own slide.
- Be creative and apply an eye catching design to your presentation.

Offline:

Warm Up:

- Review your definitions of the following;
 - Conditional statement

Skills:

- I can identify the converse, inverse, and contrapositive of a conditional statement.
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Offline:

Warm Up:

- Review your definitions of the following;
 - Conditional statement

- Converse statement
- Inverse statement
- Contrapositive statement
- The Law of Syllogism
- The Law of Detachment
- Conditional

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- 1. Select THREE advertisements from a magazine or newspaper as the focus of this project. Please choose ads for things that are considered legal, moral, and appropriate for high school students.
- 2. Display your advertisements in a half-sheet of poster board. Be creative!

Details:

- In this project, you are being asked to select 3 advertisements from a website, magazine, or newspaper. Using the three ads, you will create a presentation. For each advertisement, you are being asked to write and label the
 - $\circ \quad \text{Conditional statement} \quad$
 - Be sure this statement is in if-then form. For example: If I pop Pringles, then the fun won't stop.
 - Converse statement
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- What do you think about this advertisement after examining it as a conditional, converse, inverse, and contrapositive? Is each statement true or false?
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Online:

Project Based Learning Activity:

• For this activity, you are going to create a plan for a trip from your house to the school, known as an itinerary. On your computer or internet-connected smart phone, visit maps.google.com.

Directions:

- 1. Type in your home address to the search box. If this is done correctly, you will see a marker at your home.
- 2. Locate your school on the map, and compare the location of your house to your school.
- 3. Your goal is to create a list of steps that get you from your home to your school, using if-then (conditional) statements. For example:
 - If I leave my house, then I will turn right to the end of City Street.
 - If I turn right from City Street, then I am on County Avenue.
 - If I turn left from County Avenue, then I am on Town Parkway.
 - Progress until you get to your school.

Name	Notation	Example
Conditional	$p \rightarrow d$	If I turn left from County Avenue, then I am on Town Parkway.
Converse	$q \rightarrow p$	If I am on Town Parkway, then I turned left from County Avenue.
Inverse	~p→ ~q	If I did not turn left from County Avenue, then I am not on Town Parkway.
Contrapositive	~q→ ~p	If I am not on Town Parkway, then I did not turn left from County Avenue.

Reflection:

- Keeping in mind that you have found one path to your school from your house, is there another path you could have taken? How many more steps would this be?
- Create the converse, inverse, or contrapositive statements of your path to school. If you followed these paths, where would you end up?

Extension:

• What could be some potential geographical or street-engineering barriers that may prevent you from taking your path to school? Are there one-way streets? Would you have to take certain roads in the morning versus the afternoon? Discuss these with a parent or other family member.

Offline:

Warm Up:

• Look at each street sign. Make a statement that represents the street sign. Think about a way that you could negate each street sign.



Focused Instruction:

• Turn on a news station of your choice and develop three conditional statements from three different headlines. You are asked to write the conditional statements so that each conditional statement is true.

- Once you have the conditional statements, provide the converses, inverses, and contrapositives along with their truth values.
 - It is expected that the converses and inverses should be false, so you may need to come up with counterexamples.

Formative Assessment:

Match each statement with its symbolic notation.

1. Conjunction	A. $q \rightarrow p$
2. Disjunction	B. $p \leftrightarrow q$
3. Conditional	C. $p \lor q$
4. Inverse	D. $\sim p \rightarrow \sim q$
 5. Converse	E. $\sim q \rightarrow \sim p$
 6. Contrapositive	F. $p \wedge q$
7. Bi-Conditional	G. $p \rightarrow q$

Reflection: Write one paragraph.

• Making conditional statements can be a good pre-reading strategy to get you focused on what the article is about. Watch one of the news stories you selected and determine if your conditional statement seemed to match with what the author tried to express. Explain how you may rewrite the conditional statement to provide a better summary of the story.

Skills:

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Online:

Project Based Learning:

- Create a 6-frame Conditional Statement comic strip similar to the book <u>If You Give a Mouse a Cookie</u> by Laura Joffe Numeroff.
- Your comic strip must be school appropriate, creative, and an original piece by you.
- Each frame must contain an If-Then statement.
- When you finish your comic, answer the following questions:
 - In frame 1, what is the hypothesis?
 - In frame 5, what is the conclusion?
 - What is the converse of frame 4?
 - What is the inverse of frame 3?
 - What is the contrapositive of frame 2?
 - Take frame 6 and write out each of the following:
 - Hypothesis
 - Conclusion
 - Converse
 - Inverse
 - Contrapositive
 - \circ $\;$ What is the conclusion of the story?

Guidelines:

- You will design your comic strip using Google Slides.
- Each frame should have it's own slide.

• Answer the following questions on additional slides.

Offline:

Project Based Learning:

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- Your comic strip must be school appropriate, creative, and an original piece by you.
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 - What is the converse of frame 4?
 - What is the inverse of frame 3?
 - What is the contrapositive of frame 2?
 - Take frame 6 and write out each of the following:
 - Hypothesis
 - Conclusion
 - Converse
 - Inverse
 - Contrapositive
 - What is the conclusion of the story?

Guidelines:

- You will design your comic strip using colored pencils and a piece of paper.
- Answer the following questions on the back of your comic strip. .