

# Practice 2.1

If the given statement is not in if-then form, rewrite it. Identify the hypothesis and the conclusion. Then write the converse, inverse, and contrapositive.

1. *If a figure is a rectangle, then it has four sides.*

- a. If-Then Conditional statement: If a figure is a rectangle, then it has four sides.
- b. Hypothesis: If a figure is a rectangle
- c. Conclusion: then it has 4 sides.
- d. Converse: If a figure has 4 sides, then it is a rectangle.
- e. Inverse: If a figure is not a rectangle, then it does not have four sides.
- f. Contrapositive: If a figure does not have four sides, then the figure is not a rectangle.

2. *All Europeans live in Germany.*

- a. If-Then Conditional statement: If a person is European, then that person lives in Germany.
- b. Hypothesis: If a person is European
- c. Conclusion: then that person lives in Germany
- d. Converse: If a person lives in Germany, then that person is European.
- e. Inverse: If a person is not European, then that person does not live in Germany.
- f. Contrapositive: If a person does not live in Germany, then that person is not European.

3. *If  $x = -6$ , then  $|x| = 6$ .*

- a. If-Then Conditional statement: If  $x = -6$ , then  $|x| = 6$ .
- b. Hypothesis: If  $x$  equals six
- c. Conclusion: then the absolute value of  $x$  equals six
- d. Converse: If  $|x| = 6$ , then  $x = -6$ .
- e. Inverse: If  $x$  does not equal  $-6$ , then  $|x|$  does not equal  $6$ .
- f. Contrapositive: If  $|x|$  does not equal  $6$ , then  $x$  does not equal  $-6$ .

# [PACKET 2.1: INDUCTIVE REASONING]

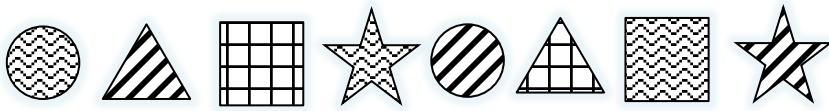
Determine the truth-value for the following statements. If a statement is false, give a counter example.

4. If an animal is a mammal, it lives on land. *False (Dolphins)*
5. If a number is prime, then it is odd. *False (2)*
6. If your first name is Joe, then your last name is Mammah. *False (Joe Montana, etc.)*
7. If the figure is a triangle, then the sum of the interior angles is  $180^\circ$ . *True*
8. If a figure has 4 congruent sides, then that figure is a square. *False (An octagon could have 4 congruent sides and 4 non-congruent sides)*

Find a pattern for each sequence. Use the pattern to find the next two terms.

9. 4, 4.5, 4.56, 4.567...  
*4.5678, 4.56789*
10. 1, -1, 2, -2, 3...  
*-3, 4*
11. J, F, M, A, M, ... J, J  
*(January, February, March...etc.)*

Use the sequence and inductive reasoning to make a conjecture:



12. What pattern is in the 15<sup>th</sup> figure?  
*!5 is a multiple of 3, so the checkerboard pattern.*
13. What is the shape of the 12<sup>th</sup> figure?  
*A star.*

| Solve each equation for x!   |  | Multiply!  |  | Factor! |  |
|--|--|--|--|---------|--|
| 1. $3x - 3 = -6$<br><br><i>Add 3, divide by 3</i>  | 2. $4x + 1 = 13x - 13$<br><br><i>Subtract 4x, add 13</i> | 3. $x(x - 2)$<br><br><i>hint:<br/>x times x = <math>x^2</math></i>   | 4. $4x^3 - 8x^2$<br><br><i>hint: GCF = <math>4x^2</math></i> |         |  |
| 5. Graph the equation:<br><br>$y = -x + 3$<br><br><i>hint: slope = -1<br/>go down one first from the y-int</i> |  | 6. Graph the equation:<br><br>$y = 1$<br><br><i>hint: graph any two points<br/>that have a y coordinate of 1<br/>connect the points and whallah!</i> |  |         |  |