



## Practice

### 2.2 Introduction to Logic

Refer to the following statement to answer Exercises 1–4:

**All turtles are reptiles.**

1. Rewrite the statement as a conditional.

If it is a turtle, then it is a reptile.

2. Identify the hypothesis and the conclusion of the statement.

It is a turtle      It is a reptile

3. Draw an Euler diagram that illustrates the statement.



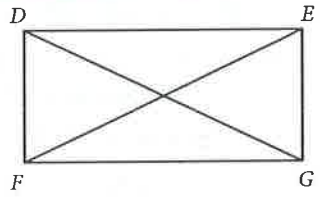
4. Write a converse of the statement and construct its Euler diagram. If the converse is false, illustrate this with a counterexample.

If it is a reptile, then it is a turtle.  
False, an alligator is a reptile.

5. Write a conditional statement with the given hypothesis and conclusion, and then write the converse of that statement. Is the original statement true? The converse? If either is false, give a counterexample.

hypothesis:  $\overline{EF} = \overline{DG}$   
 conclusion: The diagonals of a rectangle are equal in length.

Given:  $DEGF$  is a rectangle.



Conditional: If  $\overline{EF} = \overline{DG}$ , then the diagonals of a rectangle are equal in length.  
True

Converse: If the diagonals of a rectangle are equal in length, then  $\overline{EF} = \overline{DG}$ .

6. Arrange the three statements below into a logical chain. Then write the conditional statement that follows from the logic.

- ③ If it is warm, then it is spring.
- ② If flowers are blooming, then it is warm.
- ① If you see bees, then flowers are blooming.

If you see bees, then it is spring.

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# Standardized Test Practice

## 2.2 An Introduction to Logic

**TEST TAKING STRATEGY** Common mistakes are usually included in the answer choices.

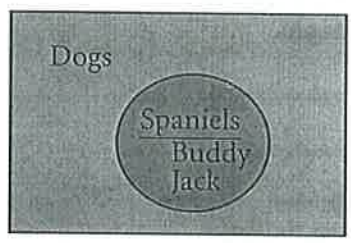
1. **Multiple Choice** An if-then statement is also known as a \_\_\_\_\_.

- (A) guess
- (B) fact
- (C) conditional
- (D) theory

2. **Multiple Choice** The statement  $p \Rightarrow q$  can be interpreted as:

- (A)  $p$  and  $q$
- (B)  $p$  or  $q$
- (C)  $p$  nor  $q$
- (D)  $p$  implies  $q$

3. **Multiple Choice** What conclusion can you reach from the Euler diagram shown below?



- (A) Buddy and Jack are pets.
- (B) All Spaniels are animals.
- (C) Jack is a dog.
- (D) All dogs are Spaniels.

4. **Multiple Choice** What is the converse of the statement, "If today is Tuesday, then tomorrow is Wednesday?"

- (A) If today is not Tuesday, then tomorrow is not Wednesday.
- (B) If tomorrow is Wednesday, then today is Tuesday.
- (C) If tomorrow is not Wednesday, then today is not Tuesday.
- (D) If today is Tuesday, then tomorrow is not Monday.

5. **Multiple Choice** What conditional follows from the logical chain stated below?

*If Jamie does not study, then he will fail his test.*

*If he fails his test, then he will be grounded.*

*If he is grounded, then he will miss the game.*

- (A) If Jamie studies, he can go to the game.
- (B) If Jamie does study, he will not be grounded.
- (C) If Jamie does not study, then he will miss the game.
- (D) If Jamie misses the big game, then he did not study.

**Quantitative Comparison** In Exercises 6–7, choose the letter of the statement below that is true about the quantities in Columns I and II.

- A The number in Column I is greater.
- B The number in Column II is greater.
- C The two numbers are equal.
- D The relationship cannot be determined from the given information.

Use the following for Exercises 6–7:

If  $\angle A$  and  $\angle B$  are supplementary, then the sum of their angle measures is  $180^\circ$ .

	Column I	Column II
6.	the sum of the angle measures $\angle A$ and $\angle B$	the sum of two complementary angles
	(A) (B)	(C) (D)
7.	$m\angle A$	$m\angle B$
	(A) (B)	(C) (D)

*180°*

*90°*

*unsure!*

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