

Trig 5.7

Determine whether a triangle has one,
two, or zero solutions
Solve triangles using the law of sines

Quiz 5.5-5.6

included angle



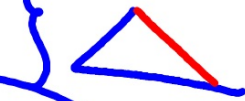
SSA

non-included angle

obtuse



acute



ambiguous

ex: "That's great"

State Farm "jacked up" commercial
<https://www.youtube.com/watch?v=317vQgEiNRE>

law of sines

SSA

Goldilocks story

activ: toothpicks and SSA

Toothpicks and triangles SSA (remember from Geom?)

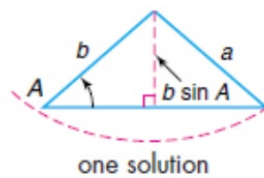
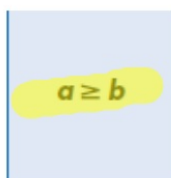
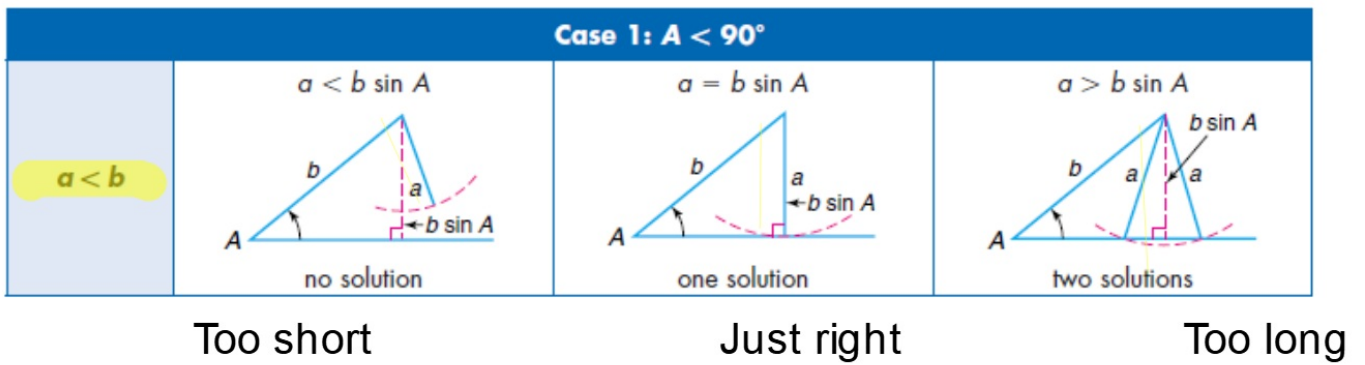
maybe 2 Δ 's
none
1 Δ

When it is NOT the included angle

Goldilocks theorem!
Acute angle:

if acute...

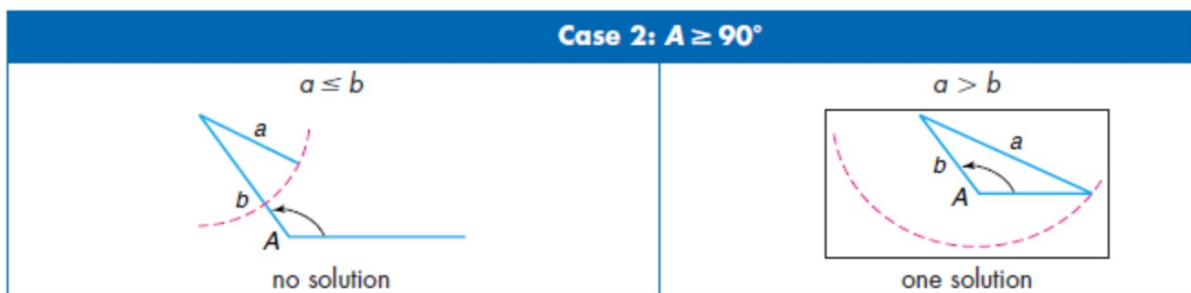
SSA: NOT the included angle



1. No triangle exists.
2. Exactly one triangle exists.
3. Two triangles exist.

JR

Obtuse angle



Either it's long enough to reach, or it isn't.

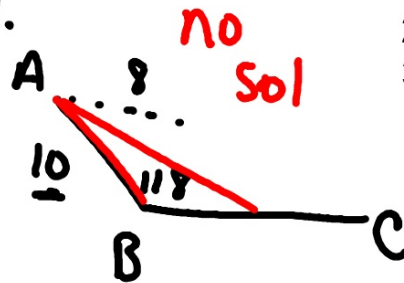
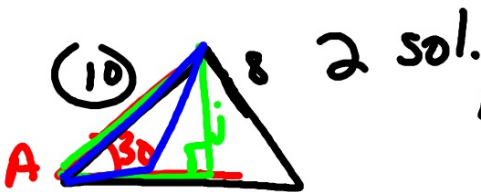
Goldilocks theorem

1 Determine the number of possible solutions for each triangle.

a. $A = 30^\circ, a = 8, b = 10$

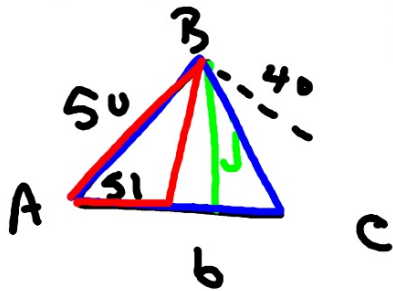
b. $b = 8, c = 10, B = 118^\circ$

1. What does it need to be "just right"? j.r.
2. Too short?
3. Too long?
between b & JR?
more than b



$$\sin 30 = \frac{j}{10}$$
$$10 \sin 30 = j$$
$$j = 5$$

b. $A = 51^\circ$, $a = 40$, $c = 50$



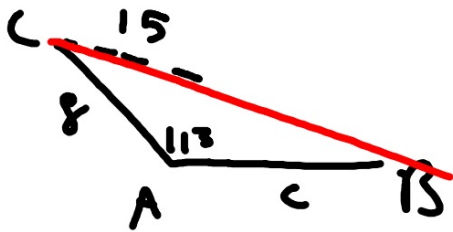
2 sol.

$$\sin 51 = \frac{j}{50}$$
$$j = 38.9$$

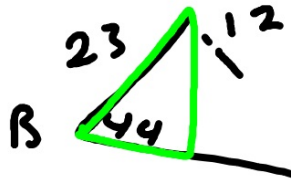
Determine the number of possible solutions for each triangle.

4. $A = 113^\circ$, $a = 15$, $b = 8$

5. $B = 44^\circ$, $a = 23$, $b = 12$



One Sol



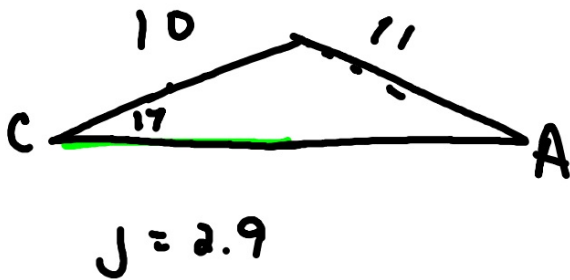
None

Consider that more than one solution may exist...
Or no solution at all...
First find out what would be just right...

Find all solutions for each triangle. If no solutions exist, write *none*. Round to the nearest tenth.

6. $C = 17^\circ, a = 10, c = 11$

7. $A = 140^\circ, b = 10, a = 3$



$11 - 290$

- 2** Find all solutions for each triangle. If no solutions exist, write *none*.
- a. $a = 4$, $b = 3$, $A = 112^\circ$

8. $A = 38^\circ$, $b = 10$, $a = 8$

9. $C = 130^\circ$, $c = 17$, $b = 5$