

Name: \_\_\_\_\_  
 Serafino · Geometry

Per: \_\_\_\_\_

Date: \_\_\_\_\_  
 M T W R F

2A

## Introduction to Reasoning & Proof

### Notes & Practice Packet

#### Deductive vs. Inductive Reasoning:

**Deductive reasoning:** \_\_\_\_\_

**Inductive reasoning:** \_\_\_\_\_

1. Use inductive reasoning to find the pattern rule & deductive reasoning to find the next term.

a. 4, 8, 12, 16, \_\_\_\_\_

e. 1, 1, 2, 5, 27, \_\_\_\_\_

b. 3, 30, 300, 3000, \_\_\_\_\_

f. M, T, W, T, F \_\_\_\_\_

c.  $\frac{1}{8}$ ,  $\frac{2}{7}$ ,  $\frac{1}{2}$ ,  $\frac{4}{5}$  \_\_\_\_\_

g. J, F, M, A, M, J \_\_\_\_\_

d. 360, 180, 120, 90, \_\_\_\_\_

h. O, T, T, F, F, S, S, \_\_\_\_\_

2. Use inductive reasoning to make a conjecture about what a Whachamahoozit is:

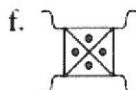
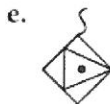
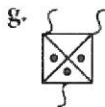
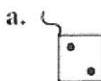
Whachamahoozits:

NOT Whachamahoozits:



a. Properties of Whachamahoozits  
 (be specific)

b. Use deductive reasoning to PROVE which of the following are Whachamahoozits.  
 (You should also be able to prove why something is NOT a Whachamahoozit.)





6. Write your own TRUE statement (doesn't have to be Biconditional) then assess if the other statements are true or false. Then assess whether or not your statement is Biconditional.

Statement:

True

Converse:

True or False?

Biconditional? Yes or No

**Writing a Biconditional Statement:** When a statement and its converse are both true, you can express the original statement as a single Biconditional statement:

Ex) **S:** *If a figure is a triangle, then it has three sides (true!)* **C:** *If a figure has three sides, then it is a triangle (true!)*

**Biconditional Statement:** If and only if a figure is a triangle, then it has three sides.

**Biconditional Shortcut:** Iff a figure is a triangle, then it has three sides.

7. Write your own TRUE BICONDITIONAL statement (must be true and converse must be true!)

Statement:

Converse:

Biconditional Statement:

8. Test whether the conjecture is true or false. Prove false by giving a counterexample.

If the statement is Biconditional, cross out "if" and write "IFF"

- a) If a number is prime, then it is odd.
- b) If a number is divisible by 2 with no remainder, then it is even.
- c) If you square a positive number, the results is always greater than or equal to the number.
- d) If you have two negative numbers, the sum of those numbers is always negative.
- e) If you have two negative numbers, then the difference of those difference is always negative.
- f) If two angles are a linear pair, then they are supplementary.

