Written Exercises

Write the hypothesis and the conclusion of each conditional.

A

1. If $3x - 7 = 32$, then $x = 13$.

2. I can't sleep if I'm not tired.

3. I'll try if you will.

4. If $m\angle 1 = 90$, then $\angle 1$ is a right angle.

5. $a + b = a$ implies $b = 0$.

6. $x = -5$ only if $x^2 = 25$.

Rewrite each pair of conditionals as a biconditional.

7. If B is between A and C, then $AB + BC = AC$.
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8. If $m\angle AOC = 180$, then $\angle AOC$ is a straight angle.
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Write each biconditional as two conditionals that are converses of each other.

9. Points are collinear if and only if they all lie in one line.

10. Points lie in one plane if and only if they are coplanar.

Provide a counterexample to show that each statement is false. You may use words or a diagram.

11. If $ab < 0$, then $a < 0$.

12. If $n^2 = 5n$, then $n = 5$.

13. If point G is on $\overrightarrow{AB}$, then G is on $\overrightarrow{BA}$.

14. If $xy > 5y$, then $x > 5$.

15. If a four-sided figure has four right angles, then it has four congruent sides.

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Tell whether each statement is true or false. Then write the converse and tell whether it is true or false.

17. If $x = -6$, then $|x| = 6$.

18. If $x^2 = 4$, then $x = -2$.

19. If $b > 4$, then $5b > 20$.

20. If $m\angle T = 40$, then $\angle T$ is not obtuse.

21. If Pam lives in Chicago, then she lives in Illinois.

22. If $\angle A \cong \angle B$, then $m\angle A = m\angle B$.

B

23. $a^2 > 9$ if $a > 3$.

24. $x = 1$ only if $x^2 = x$.

25. $n > 5$ only if $n > 7$.

26. $ab = 0$ implies that $a = 0$ or $b = 0$.

27. If points D, E, and F are collinear, then $DE + EF = DF$.

28. P is the midpoint of $\overline{GH}$ implies that $GH = 2PG$.

29. Write a definition of congruent angles as a biconditional.

30. Write a definition of a right angle as a biconditional.

C

31. What can you conclude if the following sentences are all true?
(1) If p, then q. (2) p (3) If q, then not r. (4) s or r.