

Geometry: Review 2.2-2.4

Name _____

Rewrite the conditional statement in if-then form.

1. It is time for dinner if it is 6 P.M.
2. There are 12 eggs if the carton is full.
3. An obtuse angle is an angle that measures more than 90° and less than 180° .

Write the converse and inverse of each statement.

4. If you like hockey, then you go to the hockey game.
5. If x is odd, then $3x$ is odd.

Decide whether the statement is *true* or *false*. If false, provide a counterexample.

6. The equation $4x - 3 = 12 + 2x$ has exactly one solution.
7. If $x^2 = 36$, then x must equal 18 or -18 .
8. If $m\angle A = 122^\circ$, then the measure of the supplement of $\angle A$ is 58° .

Write the converse of each true statement. Tell whether the converse is *true* or *false*.

9. If an angle measures 30° , then it is acute.
10. If two angles are supplementary, then their sum is 180° .
11. If two circles have the same diameter, then they have the same circumference.

- 12.
- 13.
- 14.

If possible, make a conclusion using either the Law of Detachment or the Law of Syllogism. If you make a conclusion, state which law was used. If you cannot make a conclusion, just write “no conclusion”.

15. If an angle measures more than 90° , then it is not acute.
 $m\angle ABC = 120^\circ$

16. If two angles are 45° , then the angles are congruent.
 $\angle A \cong \angle B$

17. If you order the apple pie, then it will be served with ice cream.
Matthew ordered the apple pie.

18. If you wear the school colors, then you have school spirit.
If you have school spirit, then the team feels great.

19. If you eat too much turkey, then you will get sick.
Ben got sick.

20. If $\angle 2$ is acute, then $\angle 3$ is obtuse.
If $\angle 3$ is obtuse, then $\angle 4$ is acute.

In Exercises 21 and 22, state whether the argument is valid. *Explain* your reasoning.

21. Jeff knows that if he does not do his chores in the morning, he will not be allowed to play video games later the same day. Jeff does not play video games on Saturday afternoon. So Jeff did not do his chores on Saturday morning.

22. Katie knows that all sophomores take driver education in her school. Brandon takes driver education. So Brandon is a sophomore.

In Exercises 23-26, use the true statements below to determine whether you know the conclusion is *true* or *false*. Explain your reasoning.

If Dan goes shopping, then he will buy a pretzel.

If the mall is open, then Jodi and Dan will go shopping.

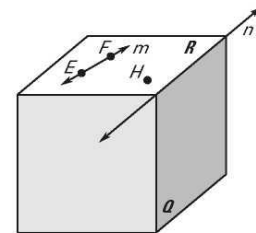
If Jodi goes shopping, then she will buy a pizza.

The mall is open.

- 23. Dan bought a pizza.
- 24. Jodi and Dan went shopping.
- 25. Jodi bought a pizza.
- 26. Jodi had some of Dan's pretzel.

Use the diagram to state and write out the postulate that verifies the truth of the statement.

- 27. The points E , F , and H lie in a plane (labeled R).
- 28. The points E and F lie on a line (labeled m).
- 29. The planes Q and R intersect in a line (labeled n).
- 30. The points E and F lie in a plane R . Therefore, line m lies in plane R .



In Exercises 31–38, use the diagram to determine if the statement is *true* or *false*.

- 31. Points A , B , D , and J are coplanar.
- 32. $\angle EBA$ is a right angle.
- 33. Points E , G , and A are collinear.
- 34. $\overleftrightarrow{FG} \perp$ plane H
- 35. $\angle ABD$ and $\angle EBC$ are vertical angles.
- 36. Planes H and K intersect at \overleftrightarrow{AB} .
- 37. \overleftrightarrow{FG} and \overleftrightarrow{DE} intersect.
- 38. $\angle GCA$ and $\angle CBD$ are congruent angles.

