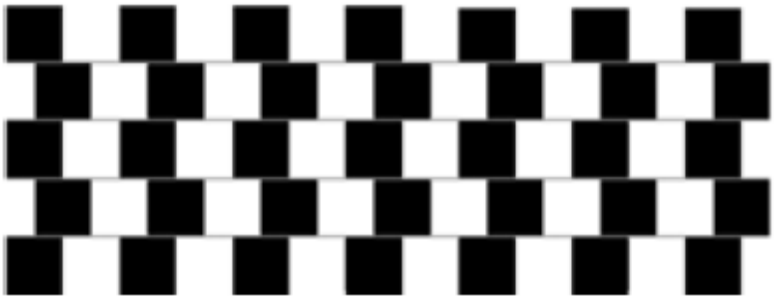
Math 2201 **Date:_____**

1.2 Exploring the Validity of Conjectures

In this section you will be presented with situations where you are expected to make a conjecture and then verify or discredit it. You will be expected to gather additional evidence, such as taking measurements, performing calculations, or extending patterns, to determine if a given argument is valid.

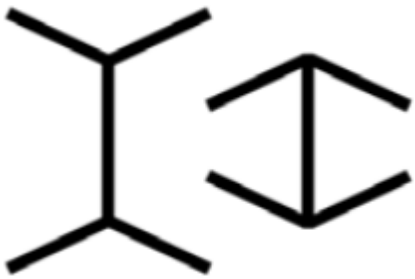
Example 1:
Make a conjecture about the following lines:



Conjecture: The lines in between the horizontal rows are not parallel.

False. Measuring shows they are parallel.

Example 2:
Make a conjecture about the length of the line segments.



Conjecture: the vertical lines are not the same length.

False. Measuring shows the same length.

Example 3:
An auto assembly plant can produce a maximum of 400 cars per day. A production line technician records the number of cars coming off the assembly line each hour. The following table gives a record of the technician's observations:

Hours	1	2	3
Cars	10	20	40

Robert conjectures that the number of cars coming off the assembly line doubles each hour. Is this conjecture valid? Explain.

Hours	4	5	6
Cars	80	160	320

False: Only 400 cars/day. We get more after only 6 hours.

Example 4:
Watch the following video clip and note as many examples of inductive reasoning as you can. Identify which ones may lead to a false conjecture.

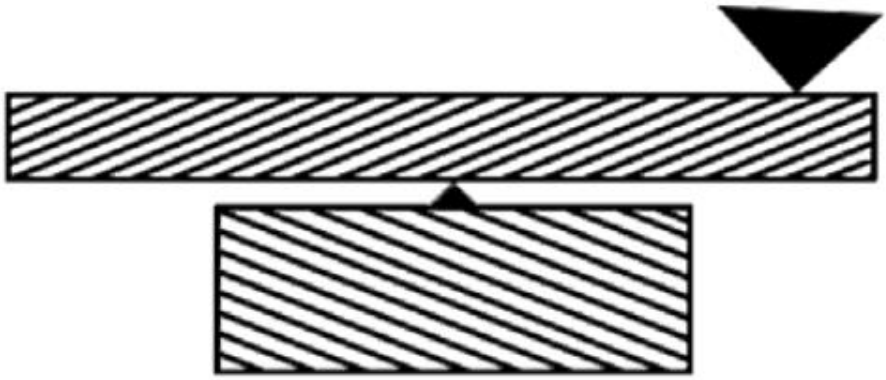
http://www.youtube.com/watch?v=4NES9LMRqAc

Name: James was actually John.

All conjectures could have been wrong.

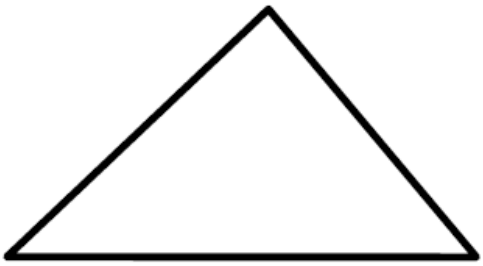
Your Turn:

1. Susie conjectures that this balance is not level. Do you agree or disagree? Justify.



We measured both sides and found the distances to be equal.

2. Grace conjectures that the triangle below is a right triangle. Do you agree or disagree? Explain.

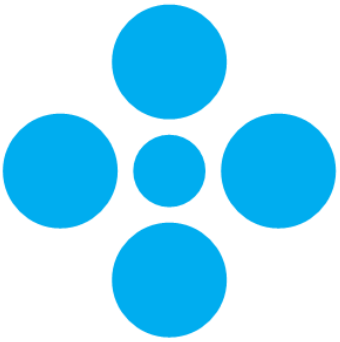


We measured with a protractor and found a 90° angle.

3. Mike had breakfast at Cora's restaurant three Saturdays in a row. He saw Janet there each time. Mike told his friends that Janet always eats breakfast at Cora's on Saturdays. Ask students if this argument is valid? Explain.

No. Conjecture is based on a limited number of examples.

4. Make a conjecture about the circles in the center:



looks bigger, but both are the same diameter.

5. Make a conjecture about the lines: