

## 2.1 Conditional Statements

**Underline the hypothesis and circle the conclusion.**

1. If a polygon is a pentagon, then it has five sides.
2. If you run, then you are fast.
3. If you like math, then you like science.

**Rewrite each statement in if-then form. Underline the hypothesis once and the conclusion twice.**

4. Glass objects are fragile.
5. Today is Friday, and tomorrow is the weekend.
6. Numbers that have 2 as a factor are even.
7. All four-sided figures are quadrilaterals.

**Find a counterexample for each statement.**

8. If it is not a weekday, then it is Saturday.
9. If you live in a country that borders the United States, then you live in Canada.
10. If a figure has four congruent sides, then it is a square.

**For each conditional  $(p \rightarrow q)$ , write the converse, the inverse and the contrapositive.**

11. If you eat all your vegetables, then you will grow.

Converse  $(q \rightarrow p)$ :

Inverse  $(\sim p \rightarrow \sim q)$ :

Contrapositive  $(\sim q \rightarrow \sim p)$ :

12. If two segments are congruent, then they have the same length.

Converse  $(q \rightarrow p)$ :

Inverse  $(\sim p \rightarrow \sim q)$  :

Contrapositive  $(\sim q \rightarrow \sim p)$ :

13. If you are watching television, then you are not driving a car.

Converse  $(q \rightarrow p)$ :

Inverse  $(\sim p \rightarrow \sim q)$  :

Contrapositive  $(\sim q \rightarrow \sim p)$ :

**For each conditional, write the converse, determine the truth values of the statement and it's converse and if both statements are true, write a biconditional statement.**

10. If a point is in the first quadrant, then both of its coordinates are positive.

T or F

Converse  $(q \rightarrow p)$ :

T or F

Biconditional  $(p \leftrightarrow q)$ :

11. If two nonvertical lines are parallel, then their slopes are equal. T or F

Converse ( $q \rightarrow p$ ): T or F

Biconditional ( $p \leftrightarrow q$ ):

12. If a triangle is equilateral, then it is equiangular. T or F

Converse ( $q \rightarrow p$ ): T or F

Biconditional ( $p \leftrightarrow q$ ):

**Place the conditionals in the correct order to provide a logical conclusion.**

13. \_\_\_\_\_ a) If you buy a license, you will not have any money.

\_\_\_\_\_ b) If you do not have any money, you are a bum.

\_\_\_\_\_ c) If you own a dog, you must buy a license.

Conclusion: \_\_\_\_\_

14. \_\_\_\_\_ a) Olympic medal winners smile a lot.

\_\_\_\_\_ b) People who love the sea are great swimmers.

\_\_\_\_\_ c) Treasure hunters love the sea.

\_\_\_\_\_ d) If a person is a great swimmer, he will win an Olympic medal.

Conclusion: \_\_\_\_\_

15. \_\_\_\_\_ a)  $b \rightarrow c$

\_\_\_\_\_ b)  $a \rightarrow b$

\_\_\_\_\_ c)  $c \rightarrow \sim d$

Conclusion: \_\_\_\_\_