

ANSWER MAZE



SIDE-ANGLE RELATIONSHIPS IN A TRIANGLE

Which Side Is Across From the Angle?

One page · 10–15 minutes · nothing to prepare

FREE

5

In $\triangle PQR$, $\angle P = 48^\circ$, $\angle Q = 71^\circ$ and $\angle R = 61^\circ$. Which side is the longest?

QR → go to 3

PR → go to 2

Find the largest angle first. Then find the side that does not touch its corner.

2

In $\triangle JKL$, $\angle J = 55^\circ$ and $\angle K = 82^\circ$. Which side is the shortest?

JK → go to 7

KL → go to 6

Only two angles are printed. Find the third angle before comparing.

1. **Hand out page 3**, one per student. Nothing else is needed.
2. **Say this once:** *“Start at box 5. The side opposite an angle does not touch its corner. If only two angles are printed, find the third one first. Write every box number in the row at the bottom as you go.”*
3. **Check a sheet quickly.** A student with no mistakes writes **5 2 7 4 1 8**: six boxes, then out.

Student sheet	page 3, one per student. At the top it shows, as two small drawings, which side is opposite an angle, and that the largest angle is opposite the longest side.
Answers	page 4.

The rule. In a triangle, the longest side is opposite the largest angle, and the shortest side is opposite the smallest angle. The side opposite an angle is the one that does not touch the angle’s corner: in $\triangle PQR$ the side opposite $\angle Q$ is PR . The rule works both ways, so some boxes give angles and ask for a side, and some give sides and ask for an angle. No box has a drawing, so students work from the letters and numbers.

Every wrong answer comes from one of two mistakes. The first is choosing a side that touches the angle, such as QR for the side opposite $\angle Q$. This is the most common mistake on this topic. These wrong answers send the student to box 3. The second is not finding the third angle. When only two angles are printed, the missing angle is found from 180° , and in every such box the missing angle is the one that decides the answer. These wrong answers send the student to box 6. Boxes 3 and 6 ask the same kind of question again, and both of their answers lead back to the route.

The row at the bottom is the check. A clean run is six numbers. Each wrong answer adds at least one more. Guessing does not get a student out: every simple guessing rule, such as always taking the first answer, goes wrong within the first three boxes.



This is the free lesson this activity came from. The worksheet, the full answers and the lesson plan are on it, at three levels of difficulty.
chooseyourlesson.com — 135 free geometry lessons.

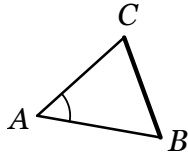
Answer Maze

Start at box 5 · sides and angles in a triangle

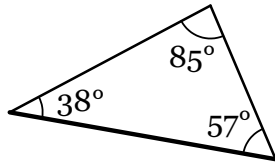
Name _____

Period _____

Date _____



The side **opposite** $\angle A$ is BC. It does not touch A.



The **largest** angle is opposite the **longest** side.

The side **opposite** an angle does not touch the angle's corner.

The **longest** side is opposite the **largest** angle. The **shortest** side is opposite the **smallest** angle.

The three angles of a triangle add to 180° .

Answer each box, and go to the box your answer names.

1

In $\triangle XYZ$, $\angle X = 70^\circ$, $\angle Y = 35^\circ$ and $\angle Z = 75^\circ$. Which side is the shortest?

XY → go to 3

XZ → go to 8

Find the smallest angle. The side across from it does not touch its corner.

2

In $\triangle JKL$, $\angle J = 55^\circ$ and $\angle K = 82^\circ$. Which side is the shortest?

JK → go to 7

KL → go to 6

Only two angles are printed. Find the third angle before comparing.

3

In $\triangle GHK$, $GH = 8$, $HK = 12$ and $KG = 10$. Which angle is the smallest?

$\angle K$ → go to 2

$\angle G$ → go to 5

Find the shortest side. The angle across from it is at the corner that is not on it.

4

In $\triangle DEF$, $\angle D = 38^\circ$ and $\angle E = 47^\circ$. Which side is the longest?

DF → go to 6

DE → go to 1

The three angles add to 180° . Which angle is missing from the question?

5

In $\triangle PQR$, $\angle P = 48^\circ$, $\angle Q = 71^\circ$ and $\angle R = 61^\circ$. Which side is the longest?

QR → go to 3

PR → go to 2

Find the largest angle first. Then find the side that does not touch its corner.

6

In $\triangle MNP$, $\angle M = 64^\circ$ and $\angle N = 78^\circ$. Which side is the shortest?

NP → go to 2

MN → go to 7

Two angles are printed. Find the third angle, then compare all three.

7

In $\triangle ABC$, $AB = 17$, $BC = 9$ and $CA = 14$. Which angle is the largest?

$\angle C$ → go to 4

$\angle A$ → go to 3

Find the longest side first. Then find the corner that is not on it.

8

In $\triangle STU$, $\angle S = 44^\circ$ and $\angle U = 51^\circ$. Which side is the longest?

SU → you are out

ST → go to 6

Find the missing angle first, then compare all three.

Write each box number as you reach it:

--	--	--	--	--	--	--	--	--



135 free geometry lessons
chooseyourlesson.com

Answer Maze — answers

For the teacher

The route, in order. Boxes 3 and 6 are not on it. A student reaches them only by a wrong answer. They are the last two rows of the table.

5 → 2 → 7 → 4 → 1 → 8 → out

	Box	Right answer, and why	Wrong answer, and why a student picks it
1	Box 5 In $\triangle PQR$, $\angle P = 48^\circ$, $\angle Q = 71^\circ$ and $\angle R = 61^\circ$. Which side is the longest?	PR. The largest angle is $\angle Q = 71^\circ$. The side across from it, which does not touch Q, is PR.	“QR” goes to box 3. QR touches the corner Q. A student who pairs an angle with a side it touches picks this.
2	Box 2 In $\triangle JKL$, $\angle J = 55^\circ$ and $\angle K = 82^\circ$. Which side is the shortest?	JK. $\angle L = 180^\circ - 55^\circ - 82^\circ = 43^\circ$. The smallest angle is $\angle L = 43^\circ$. The side across from it, which does not touch L, is JK.	“KL” goes to box 6. A student who compares only the two printed angles picks this. The missing angle, $\angle L = 43^\circ$, is the smallest.
3	Box 7 In $\triangle ABC$, $AB = 17$, $BC = 9$ and $CA = 14$. Which angle is the largest?	$\angle C$. The longest side is $AB = 17$. The angle across from it is at the corner not on AB: $\angle C$.	“ $\angle A$ ” goes to box 3. $\angle A$ is at one end of AB. A student who pairs a side with an angle it touches picks this.
4	Box 4 In $\triangle DEF$, $\angle D = 38^\circ$ and $\angle E = 47^\circ$. Which side is the longest?	DE. $\angle F = 180^\circ - 38^\circ - 47^\circ = 95^\circ$. The largest angle is $\angle F = 95^\circ$. The side across from it, which does not touch F, is DE.	“DF” goes to box 6. A student who compares only the two printed angles picks this. The missing angle, $\angle F = 95^\circ$, is the largest.
5	Box 1 In $\triangle XYZ$, $\angle X = 70^\circ$, $\angle Y = 35^\circ$ and $\angle Z = 75^\circ$. Which side is the shortest?	XZ. The smallest angle is $\angle Y = 35^\circ$. The side across from it, which does not touch Y, is XZ.	“XY” goes to box 3. XY touches the corner Y. A student who pairs an angle with a side it touches picks this.
6	Box 8 In $\triangle STU$, $\angle S = 44^\circ$ and $\angle U = 51^\circ$. Which side is the longest?	SU. $\angle T = 180^\circ - 44^\circ - 51^\circ = 85^\circ$. The largest angle is $\angle T = 85^\circ$. The side across from it, which does not touch T, is SU.	“ST” goes to box 6. A student who compares only the two printed angles picks this. The missing angle, $\angle T = 85^\circ$, is the largest.
	Box 3 In $\triangle GHK$, $GH = 8$, $HK = 12$ and $KG = 10$. Which angle is the smallest?	$\angle K$. The shortest side is $GH = 8$. The angle across from it is at the corner not on GH: $\angle K$.	“ $\angle G$ ” goes to box 5. $\angle G$ is at one end of GH. A student who pairs a side with an angle it touches picks this.
	Box 6 In $\triangle MNP$, $\angle M = 64^\circ$ and $\angle N = 78^\circ$. Which side is the shortest?	MN. $\angle P = 180^\circ - 64^\circ - 78^\circ = 38^\circ$. The smallest angle is $\angle P = 38^\circ$. The side across from it, which does not touch P, is MN.	“NP” goes to box 2. A student who compares only the two printed angles picks this. The missing angle, $\angle P = 38^\circ$, is the smallest.

How to check any box. If only two angles are printed, find the third: the three add to 180° . Then find the largest or smallest measure the question needs. Its partner is across the triangle: the side that does not touch the angle’s corner, or the angle at the corner that is not on the side. A quick check: the answer and the measure it comes from never share a letter.

A student can find the last four boxes of the route by following the arrows backward from “you are out.” So ask a student with a clean row to explain one box.