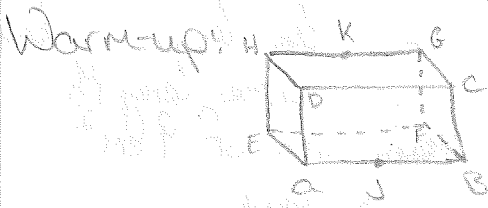


# 2.1: Conditional Statements

Chapter goal: Write a two-column proof and paragraph proof  
Prove segment and angle relationships

Objective: recognize and analyze a conditional statement  
write postulates about points, lines, and planes  
using conditional statements



- 1) A point collinear with G and H
- 2) A point coplanar with D, C, G
- 3) A point coplanar with H, G, E
- 4) A point coplanar with A, D, E

## Vocab

Conditional Statement - has two parts, a hypothesis and a conclusion

If then form - If part contains the hypothesis, then contains the conclusion

ex: If a # is divisible by 4, then it is divisible by 2

Converse - a conditional statement that switches the hypothesis and conclusion

ex: If a # is divisible by 2, then it is divisible by 4

Negation - the negative of a statement

ex: 

Statement	Negation
$m\angle A = 30^\circ$	$m\angle A \neq 30^\circ$

Inverse - when you negate the hypothesis and conclusion of a conditional statement

ex: If a # is not divisible by 4, then it is not divisible by 2

Contrapositive - when you negate the hypothesis and conclusion of the converse

ex: If a # is not divisible by 2, then it is not divisible by 4

## Writing if-then statements, inverse, converse, and contrapositives

Two segments that have the same length are congruent

If-then: If two segments have the same length, then they are congruent.

Inverse: If two segments don't have the same length, then they are not  $\cong$ .

Converse: If two segments are congruent, then they have the same length.

Contrapositive: If two segments are not congruent, then they don't have the same length.

Now try: A square with side length 3cm has an area of  $9\text{cm}^2$ .

- An angle with a measure of  $90^\circ$  is a right angle.

- I will dry the dishes if you will wash them.

## Point, Line, and Plane Postulates

In the first chapter, we went over the segment addition postulate and the angle addition postulate. Now we have postulates about points, lines, and planes.

Postulate 5: Through any two points there exists exactly one line.

Postulate 6: A line contains at least two points.

7: If two lines intersect, then their intersection is exactly one point.

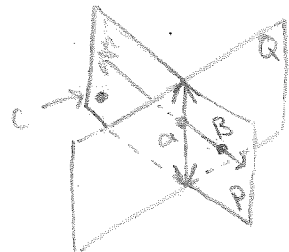
8: Through any 3 noncollinear points there exists exactly one plane.

9: A plane contains at least 3 noncollinear points.

10: If two points lie in a plane, then the line containing them lies in the plane.

11: If two planes intersect, then their intersection is a line.

ex  
Use the postulates to describe occurrences in the diagram



Closure: What is an if-then statement  
Inverse? Converse? Contrapositive?

Homework 2.1B, write each postulate as an if-then statement