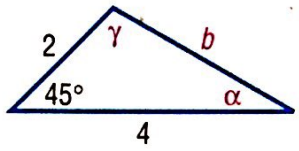
8.3 EXERCISES

In Problems 1–8, solve each triangle.

1.



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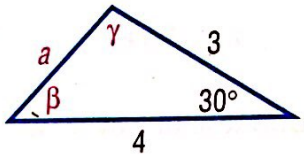

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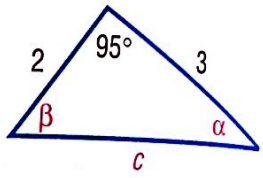

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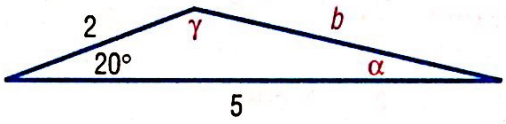

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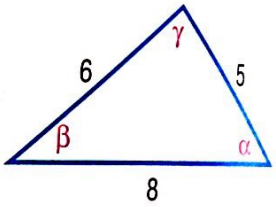

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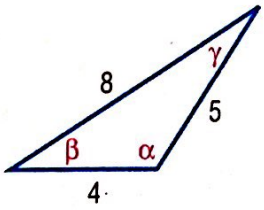

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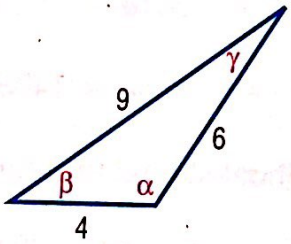
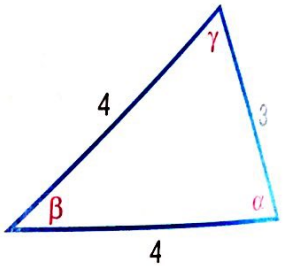


8.



In Problems 9–24, solve each triangle.

9. $a = 3, \quad b = 4, \quad \gamma = 40°$

10. $a = 2, \quad c = 1, \quad \beta = 10°$

11. $b = 1, \quad c = 3, \quad \alpha = 80°$

12. $a = 6, \quad b = 4, \quad \gamma = 60°$

13. $a = 3, \quad c = 2, \quad \beta = 110°$

14. $b = 4, \quad c = 1, \quad \alpha = 120°$

15. $a = 2, \quad b = 2, \quad \gamma = 50°$

16. $a = 3, \quad c = 2, \quad \beta = 90°$

17. $a = 12, \quad b = 13, \quad c = 5$

18. $a = 4, \quad b = 5, \quad c = 3$

19. $a = 2, \quad b = 2, \quad c = 2$

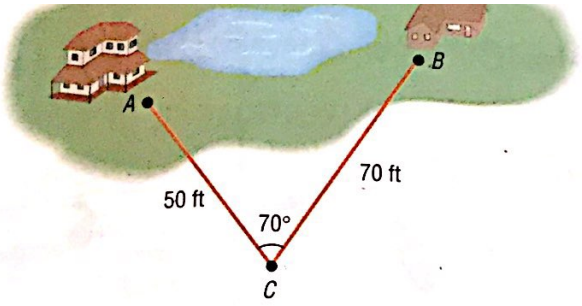
20. $a = 3, \quad b = 3, \quad c = 2$

21. $a = 5, \quad b = 8, \quad c = 9$

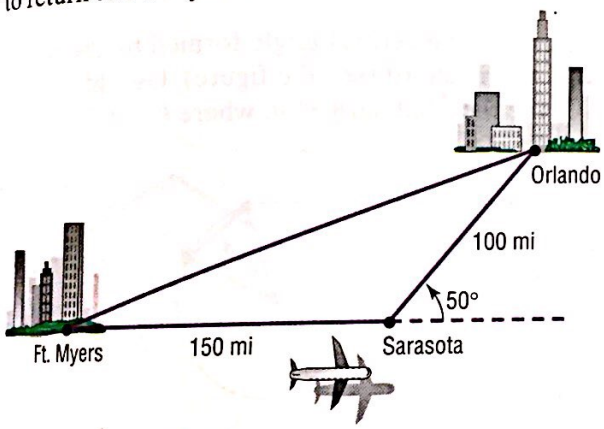
22. $a = 4, \quad b = 3, \quad c = 6$

23. $a = 10, \quad b = 8, \quad c = 5$

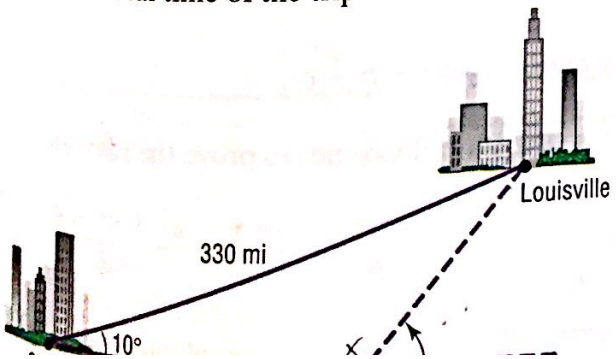
24. $a = 9, \quad b = 7, \quad c = 10$



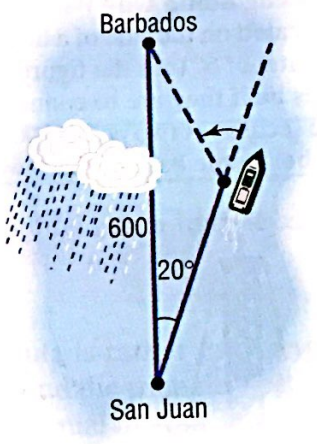
26. Navigation An airplane flies from Ft. Myers to Sarasota, a distance of 150 miles, and then turns through an angle of 50° and flies to Orlando, a distance of 100 miles (see the figure).
(a) How far is it from Ft. Myers to Orlando?
(b) Through what angle should the pilot turn at Orlando to return to Ft. Myers?



27. Revising a Flight Plan In attempting to fly from Chicago to Louisville, a distance of 330 miles, a pilot inadvertently took a course that was 10° in error, as indicated in the figure.
(a) If the aircraft maintains an average speed of 220 miles per hour and if the error in direction is discovered after 15 minutes, through what angle should the pilot turn to head toward Louisville?
(b) What new average speed should the pilot maintain so that the total time of the trip is 90 minutes?



10 hours, after which time the path to Barbados becomes clear of storms.
(a) Through what angle should the captain turn to head directly to Barbados?
(b) How long will it be before the ship reaches Barbados if the same 15-knot speed is maintained?



29. Major League Baseball Field A Major League baseball diamond is actually a square 90 feet on a side. The pitching rubber is located 60.5 feet from home plate on a line joining home plate and second base.
(a) How far is it from the pitching rubber to first base?
(b) How far is it from the pitching rubber to second base?
(c) If a pitcher faces home plate, through what angle does he need to turn to face first base?

30. Little League Baseball Field According to Little League baseball official regulations, the diamond is a square 60 feet on a side. The pitching rubber is located 46 feet from home plate on a line joining home plate and second base.
(a) How far is it from the pitching rubber to first base?
(b) How far is it from the pitching rubber to second base?
(c) If a pitcher faces home plate, through what angle does he need to turn to face first base?

31. Finding the Length of a Guy Wire The height of a radio tower is 500 feet, and the ground on one side of the tower slopes upward at an angle of 10° (see the figure on p. 538).
(a) How long should a guy wire be if it is to connect to the top of the tower and be secured at a point on the sloped side 100 feet from the base of the tower?
(b) How long should a second guy wire be if it is to con-