

Trigonometry

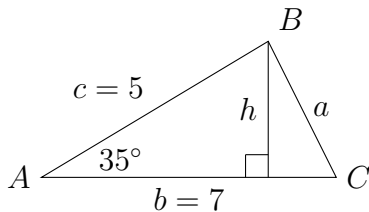
Activity 4b - Area of a Triangle

Assume we know the formula for the area of a triangle

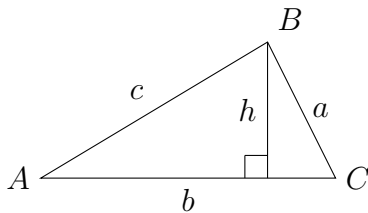
$$\text{Area} = \frac{1}{2}(\text{base})(\text{height})$$

- (SAS) Do as many of the following problems as are necessary for you to develop a process that you can describe in question 2. In each case, find h and the area of the triangle. Note that b is the entire length from A to C , not just the portion that would be the adjacent side to angle A in the right triangle.

- Given $b = 7$, $c = 5$ and $A = 35^\circ$, find h and the area of the triangle.



- Given $b = 12$, $c = 8$ and $A = 52^\circ$, find h and the area of the triangle.
 - Given $b = 4$, $c = 11$ and $A = 83^\circ$, find h and the area of the triangle.
 - Given $b = 10$, $c = 9$ and $A = 115^\circ$, find h and the area of the triangle.
- Describe, in words, the steps needed to find the area of a triangle, given A , b , and c . (You may also use mathematical expressions in your description.)
 - Using c and A , write a formula for h . Then write a formula for the area of the triangle.



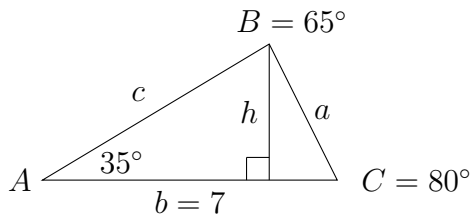
- Repeat using a and C . That is, using a and C , write a formula for h . Then write a formula for the area of the triangle.

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Activity 4b - Area of a Triangle

5. (AAS = AAAS = ASA) Do as many of the following problems as are necessary for you to develop a process that you can describe in question 6. In each case, find c , then find h , then find the area of the triangle. Note that b is the entire length from A to C , not just the portion that would be the adjacent side to angle A in the right triangle.

(a) Given $b = 7$, $A = 35^\circ$, $B = 65^\circ$ and $C = 80^\circ$



- Find c
- Find h
- Find the area of the triangle

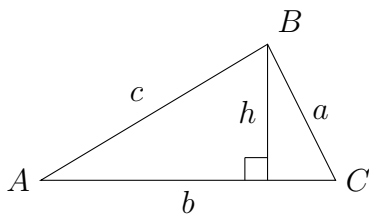
(b) Given $b = 12$, $A = 52^\circ$, $B = 67^\circ$ and $C = 61^\circ$

(c) Given $b = 5$, $A = 85^\circ$, $B = 23^\circ$ and $C = 72^\circ$

(d) Given $b = 11$, $A = 115^\circ$, $B = 43^\circ$ and $C = 22^\circ$

6. Describe, in words, the steps needed to find the area of a triangle, given b , A , B , and C . (You may also use mathematical expressions in your description.)

7. Derive a formula for the area of a triangle, given b , A , B and C , by doing the following



- Find c , as a function of b , C and B
- Find h , as a function of c and A
- Find h , as a function of b , A , B and C
- Find the area of the triangle, as a function of b , A , B and C