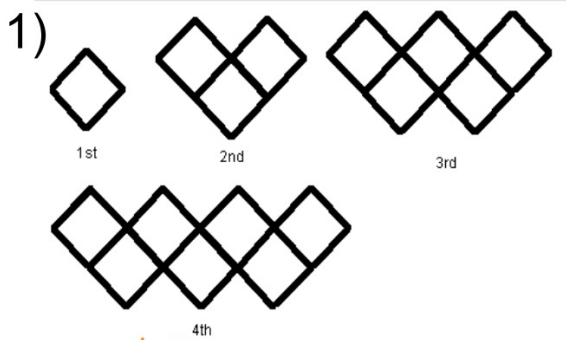


## Geometry: Bell Work

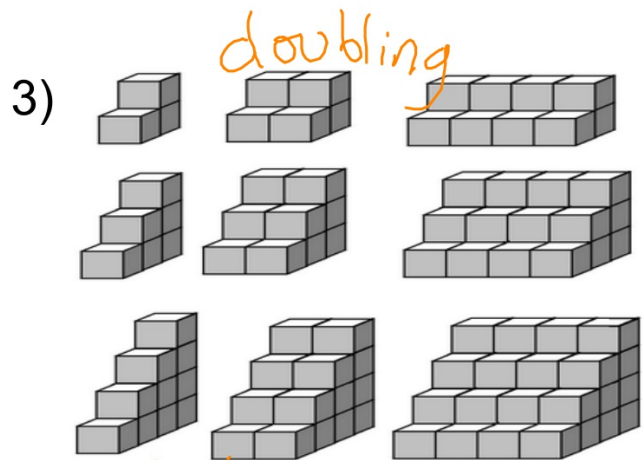
Describe the pattern.



adds two

2) 135, 129, 123, 117...

subtract 6



Multiply by 2

Pull out a piece of paper.  
It should be whole, not ripped.

From this piece of paper, create a  
perfect square. You may fold it or  
cut it, but no rulers are allowed.

Explain your square.

A blue banner with a white border. On the left, the word "LESSON" is written vertically in white. To its right, the numbers "2-1" are displayed in a large, light blue font. Further right, the text "Inductive Reasoning and Conjecture" is written in a bold, white font.

**LESSON 2-1 Inductive Reasoning and Conjecture**

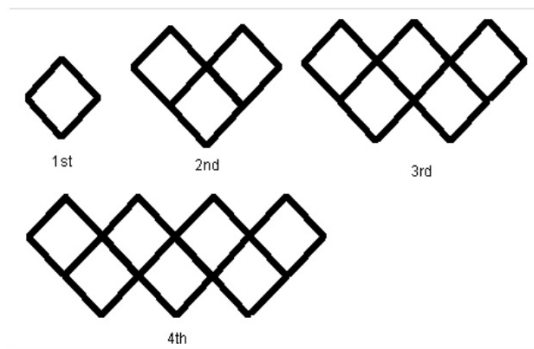
We have worked with points lines and planes, the foundation of geometry.

Now we're switching gears to discuss the types of reasoning that we use to make statements about geometry, and about math in general.

We will use inductive reasoning to make conjectures and find counterexamples.

**Inductive reasoning** is reasoning that uses specific examples to arrive at a conclusion

For example, continuing a pattern.



A **conjecture** is the conclusion reached from the inductive reasoning.

conjecture = statement<sup>+</sup>

Write a conjecture that describes the pattern in the sequence. Then use your conjecture to find the next item in the sequence.

**Movie show times: 8:30 A.M., 9:45 A.M., 11:00 A.M., 12:15 P.M., ...**

The movie is shown every 1h 15min.

1:30 P.M.

Write a conjecture that describes the pattern in each sequence. Then use your conjecture to find the next item in the sequence.

B.  $10, 4, -2, -8, \dots$

minus 6

-14

length of  $\overline{AB}$

2B. the relationship between  $AB$  and  $EF$ , if  $AB = CD$  and  $CD = EF$  |

$$AB = EF$$

If there is just a single example that goes against the conjecture, then *the entire conjecture* is considered **false**.

This false example is called a **counterexample**. A counterexample can be a number, a drawing, or a statement.

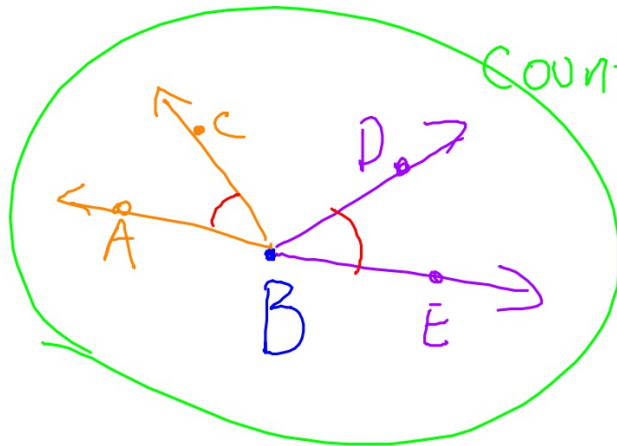
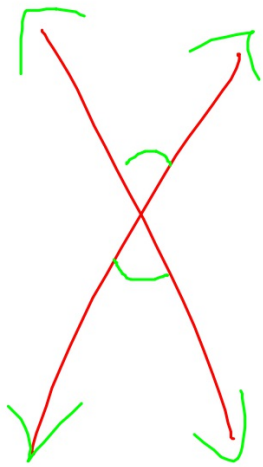
Find a counterexample to show each conjecture is false.

- a) All birds fly      penguin      emu  
                                 ostrich      kiwi
- b) The sum of two numbers is greater than either number.  
                                  $-2 + (-5) = -7$        $0 + 8 = 8$
- c) If  $\angle ABC \cong \angle DBE$ , then  $\angle ABC$  and  $\angle DBE$  are vertical angles.



If  $\angle ABC \cong \angle DBE$ , then  $\angle ABC$  and  $\angle DBE$  are vertical angles.

congruent



Counterexample

A blue banner with a dark blue vertical bar on the left containing the word "LESSON" in white. To the right of the bar, the numbers "2-1" are displayed in a large, light blue font. Further right, the text "Inductive Reasoning and Conjecture" is written in a white, bold, sans-serif font.

**LESSON 2-1 Inductive Reasoning and Conjecture**

We discussed the types of reasoning that we use to make statements about geometry, and about math in general.

We used inductive reasoning to make conjectures and find counterexamples.

Stop and Jot (exit ticket):

Make a conjecture that is true. Cite evidence or reasoning to explain why your conjecture is true.

Write a conjecture that is false. Give a counter example to your conjecture.

Assignment:

2.1 pgs 92-93 # 1-13