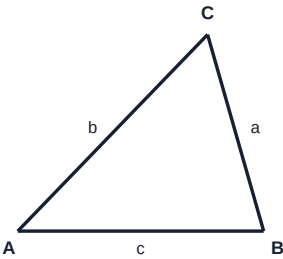


Law of Sines

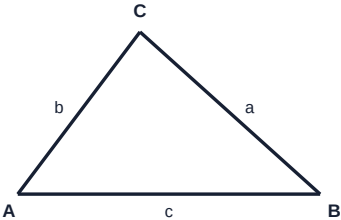
Solve each triangle in degrees. Show the sine proportion, reject any angle set that does not total 180°, and round only final answers to the selected precision.

1. Given $A = 25^\circ$, $a = 8$, 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 $A = 53^\circ$, $B = 42^\circ$, and $a = 13$, solve triangle ABC. Round final values to the nearest tenth.

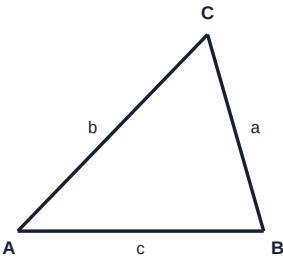


Reference sketch; calculate using the givens.

Law of Sines

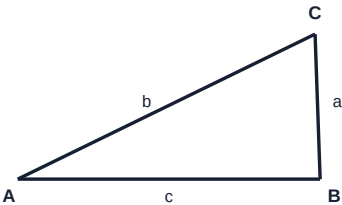
Solve each triangle in degrees. Show the sine proportion, reject any angle set that does not total 180°, and round only final answers to the selected precision.

3. Given $A = 30^\circ$, $a = 4$, 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 $A = 26^\circ$, $B = 88^\circ$, and $c = 7$, solve triangle ABC. Round final values to the nearest tenth.



Reference sketch; calculate using the givens.

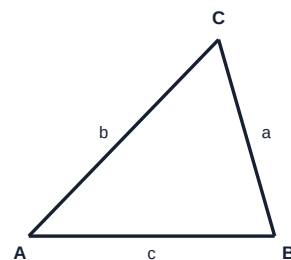
Math Sheet

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Law of Sines

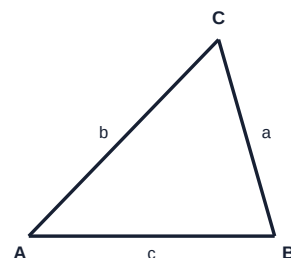
Solve each triangle in degrees. Show the sine proportion, reject any angle set that does not total 180° , and round only final answers to the selected precision.

5. Given $A = 65^\circ$, $a = 18$, 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 $A = 31^\circ$, $a = 10.4$, 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

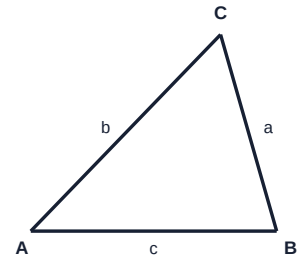
Math Sheet

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Law of Sines

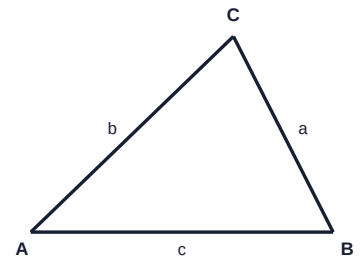
Solve each triangle in degrees. Show the sine proportion, reject any angle set that does not total 180° , and round only final answers to the selected precision.

7. Given $A = 75^\circ$, $a = 11$, 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 $A = 44^\circ$, $B = 63^\circ$, and $a = 11$, solve triangle ABC. Round final values to the nearest tenth.



Reference sketch; calculate using the givens.

Math Sheet

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 $A = 25^\circ$, $a = 8$, and $b = 10$, determine whether zero, one, or two triangles are possible. Solve every valid triangle to the nearest tenth.

Answer: Solution 1: $B = 31.9^\circ$, $C = 123.1^\circ$, $c = 15.9$; Solution 2: $B = 148.1^\circ$, $C = 6.9^\circ$, $c = 2.3$.

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

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

Answer: $A = 53.0^\circ$, $B = 42.0^\circ$, $C = 85.0^\circ$; $a = 13.0$, $b = 10.9$, $c = 16.2$.

- $C = 180^\circ - 53^\circ - 42^\circ = 85.0^\circ$.
- Use $a/\sin(A) = b/\sin(B) = c/\sin(C)$, with $a = 13$.
- Solving the two missing proportions gives $a = 13.0$, $b = 10.9$, and $c = 16.2$.

Math Sheet

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 $A = 30^\circ$, $a = 4$, and $b = 12$, determine whether zero, one, or two triangles are possible. Solve every valid triangle to the nearest tenth.

Answer: No triangle.

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

- 4.** Given $A = 26^\circ$, $B = 88^\circ$, and $c = 7$, solve triangle ABC. Round final values to the nearest tenth.

Answer: $A = 26.0^\circ$, $B = 88.0^\circ$, $C = 66.0^\circ$; $a = 3.4$, $b = 7.7$, $c = 7.0$.

- $C = 180^\circ - 26^\circ - 88^\circ = 66.0^\circ$.
- Use $a/\sin(A) = b/\sin(B) = c/\sin(C)$, with $c = 7$.
- Solving the two missing proportions gives $a = 3.4$, $b = 7.7$, and $c = 7.0$.

Math Sheet

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 $A = 65^\circ$, $a = 18$, and $b = 14$, determine whether zero, one, or two triangles are possible. Solve every valid triangle to the nearest tenth.

Answer: Solution 1: $B = 44.8^\circ$, $C = 70.2^\circ$, $c = 18.7$.

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

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

Answer: Solution 1: $B = 40.1^\circ$, $C = 108.9^\circ$, $c = 19.1$; Solution 2: $B = 139.9^\circ$, $C = 9.1^\circ$, $c = 3.2$.

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

Math Sheet

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 $A = 75^\circ$, $a = 11$, and $b = 18$, determine whether zero, one, or two triangles are possible. Solve every valid triangle to the nearest tenth.

Answer: No triangle.

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

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

Answer: $A = 44.0^\circ$, $B = 63.0^\circ$, $C = 73.0^\circ$; $a = 11.0$, $b = 14.1$, $c = 15.1$.

- $C = 180^\circ - 44^\circ - 63^\circ = 73.0^\circ$.
- Use $a/\sin(A) = b/\sin(B) = c/\sin(C)$, with $a = 11$.
- Solving the two missing proportions gives $a = 11.0$, $b = 14.1$, and $c = 15.1$.