Lesson 2.2 Shark-bait Review

Identify the hypothesis and conclusion of each conditional.

1. A mapping that is a reflection is a type of transformation.

hyp. If a mapping is a reflection, then con. it is a transformation

2. The quotient of two negative numbers is positive.

hyp. If it is the quotient of 2 negatives, then con. it is positive.

3. Determine if the conditional "If x is a number then $|x| > 0$" is true. If false, give a counterexample. False because $|0| \not> 0$

4. Rewrite the statement into an "if, then" form.
   1. A giraffe has a long neck.
      If it is a giraffe then it has a long neck.
   2. All pentagons have 5 sides. If it is a pentagon then it has 5 sides.
5. Identify the hypothesis and conclusion of #1.
   Hyp: it is a giraffe; Con: it has a long neck.
6. Write the converse to #2.
   If it has 5 sides then it is a pentagon.
7. True or False: If a figure has 4 sides then it is a rectangle.
   False

Lesson 2.3 Shark-bait Review

Is the conclusion a result of inductive or deductive reasoning?

1. At Reagan High School, students must pass Geometry before they take Algebra 2. Emily is in Algebra 2, so she must have passed Geometry.

Deductive b/c the first sentence is a fact not an observation.

Determine if each conjecture is valid?

2. Given: If *n* is a natural number, then *n* is an integer. If *n* is an integer, then n is a rational number. 0.875 is a rational number.

Invalid

Conjecture: 0.875 is a natural number.

3. Given: If an American citizen is at least 18 years old, then he or she is eligible to vote. Anna is a 20-year-old American citizen.

Valid, Anna is at least 18.

Conjecture: Anna is eligible to vote.

Ch 2 quiz review

Ch. 2 Quiz Review on Inductive and Deductive reasoning

1. _____ Show that the conjecture is false by finding a counterexample.
   If $a > b$, then $\frac{a}{b} > 0$.
   a. $a = 2, b = 10$
   b. $a = -10, b = 2$
   c. $a = 10, b = 2$
   d. $a = 10, b = -2$

   10>-2 $\frac{10}{-2} \neq 0$

2. _____ Identify the hypothesis and conclusion of the conditional statement.
   If it is snowing then it is cold.
   a. Hypothesis: It is cold.
      Conclusion: It is snowing.
   b. Hypothesis: Snow makes it cold.
      Conclusion: Cold does not make it snow.
   c. Hypothesis: Snow and cold happen together.
      Conclusion: Cold and snow do not happen together..
   d. Hypothesis: It is snowing.
      Conclusion: It is cold.

3. Write a conditional statement from the statement.
   A giraffe has a long neck..
   Conditional: If it is a giraffe then it has a long neck.

4. _____ Determine if the conditional statement is true. If false, give a counterexample. If a figure has four sides, then it is a rectangle.
   a. True.
   b. False; A trapezoid has four sides, and it is not a rectangle.

5. Write the converse, inverse, and contrapositive of the conditional statement, "If an animal is a duck, then it has a bill."
   Converse: if it has a bill then it is a duck.
   Inverse: If it is not a duck, then it does not have a bill.
   Contrapositive: if it does not have a bill then it is not a duck.

6. There is a myth that toilets and sinks drain in opposite directions in the Southern and Northern Hemispheres. However, Jorge in Costa Rica observe sinks draining in the both hemispheres, and noticed the toilets flushed the same way. Conclusion, the myth is false. Is the conclusion a result of **inductive** or **deductive** reasoning? Please circle one.

7. Determine if the conjecture is valid by the Law of Detachment.
   Given: If Jimmy ate pizza, then he must have called Domino's. Jimmy called Domino's.
   Conjecture: Jimmy ate pizza.
   Circle one:
   Valid **Invalid**

   The conclusion doesnt mean the hypothesis will come true.

8. Determine if the conjecture is valid by the Law of Syllogism.

   Given: If you are in Surfside Beach, then you are in South Carolina.
   If you are in South Carolina, then you are in the east coast.
   Conjecture: If you are in Surfside Beach, then you are in the east coast.
   Circle one:
   Valid **Invalid**

9. Use the Law of Syllogism to draw a conclusion from the given information.
   Given: ~~If two lines never meet, then they are parallel.~~ If two lines are parallel then they are not perpendicular.

   Two lines never meet.

   Conclusion:

10. If $p \rightarrow q$ and $q \rightarrow r$ are true statements the Law of Syllogism says $p \rightarrow$ q is also true.

11. Give the next number in the pattern 7, 4, 1, -2, -5 ... -8.

12. The square of an odd number is always odd