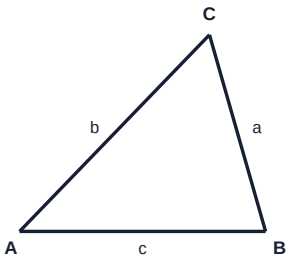
Name _____ Score _____ Teacher _____ Date _____

Law of Sines

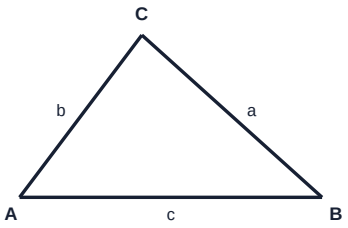
Solve each triangle in degrees. Show the sine proportion, reject any angle set that does not total 180°, and round only final answers to the selected precision.

1. **Given A = 25°, a = 8, and b = 10, determine whether zero, one, or two triangles are possible. Solve every valid triangle to the nearest tenth.**



Label schematic only; does not assert existence

2. **Given A = 53°, B = 42°, and a = 13, solve triangle ABC. Round final values to the nearest tenth.**



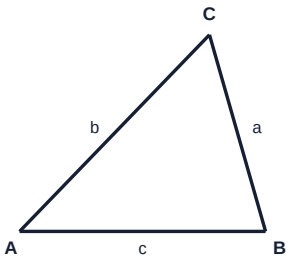
Reference sketch; calculate using the givens.

Name _____ Score _____ Teacher _____ Date _____

Law of Sines

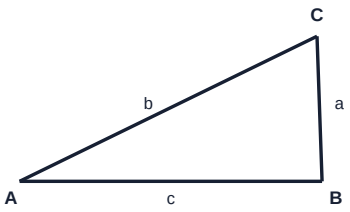
Solve each triangle in degrees. Show the sine proportion, reject any angle set that does not total 180°, and round only final answers to the selected precision.

3. **Given A = 30°, a = 4, and b = 12, determine whether zero, one, or two triangles are possible. Solve every valid triangle to the nearest tenth.**



Label schematic only; does not assert existence

4. **Given A = 26°, B = 88°, and c = 7, solve triangle ABC. Round final values to the nearest tenth.**



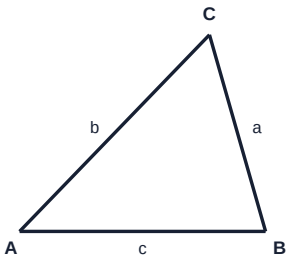
Reference sketch; calculate using the givens.

Name _____ Score _____ Teacher _____ Date _____

Law of Sines

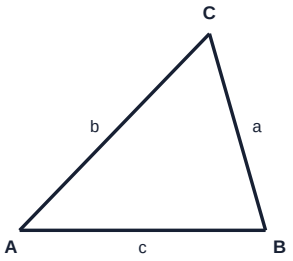
Solve each triangle in degrees. Show the sine proportion, reject any angle set that does not total 180°, and round only final answers to the selected precision.

5. **Given A = 65°, a = 18, and b = 14, determine whether zero, one, or two triangles are possible. Solve every valid triangle to the nearest tenth.**



Label schematic only; does not assert existence

6. **Given A = 31°, a = 10.4, and b = 13, determine whether zero, one, or two triangles are possible. Solve every valid triangle to the nearest tenth.**



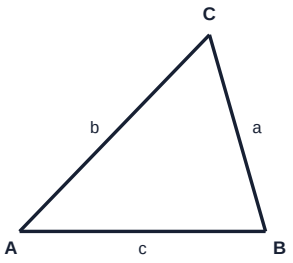
Label schematic only; does not assert existence

Name _____ Score _____ Teacher _____ Date _____

Law of Sines

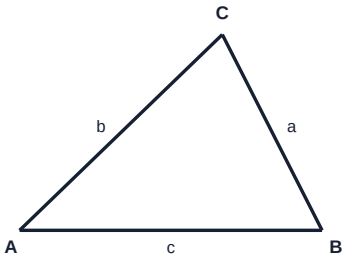
Solve each triangle in degrees. Show the sine proportion, reject any angle set that does not total 180°, and round only final answers to the selected precision.

7. **Given A = 75°, a = 11, and b = 18, determine whether zero, one, or two triangles are possible. Solve every valid triangle to the nearest tenth.**



Label schematic only; does not assert existence

8. **Given A = 44°, B = 63°, and a = 11, solve triangle ABC. Round final values to the nearest tenth.**



Reference sketch; calculate using the givens.

Name _____ Score _____ Teacher _____ Date _____

Law of Sines

Worked Answer Key

Solve each triangle in degrees. Show the sine proportion, reject any angle set that does not total 180°, and round only final answers to the selected precision.

1. Given A = 25°, a = 8, and b = 10, determine whether zero, one, or two triangles are possible. Solve every valid triangle to the nearest tenth.

Answer: Solution 1: B = 31.9°, C = 123.1°, c = 15.9; Solution 2: B = 148.1°, C = 6.9°, c = 2.3.

1. sin(B) = b sin(A) / a = 10 sin(25°) / 8, approximately 0.5283.
2. Solution 1: B is approximately 31.9°, C = 180° - A - B is approximately 123.1°, and c = a sin(C) / sin(A) is approximately 15.9.
3. Solution 2: B is approximately 148.1°, C = 180° - A - B is approximately 6.9°, and c = a sin(C) / sin(A) is approximately 2.3.
4. The supplementary candidate 180° - B was checked; any candidate with C <= 0° is rejected as degenerate.

2. Given A = 53°, B = 42°, and a = 13, solve triangle ABC. Round final values to the nearest tenth.

Answer: A = 53.0°, B = 42.0°, C = 85.0°; a = 13.0, b = 10.9, c = 16.2.

1. C = 180° - 53° - 42° = 85.0°.
2. Use a/sin(A) = b/sin(B) = c/sin(C), with a = 13.
3. Solving the two missing proportions gives a = 13.0, b = 10.9, and c = 16.2.

Name _____ Score _____ Teacher _____ Date _____

Law of Sines

Worked Answer Key

Solve each triangle in degrees. Show the sine proportion, reject any angle set that does not total 180°, and round only final answers to the selected precision.

3. Given A = 30°, a = 4, and b = 12, determine whether zero, one, or two triangles are possible. Solve every valid triangle to the nearest tenth.

Answer: No triangle.

1. sin(B) = b sin(A) / a = 12 sin(30°) / 4, approximately 1.5000.
2. The sine ratio is greater than 1, so no real angle B exists and no triangle can be formed.

4. Given A = 26°, B = 88°, and c = 7, solve triangle ABC. Round final values to the nearest tenth.

Answer: A = 26.0°, B = 88.0°, C = 66.0°; a = 3.4, b = 7.7, c = 7.0.

1. C = 180° - 26° - 88° = 66.0°.
2. Use a/sin(A) = b/sin(B) = c/sin(C), with c = 7.
3. Solving the two missing proportions gives a = 3.4, b = 7.7, and c = 7.0.

Name _____ Score _____ Teacher _____ Date _____

Law of Sines

Worked Answer Key

Solve each triangle in degrees. Show the sine proportion, reject any angle set that does not total 180°, and round only final answers to the selected precision.

5. Given A = 65°, a = 18, and b = 14, determine whether zero, one, or two triangles are possible. Solve every valid triangle to the nearest tenth.

Answer: Solution 1: B = 44.8°, C = 70.2°, c = 18.7.

1. sin(B) = b sin(A) / a = 14 sin(65°) / 18, approximately 0.7049.
2. Solution 1: B is approximately 44.8°, C = 180° - A - B is approximately 70.2°, and c = a sin(C) / sin(A) is approximately 18.7.
3. The supplementary candidate 180° - B was checked; any candidate with C <= 0° is rejected as degenerate.

6. Given A = 31°, a = 10.4, and b = 13, determine whether zero, one, or two triangles are possible. Solve every valid triangle to the nearest tenth.

Answer: Solution 1: B = 40.1°, C = 108.9°, c = 19.1; Solution 2: B = 139.9°, C = 9.1°, c = 3.2.

1. sin(B) = b sin(A) / a = 13 sin(31°) / 10.4, approximately 0.6438.
2. Solution 1: B is approximately 40.1°, C = 180° - A - B is approximately 108.9°, and c = a sin(C) / sin(A) is approximately 19.1.
3. Solution 2: B is approximately 139.9°, C = 180° - A - B is approximately 9.1°, and c = a sin(C) / sin(A) is approximately 3.2.
4. The supplementary candidate 180° - B was checked; any candidate with C <= 0° is rejected as degenerate.

Name _____ Score _____ Teacher _____ Date _____

Law of Sines

Worked Answer Key

Solve each triangle in degrees. Show the sine proportion, reject any angle set that does not total 180°, and round only final answers to the selected precision.

7. Given A = 75°, a = 11, and b = 18, determine whether zero, one, or two triangles are possible. Solve every valid triangle to the nearest tenth.

Answer: No triangle.

1. sin(B) = b sin(A) / a = 18 sin(75°) / 11, approximately 1.5806.
2. The sine ratio is greater than 1, so no real angle B exists and no triangle can be formed.

8. Given A = 44°, B = 63°, and a = 11, solve triangle ABC. Round final values to the nearest tenth.

Answer: A = 44.0°, B = 63.0°, C = 73.0°; a = 11.0, b = 14.1, c = 15.1.

1. C = 180° - 44° - 63° = 73.0°.
2. Use a/sin(A) = b/sin(B) = c/sin(C), with a = 11.
3. Solving the two missing proportions gives a = 11.0, b = 14.1, and c = 15.1.