

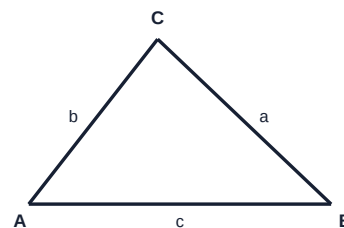
Math Sheet

Name _____ Score _____ Teacher _____ Date _____

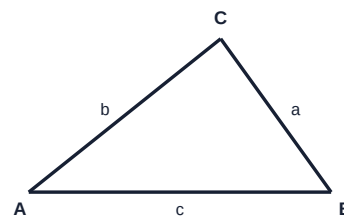
Law of Cosines

Use the law of cosines to find the requested side or angle. Keep full calculator precision until the final answer, then round as directed.

1. Given $b = 9$, $c = 13$, and included angle $A = 52^\circ$, find side a . Round the final answer to the nearest tenth.



2. Given $a = 10$, $b = 13$, and $c = 16$, find angle C . Round the final answer to the nearest tenth.



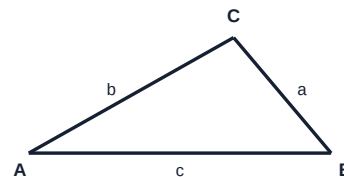
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Law of Cosines

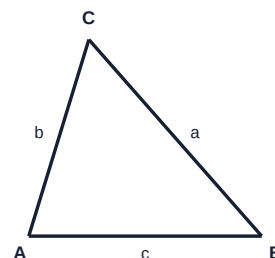
Use the law of cosines to find the requested side or angle. Keep full calculator precision until the final answer, then round as directed.

3. Given $a = 9$, $b = 14$, and $c = 18$, find angle C. Round the final answer to the nearest tenth.



Reference sketch; calculate using the givens.

4. Given $b = 15$, $c = 17$, and included angle $A = 73^\circ$, find side a. Round the final answer to the nearest tenth.



Reference sketch; calculate using the givens.

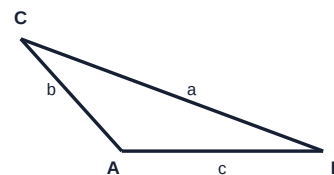
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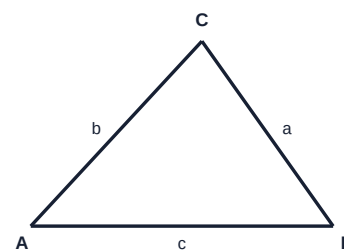
Law of Cosines

Use the law of cosines to find the requested side or angle. Keep full calculator precision until the final answer, then round as directed.

5. Given $b = 9$, $c = 12$, and included angle $A = 132^\circ$, find side a . Round the final answer to the nearest tenth.



6. Given $a = 9$, $b = 10$, and $c = 12$, find angle C . Round the final answer to the nearest tenth.



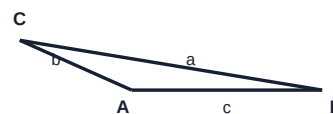
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Law of Cosines

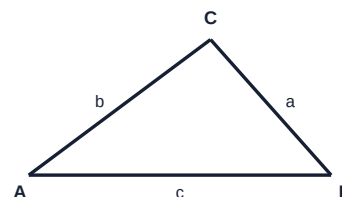
Use the law of cosines to find the requested side or angle. Keep full calculator precision until the final answer, then round as directed.

7. Given $b = 9$, $c = 14$, and included angle $A = 156^\circ$, find side a . Round the final answer to the nearest tenth.



Reference sketch; calculate using the givens.

8. Given $a = 12$, $b = 15$, and $c = 20$, find angle C . Round the final answer to the nearest tenth.



Reference sketch; calculate using the givens.

Math Sheet

Name _____ Score _____ Teacher _____ Date _____

Law of Cosines

Worked Answer Key

Use the law of cosines to find the requested side or angle. Keep full calculator precision until the final answer, then round as directed.

1. Given $b = 9$, $c = 13$, and included angle $A = 52^\circ$, find side a . Round the final answer to the nearest tenth.

Answer: $a = 10.3$.

- $a^2 = b^2 + c^2 - 2bc \cos(A)$
- $a^2 = 9^2 + 13^2 - 2(9)(13) \cos(52^\circ)$, approximately 105.9352.
- Using the unrounded radicand, a is approximately 10.3.

2. Given $a = 10$, $b = 13$, and $c = 16$, find angle C . Round the final answer to the nearest tenth.

Answer: $C = 87.1^\circ$.

- $c^2 = a^2 + b^2 - 2ab \cos(C)$
- $\cos(C) = (a^2 + b^2 - c^2) / (2ab) = (10^2 + 13^2 - 16^2) / (2(10)(13))$, approximately 0.0500.
- Using the exact side expression, $C = \cos^{-1}((10^2 + 13^2 - 16^2) / (2(10)(13)))$ is approximately 87.1° .

Math Sheet

Name _____ Score _____ Teacher _____ Date _____

Law of Cosines

Worked Answer Key

Use the law of cosines to find the requested side or angle. Keep full calculator precision until the final answer, then round as directed.

3. Given $a = 9$, $b = 14$, and $c = 18$, find angle C. Round the final answer to the nearest tenth.

Answer: $C = 100.7^\circ$.

- $c^2 = a^2 + b^2 - 2ab \cos(C)$
- $\cos(C) = (a^2 + b^2 - c^2) / (2ab) = (9^2 + 14^2 - 18^2) / (2(9)(14))$, approximately -0.1865.
- Using the exact side expression, $C = \cos^{-1}((9^2 + 14^2 - 18^2) / (2(9)(14)))$ is approximately 100.7° .

4. Given $b = 15$, $c = 17$, and included angle $A = 73^\circ$, find side a. Round the final answer to the nearest tenth.

Answer: $a = 19.1$.

- $a^2 = b^2 + c^2 - 2bc \cos(A)$
- $a^2 = 15^2 + 17^2 - 2(15)(17) \cos(73^\circ)$, approximately 364.8904.
- Using the unrounded radicand, a is approximately 19.1.

Law of Cosines

Worked Answer Key

Use the law of cosines to find the requested side or angle. Keep full calculator precision until the final answer, then round as directed.

5. Given $b = 9$, $c = 12$, and included angle $A = 132^\circ$, find side a . Round the final answer to the nearest tenth.

Answer: $a = 19.2$.

- $a^2 = b^2 + c^2 - 2bc \cos(A)$
- $a^2 = 9^2 + 12^2 - 2(9)(12) \cos(132^\circ)$, approximately 369.5322.
- Using the unrounded radicand, a is approximately 19.2.

6. Given $a = 9$, $b = 10$, and $c = 12$, find angle C . Round the final answer to the nearest tenth.

Answer: $C = 78.1^\circ$.

- $c^2 = a^2 + b^2 - 2ab \cos(C)$
- $\cos(C) = (a^2 + b^2 - c^2) / (2ab) = (9^2 + 10^2 - 12^2) / (2(9)(10))$, approximately 0.2056.
- Using the exact side expression, $C = \cos^{-1}((9^2 + 10^2 - 12^2) / (2(9)(10)))$ is approximately 78.1° .

Law of Cosines

Worked Answer Key

Use the law of cosines to find the requested side or angle. Keep full calculator precision until the final answer, then round as directed.

7. Given $b = 9$, $c = 14$, and included angle $A = 156^\circ$, find side a . Round the final answer to the nearest tenth.

Answer: $a = 22.5$.

1. $a^2 = b^2 + c^2 - 2bc \cos(A)$
2. $a^2 = 9^2 + 14^2 - 2(9)(14) \cos(156^\circ)$, approximately 507.2135.
3. Using the unrounded radicand, a is approximately 22.5.

8. Given $a = 12$, $b = 15$, and $c = 20$, find angle C . Round the final answer to the nearest tenth.

Answer: $C = 94.9^\circ$.

1. $c^2 = a^2 + b^2 - 2ab \cos(C)$
2. $\cos(C) = (a^2 + b^2 - c^2) / (2ab) = (12^2 + 15^2 - 20^2) / (2(12)(15))$, approximately -0.0861.
3. Using the exact side expression, $C = \cos^{-1}((12^2 + 15^2 - 20^2) / (2(12)(15)))$ is approximately 94.9° .