

Ambiguous Case

CLASS EXERCISES

Find the number of solutions in each case. When in doubt, carefully draw a sketch.

1. $\angle A = 94^\circ$, $a = 25$, $b = 15$
2. $\angle A = 84^\circ$, $a = 25$, $b = 15$
3. $\angle A = 80^\circ$, $a = 20$, $b = 20$
4. $\angle A = 40^\circ$, $a = 19$, $b = 20$
5. $\angle A = 30^\circ$, $a = 10$, $b = 20$
6. $\angle A = 65^\circ$, $a = 10$, $b = 20$
7. $\angle A = 40^\circ$, $a = 10$, $b = 20$
8. $\angle A = 150^\circ$, $a = 10$, $b = 20$
9. $\angle A = 45^\circ$, $a = 10$, $b = 10\sqrt{2}$
10. $\angle A = 60^\circ$, $a = 10\sqrt{3}$, $b = 20$

PRACTICE EXERCISES

Determine how many solutions exist. When either one or two solutions exist, solve the triangle or triangles. In Exercises 1–10, round all lengths to two significant digits and all angle measures to the nearest degree. In Exercises 11–28, round all lengths to three significant digits and all angle measures to the nearest tenth of a degree.

1. $\angle A = 67^\circ$, $a = 18$, $b = 20$
2. $\angle A = 71^\circ$, $a = 37$, $b = 40$
3. $\angle A = 32^\circ$, $a = 7$, $b = 10$
4. $\angle A = 29^\circ$, $a = 15$, $b = 19$
5. $\angle A = 87^\circ$, $a = 47$, $b = 50$
6. $\angle A = 79^\circ$, $a = 52$, $b = 55$
7. $\angle A = 113^\circ$, $a = 49$, $b = 54$
8. $\angle A = 110^\circ$, $a = 76$, $b = 85$
9. $\angle A = 37^\circ$, $a = 49$, $b = 54$
10. $\angle A = 40^\circ$, $a = 75$, $b = 85$
11. $\angle A = 59.8^\circ$, $a = 80.8$, $b = 73.9$
12. $\angle A = 69.8^\circ$, $a = 74.5$, $b = 21.3$
13. $\angle A = 31.9^\circ$, $a = 30.6$, $b = 37.9$
14. $\angle A = 29.8^\circ$, $a = 28.6$, $b = 35.8$
15. $\angle A = 85.8^\circ$, $a = 23.9$, $b = 26.4$
16. $\angle A = 76.4^\circ$, $a = 27.3$, $b = 29.0$
17. $\angle C = 47.1^\circ$, $b = 15.3$, $c = 11.9$
18. $\angle C = 51.6^\circ$, $b = 32.4$, $c = 28.0$
19. $\angle B = 36.3^\circ$, $b = 46.3$, $c = 51.2$
20. $\angle B = 41.2^\circ$, $b = 83.2$, $c = 76.2$
21. $\angle B = 54.3^\circ$, $a = 62.5$, $b = 29.6$
22. $\angle B = 58.7^\circ$, $a = 118.6$, $b = 62.4$
23. $\angle C = 108.7^\circ$, $a = 51.2$, $c = 54.3$
24. $\angle C = 103.4^\circ$, $a = 89.4$, $c = 98.4$
25. $\angle C = 123^\circ$, $b = 106.9$, $c = 104.3$
26. $\angle C = 115^\circ$, $b = 54.8$, $c = 53.4$
27. $\angle C = 23.47^\circ$, $a = 26.49$, $c = 20.5$
28. $\angle C = 29.7^\circ$, $a = 78.92$, $c = 58.9$