

# Chapter 14

## Triangle, Sine and Cosine Rule



**Fig. 14-1: Angle measurement from a fixed point illustrated.**

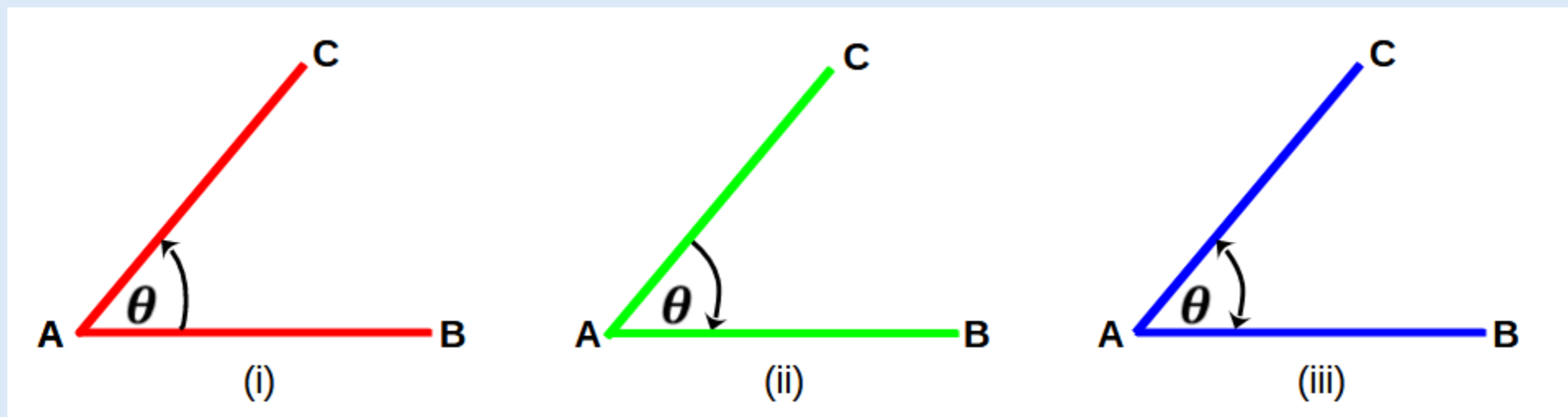


Fig. 14-2: Example 1.

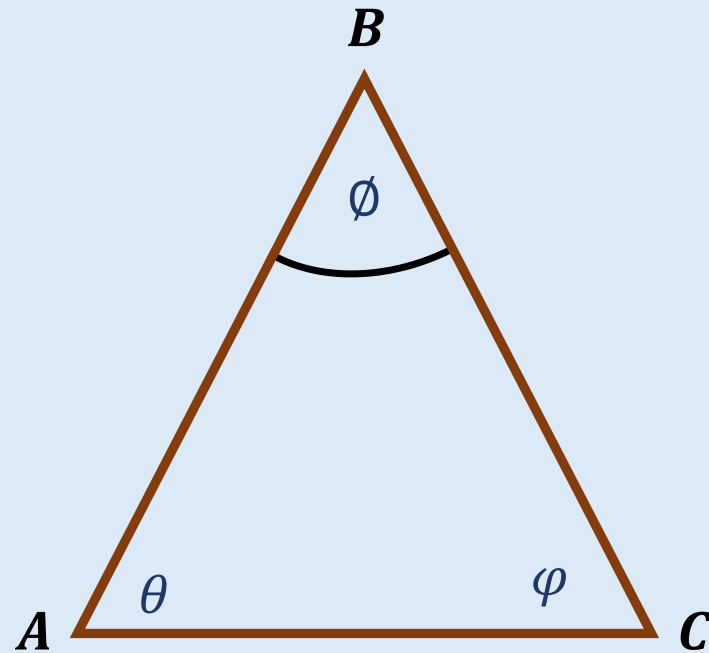
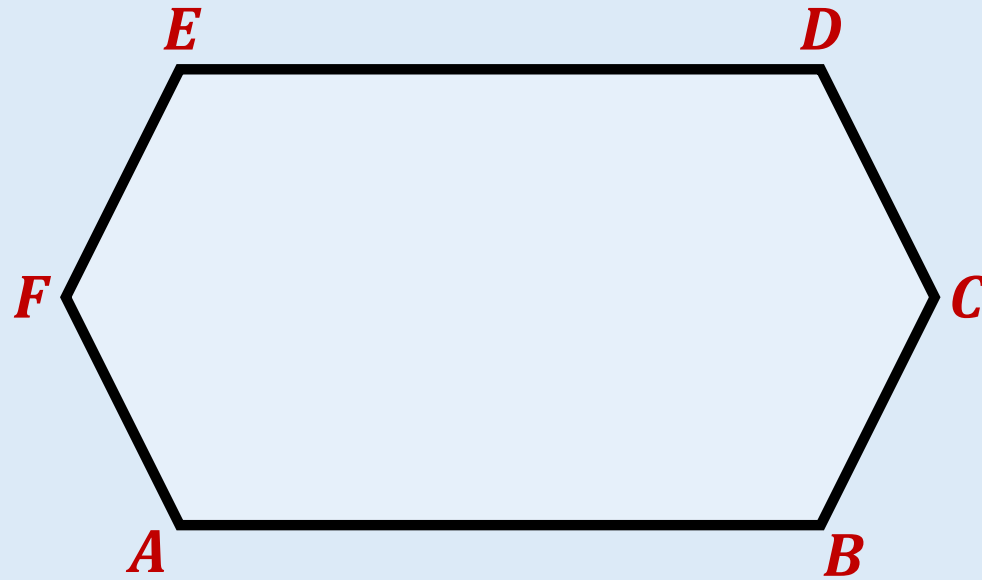
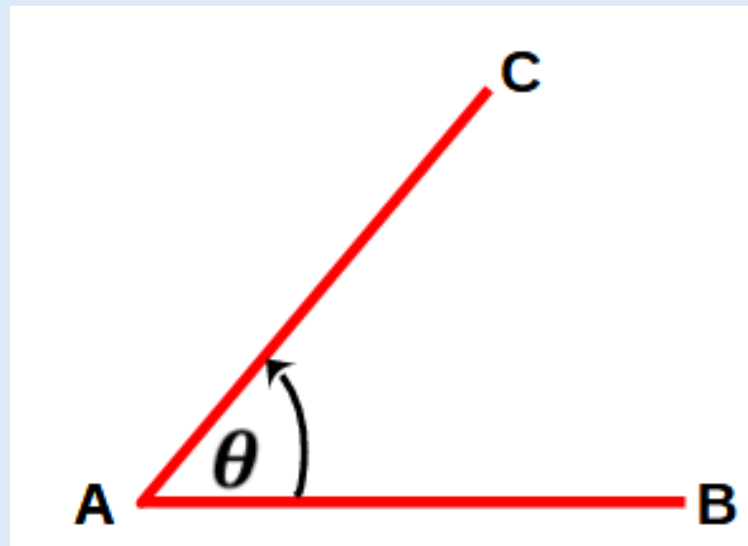


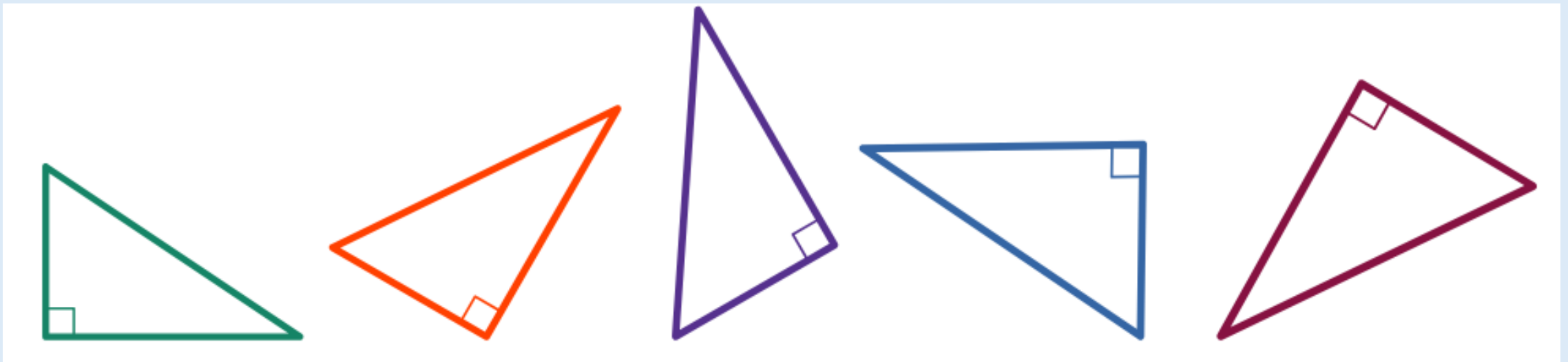
Fig. 14-3: Example 2.



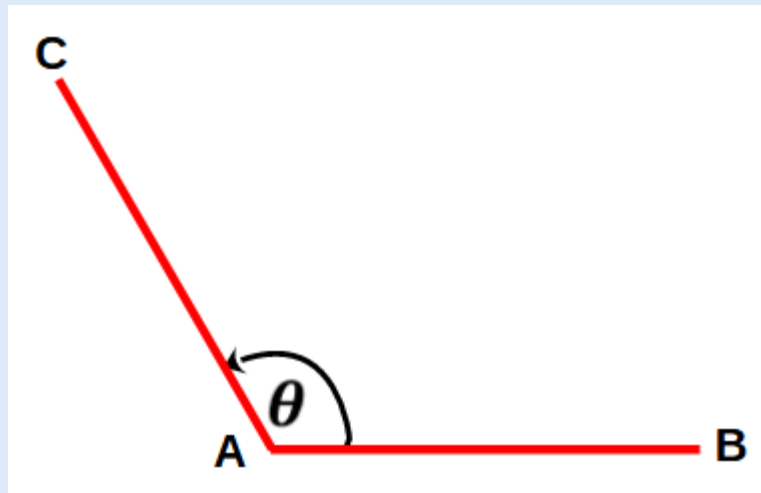
**Fig. 14-4: Acute angle illustrated.**



**Fig. 14-5: Right angle illustrated.**



**Fig. 14-6: Obtuse angle illustrated.**



**Fig. 14-7: Straight line angle illustrated.**

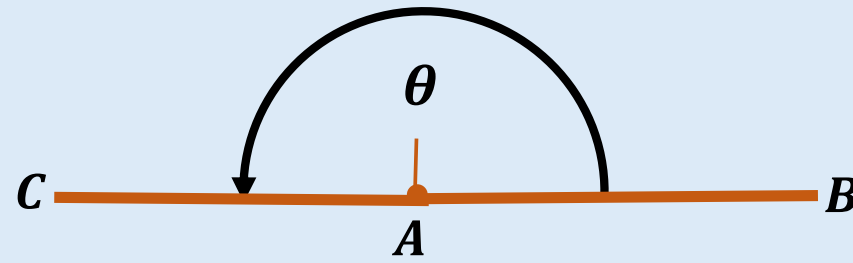
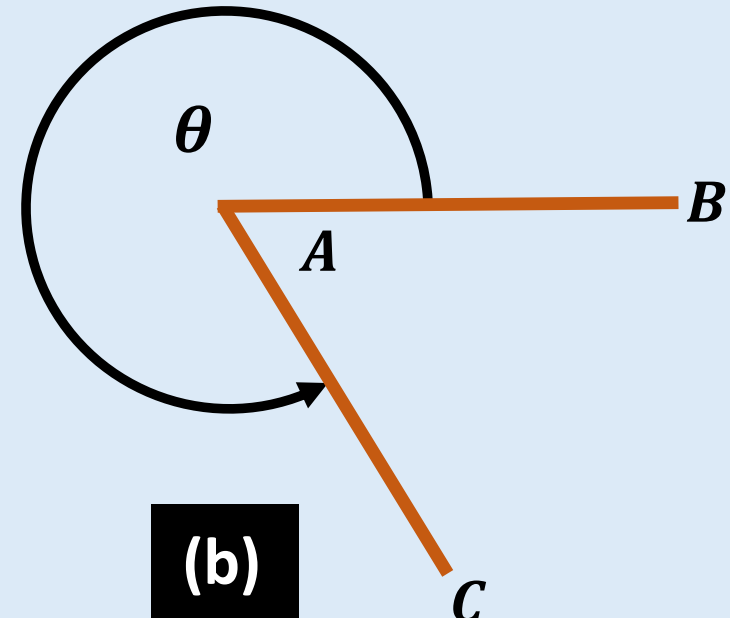
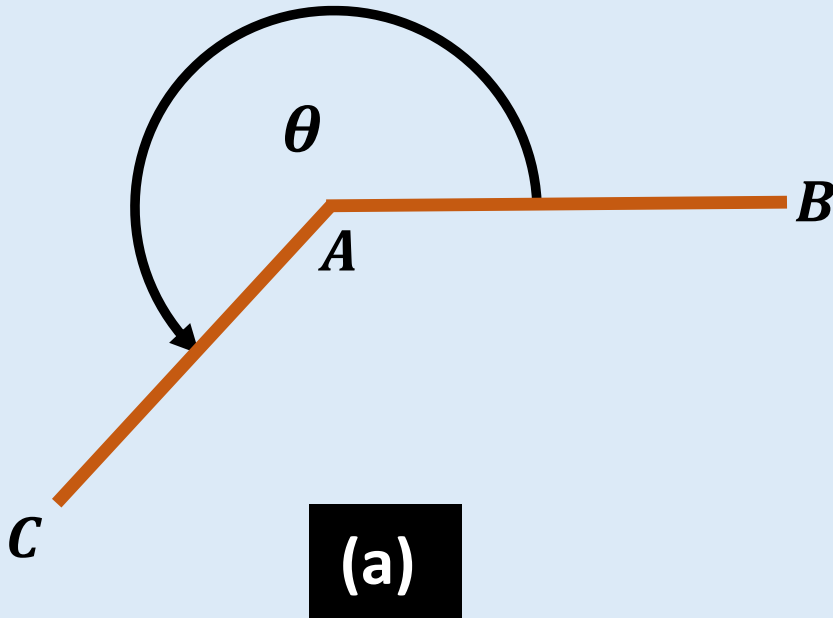




Fig. 14-8: Reflex angles illustrated.



**Fig. 14-9: One radian illustrated.**

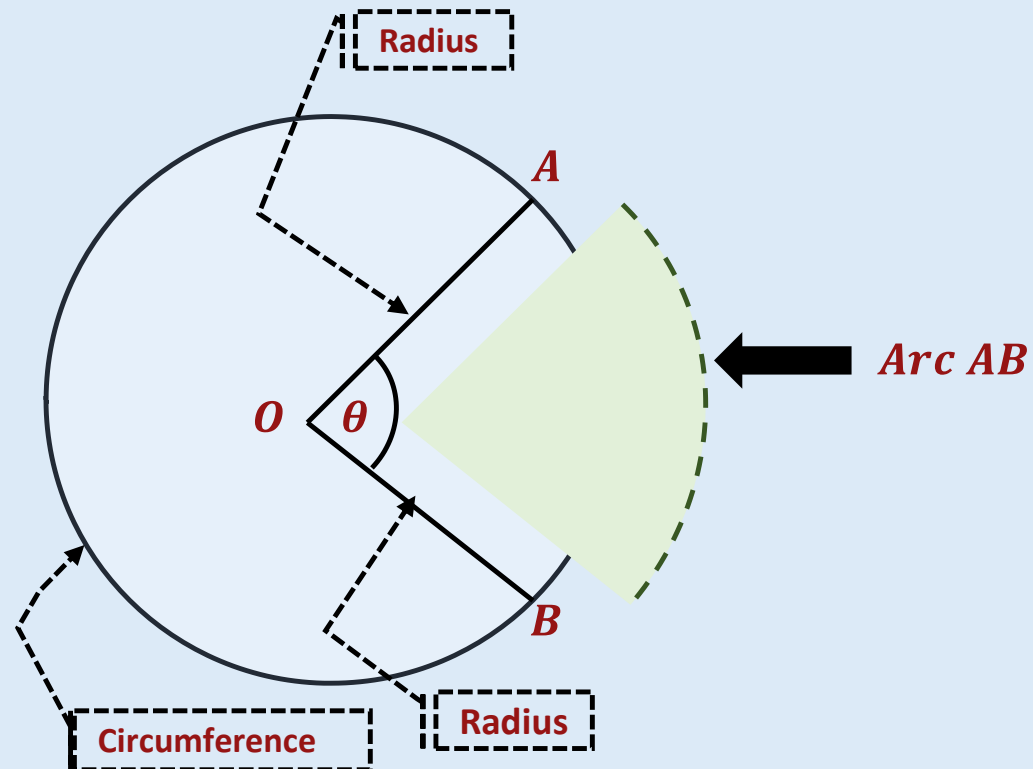
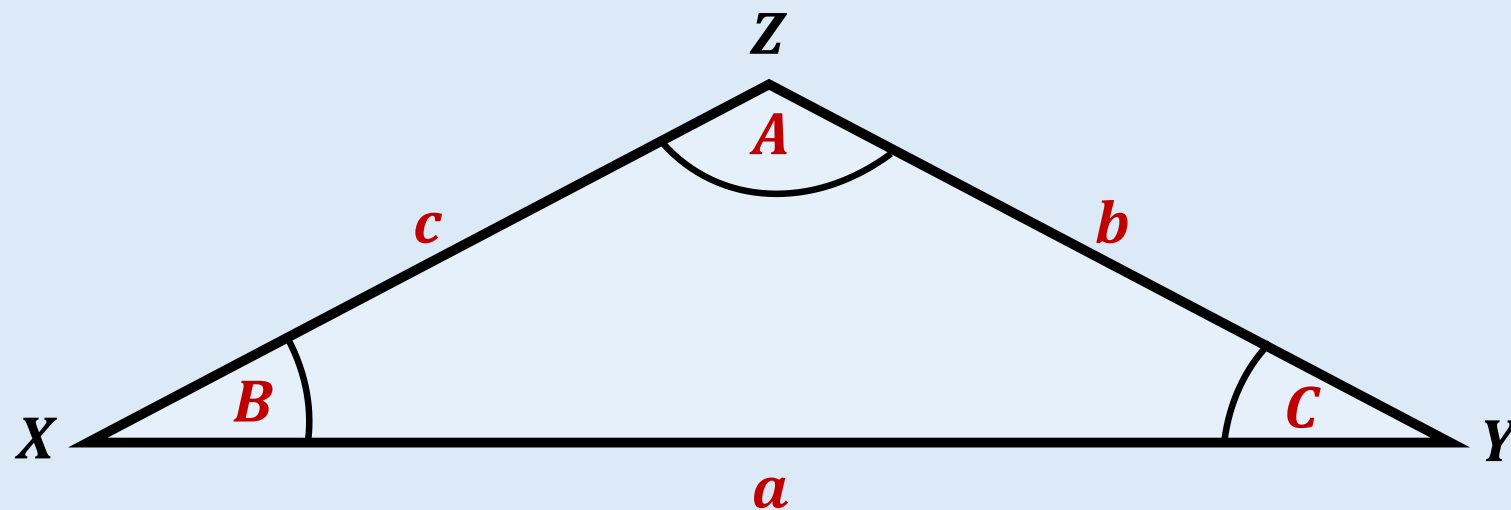
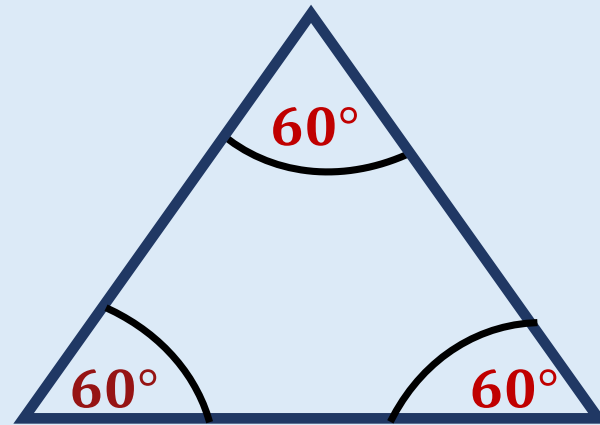


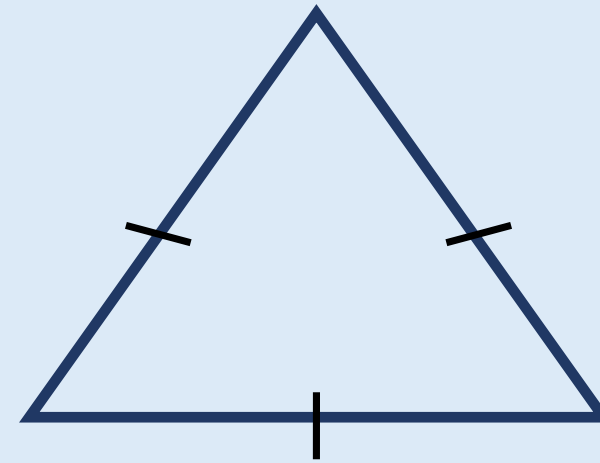
Fig. 14-10: A triangle illustrating angle and side naming format.



**Fig. 14-11: Equilateral triangle: (a) shows equal angles of 60 degrees, and (b) uses a line on the three sides to indicate that they are equal, with corresponding equal angles.**



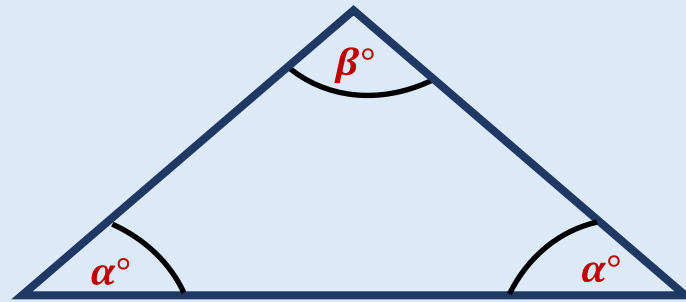
(a)



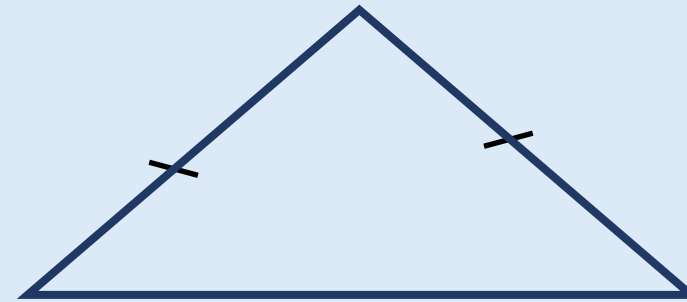
(b)



**Fig. 14-12: Isosceles triangle: (a) shows two equal angles of  $\alpha$ , and (b) uses a line to indicate that sides and their corresponding angles are equal.**



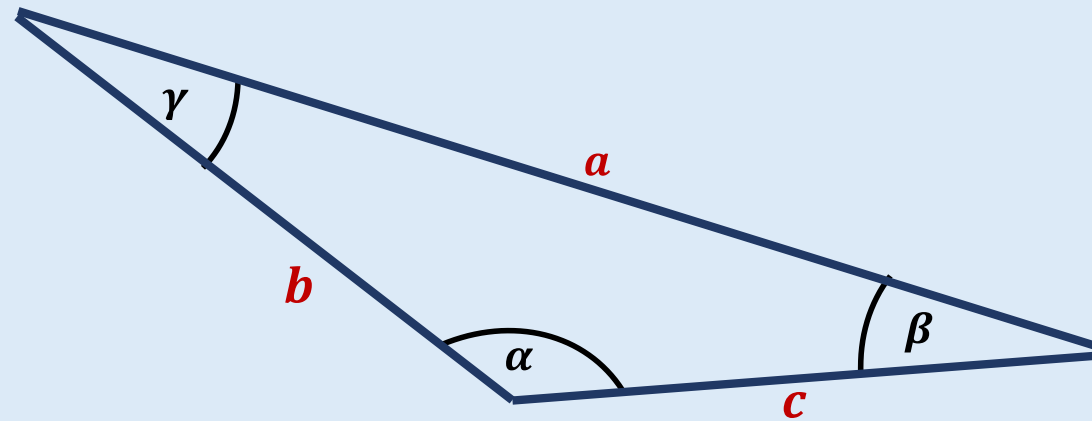
(a)



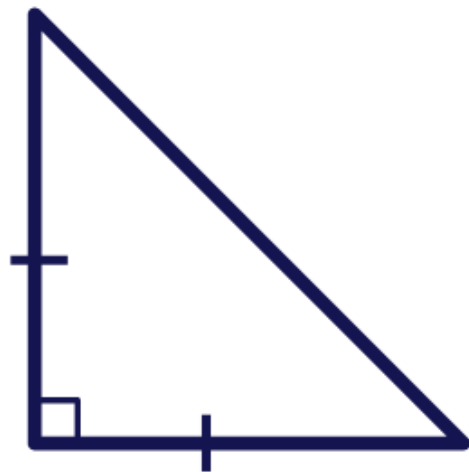
(b)



**Fig. 14-13: Scalene triangle illustrated such that  $\alpha \neq \beta \neq \gamma$  and  $a \neq b \neq c$ .**



**Fig. 14-14: Right-angled triangle: (a) isosceles and (b) scalene.**



(a)



(b)



**Fig. 14-15: Pythagoras' theorem illustrated using a right-angled triangle.**

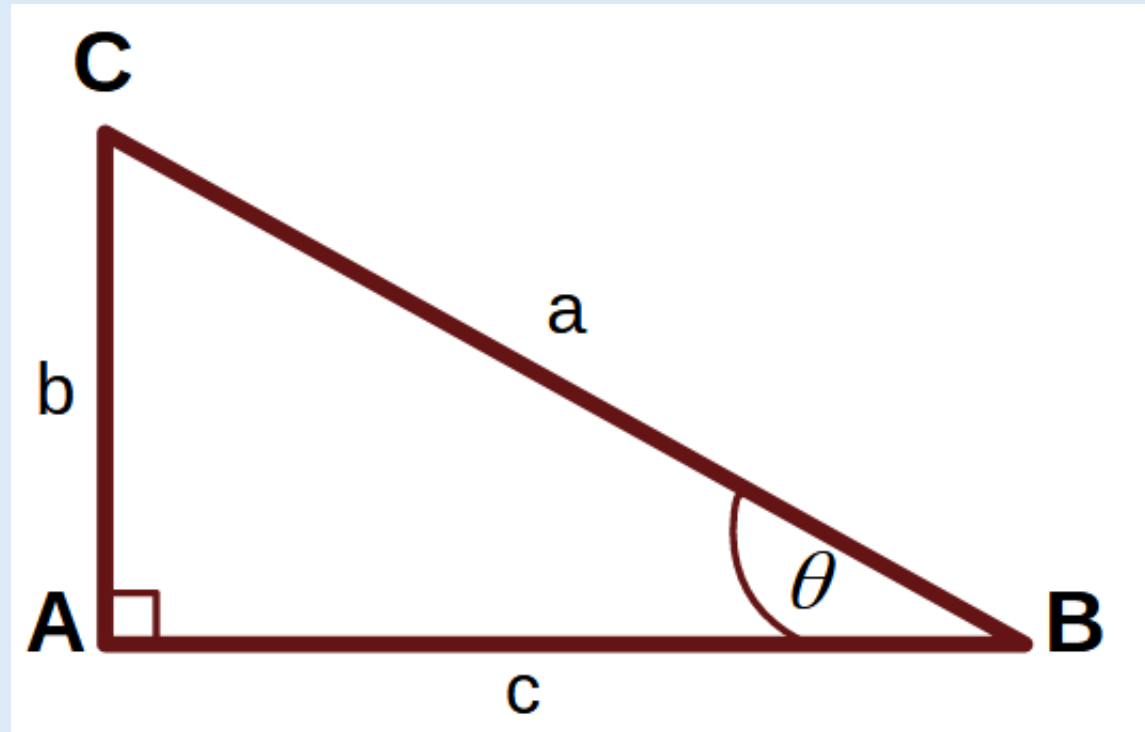




Fig. 14-16: Example 6.

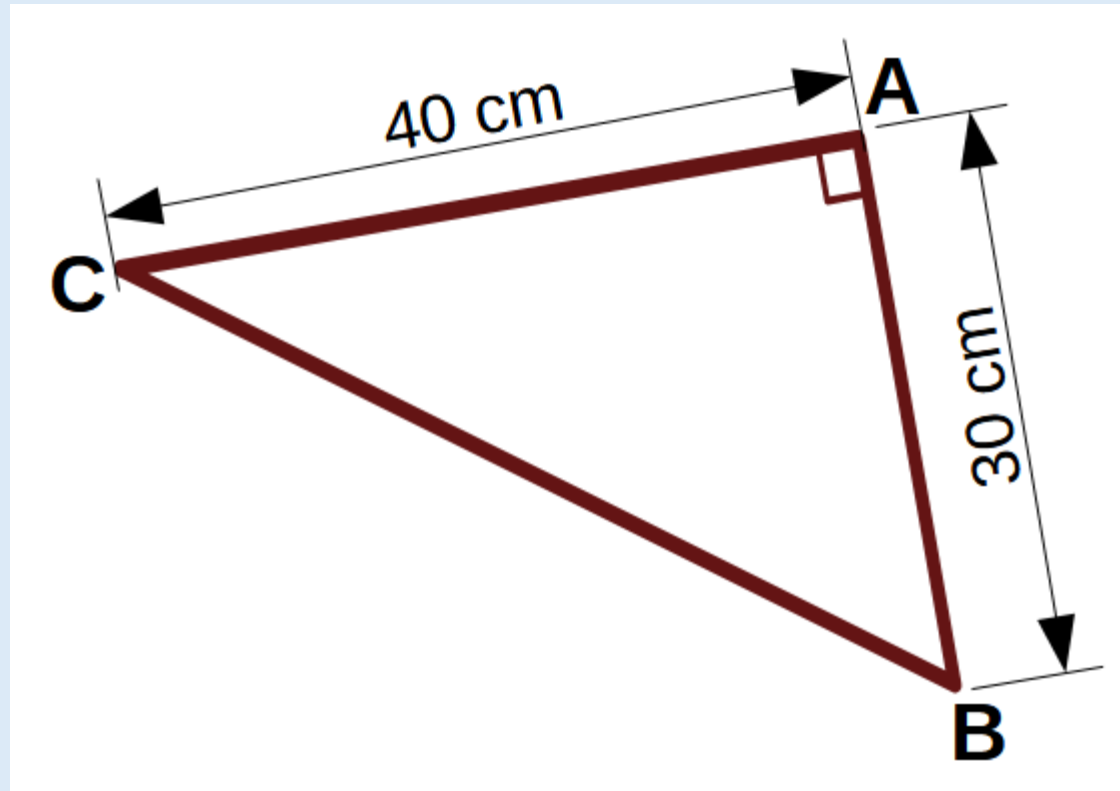


Fig. 14-17: Solution to Example 8 Part I.

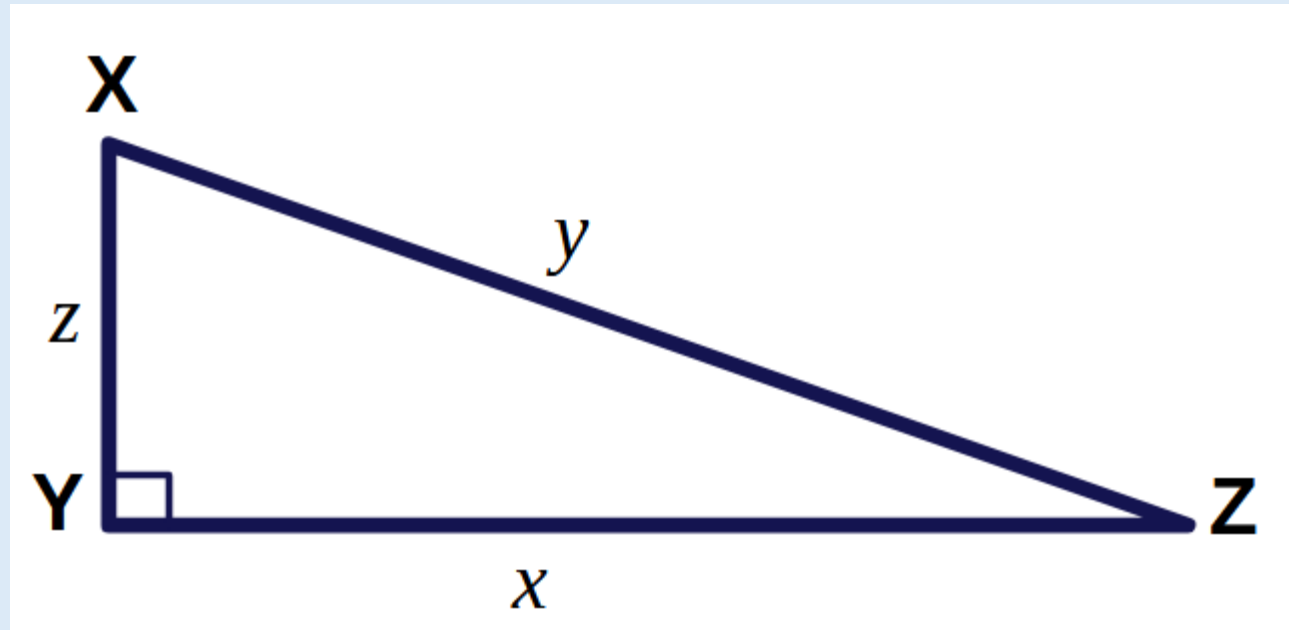
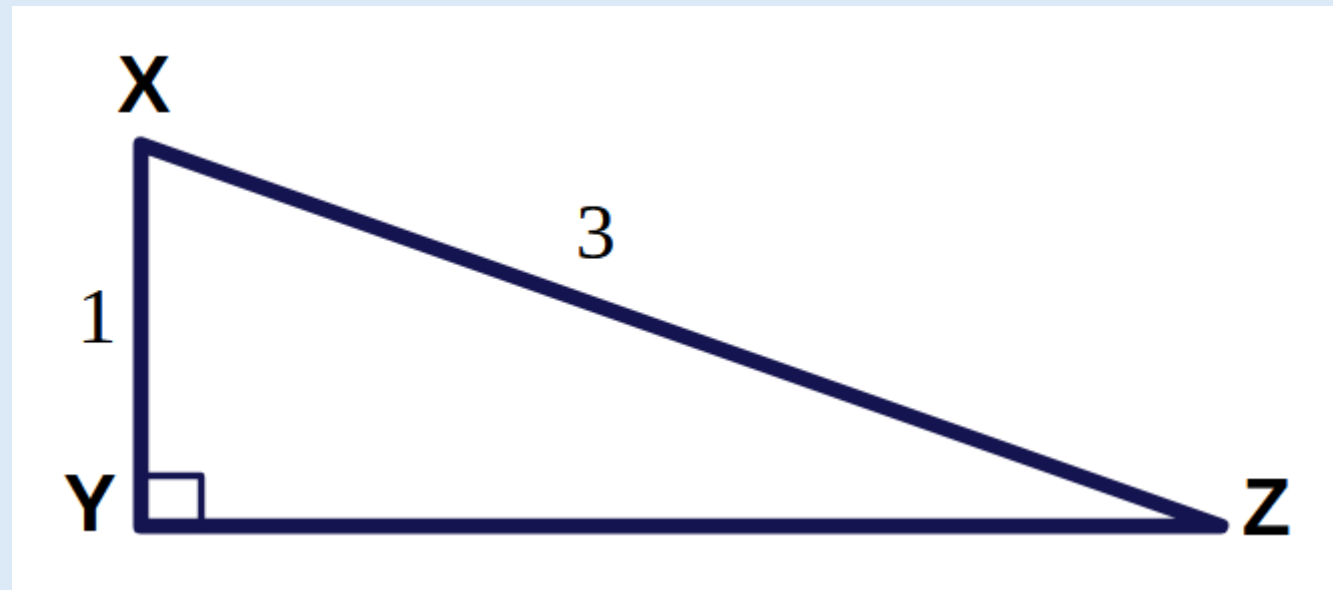
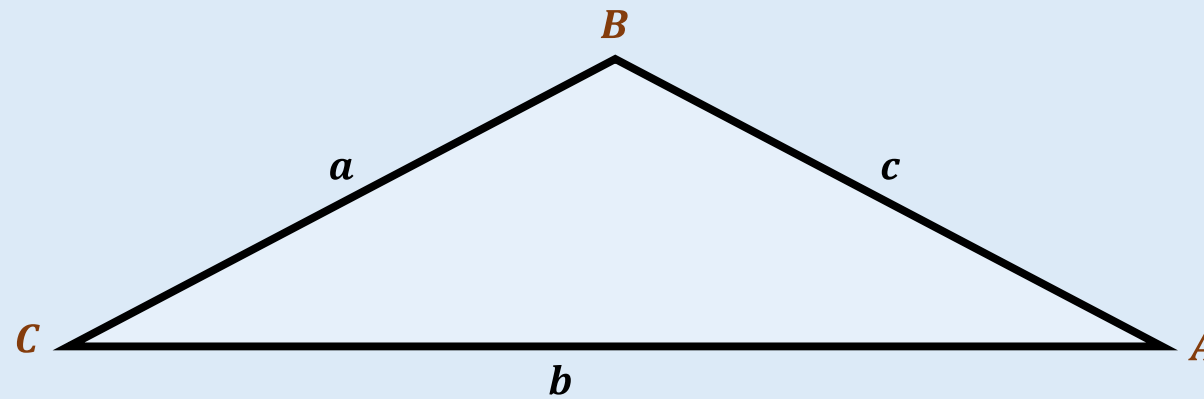


Fig. 14-18: Solution to Example 8 Part II.



**Fig. 14-19: Sine rule illustrated using a non-right-angled triangle ABC.**



**Fig. 14-20: Cases when the sine rule can be used illustrated.**

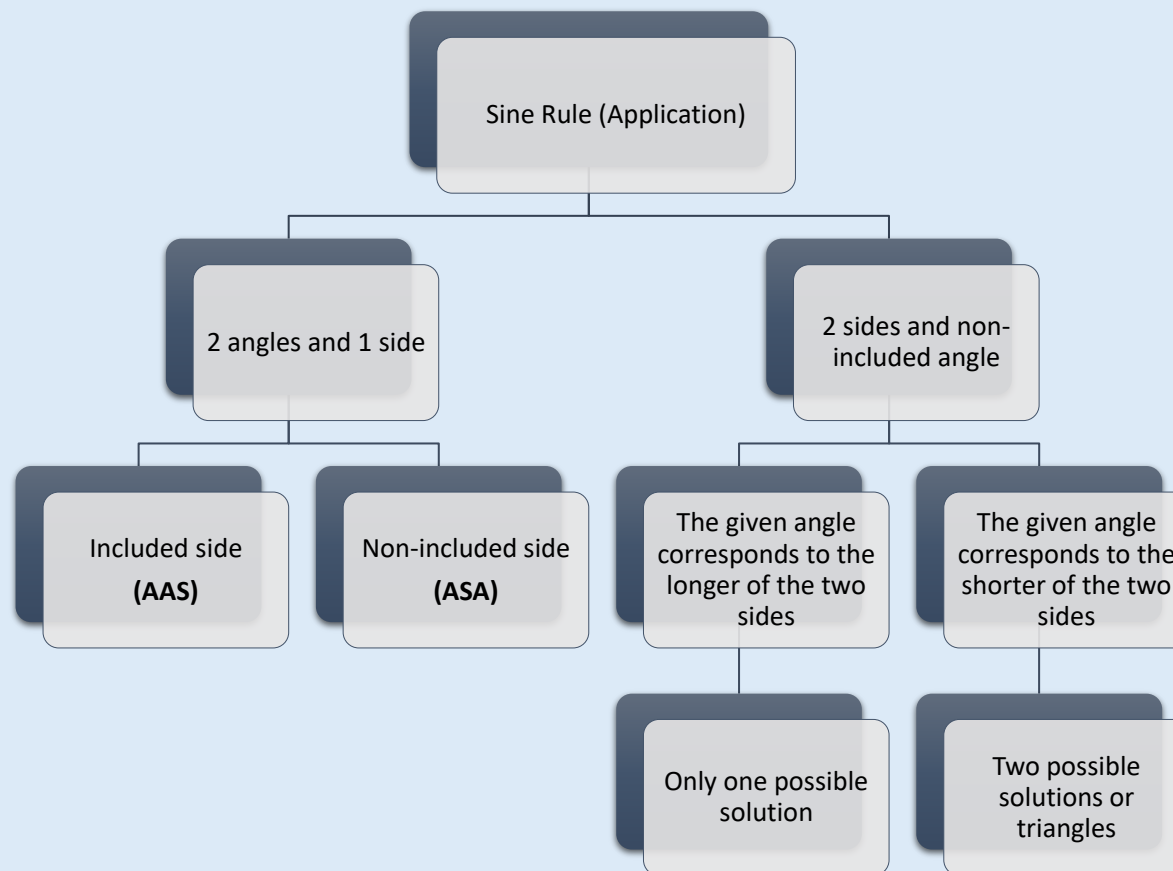


Fig. 14-21: Example 9.

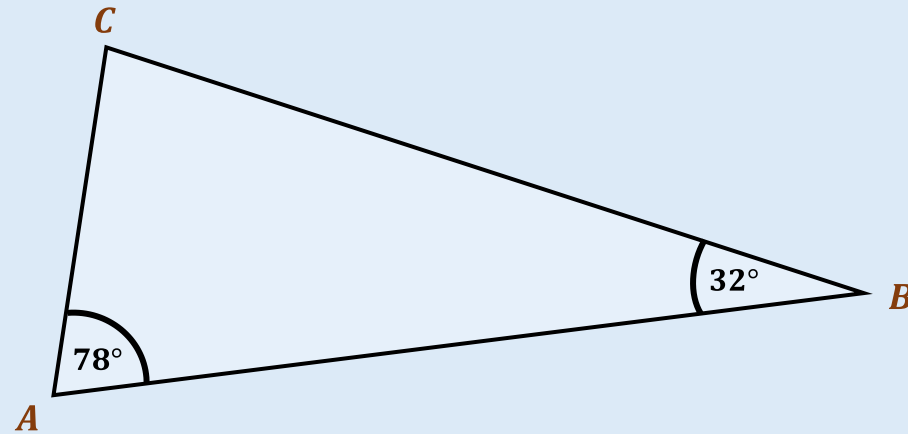


Fig. 14-22: Example 10.

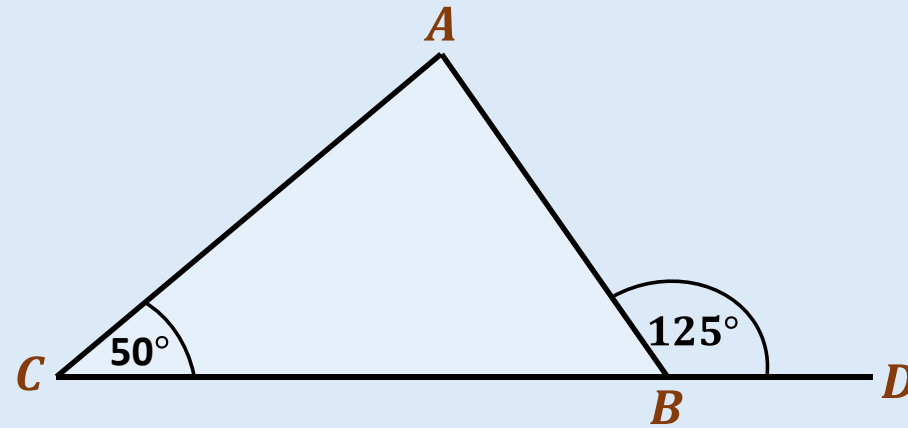


Fig. 14-23: Example 11.

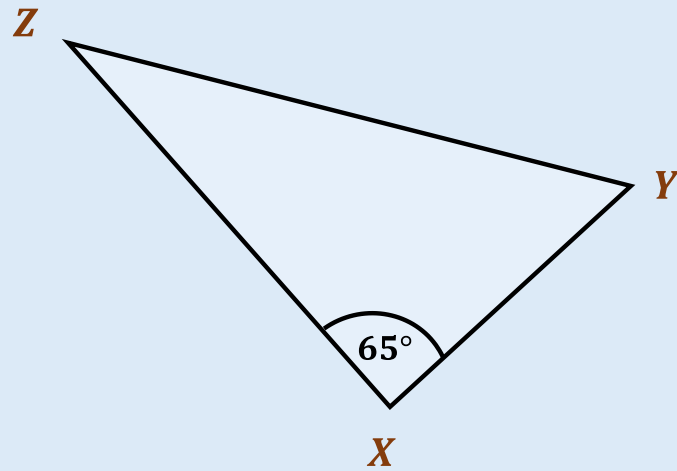




Fig. 14-24: Solution to Example 12 – Part I.

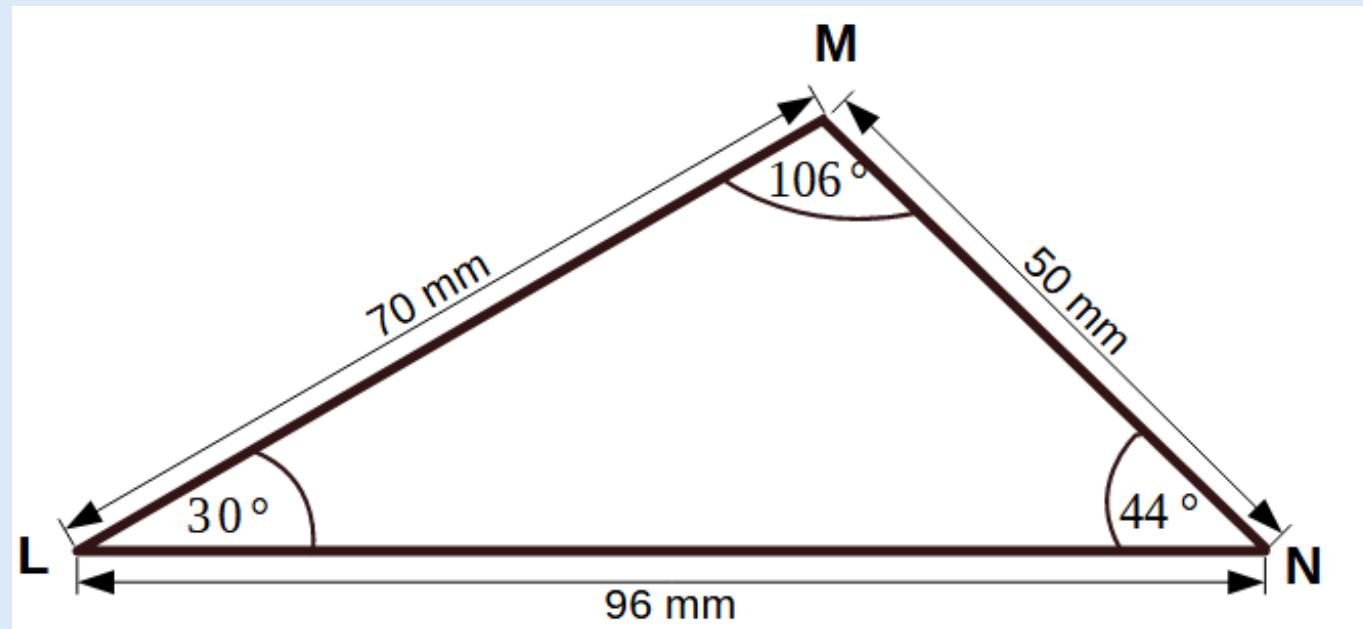


Fig. 14-25: Solution to Example 12 – Part II.

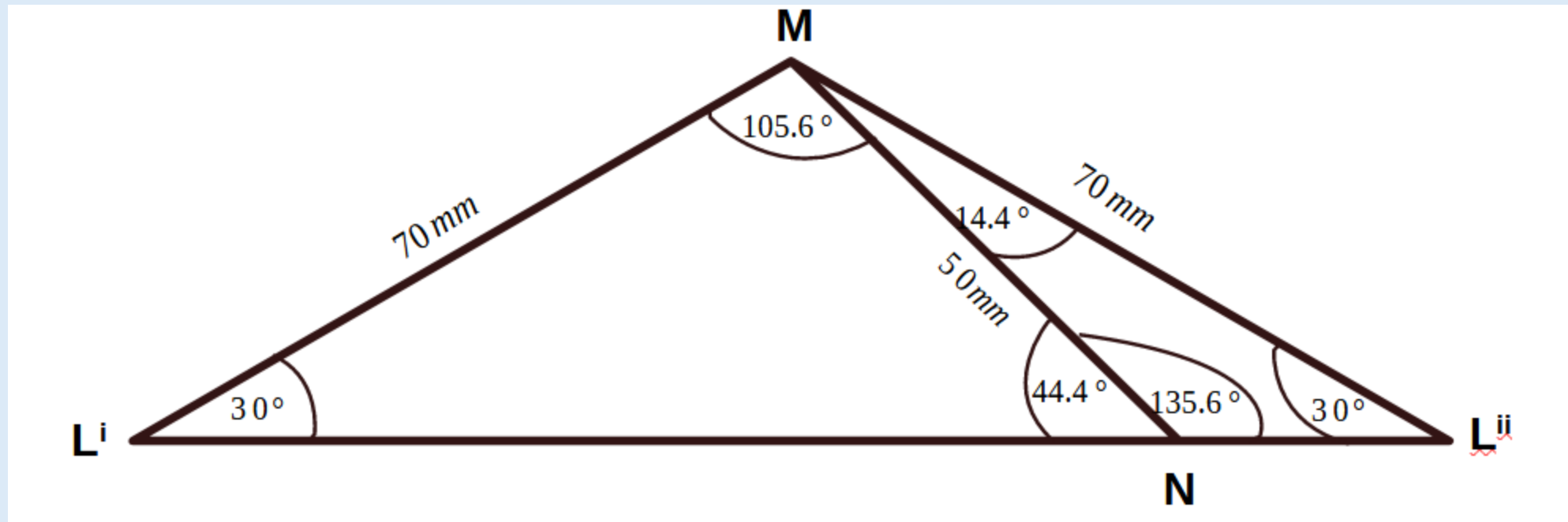


Fig. 14-26: Cosine rule illustrated using a non-right-angled triangle ABC.

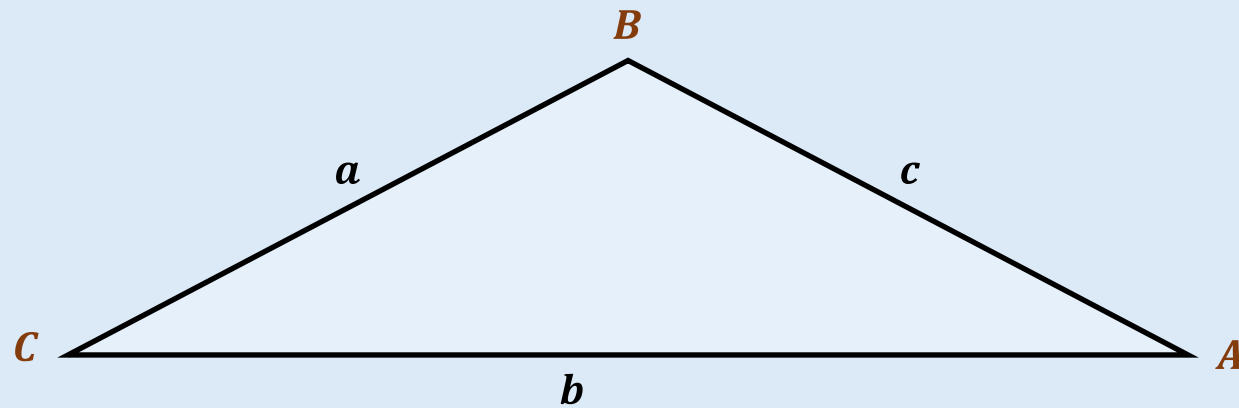


Fig. 14-27: Example 13.

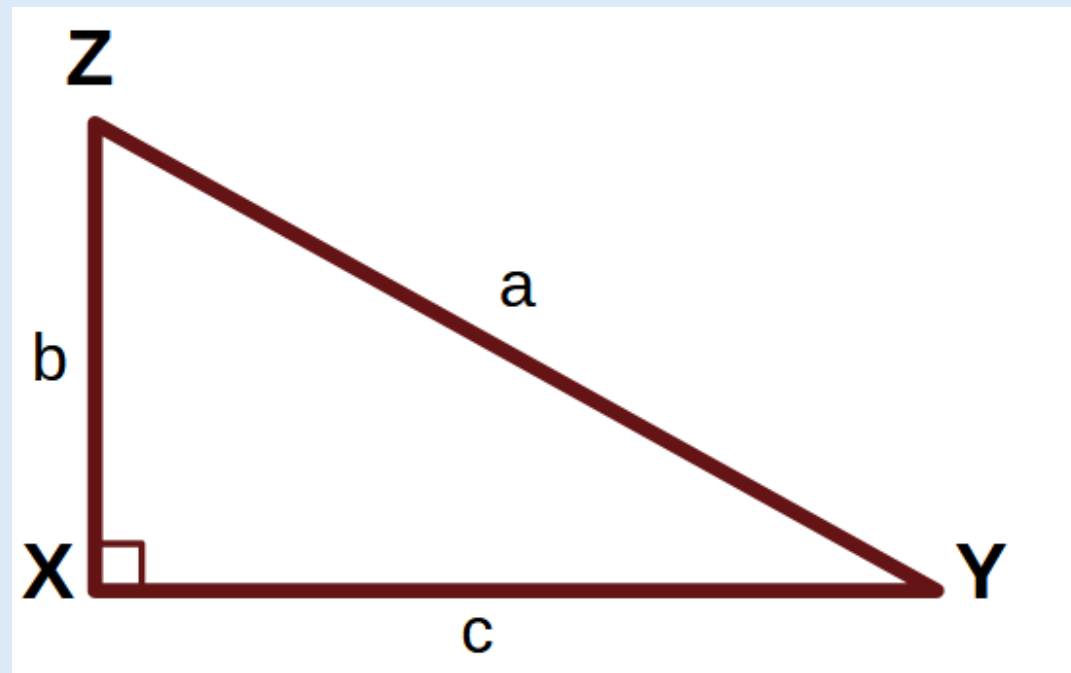


Fig. 14-28: Solution to Example 14.

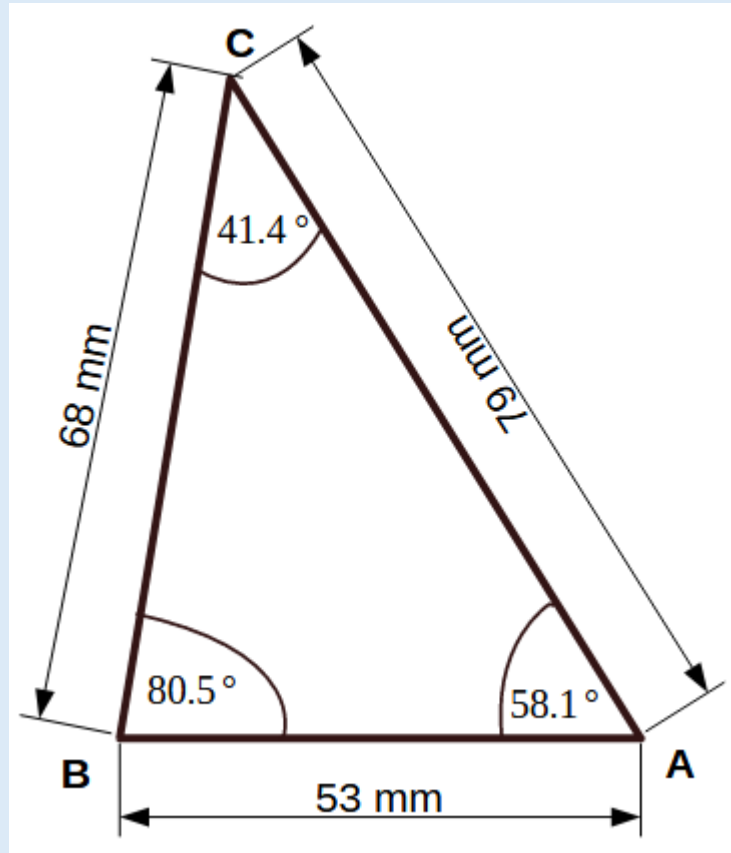
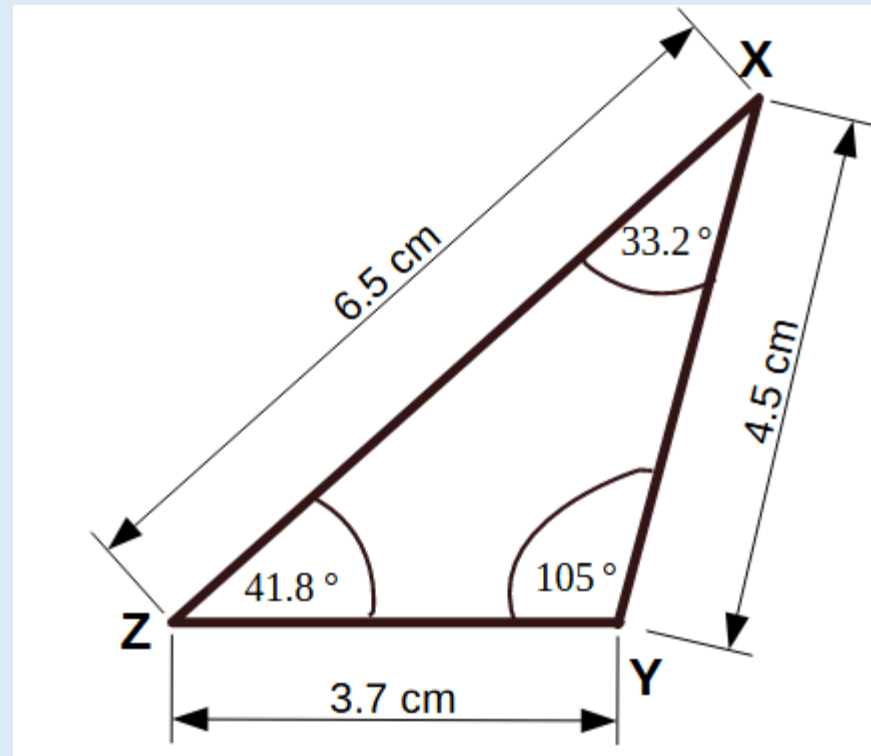
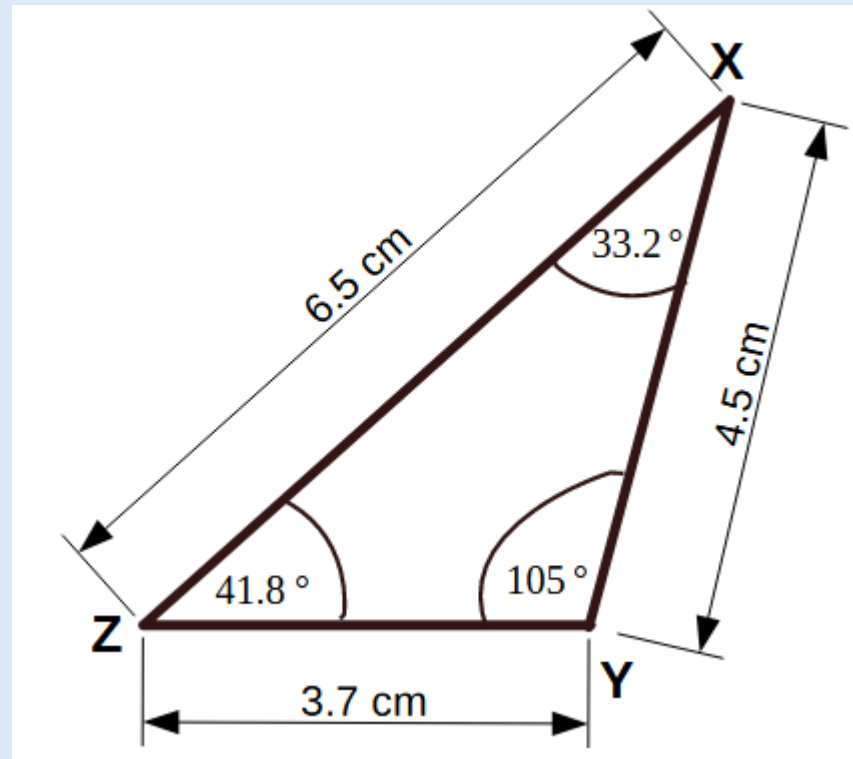


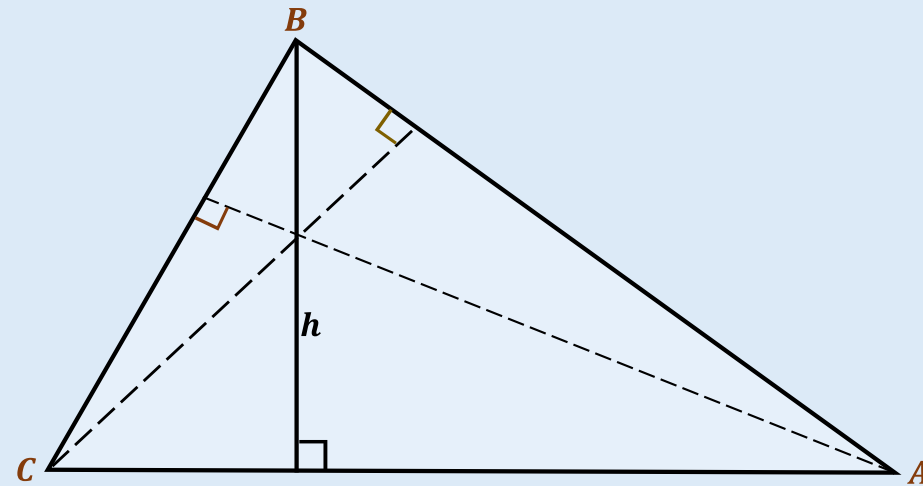
Fig. 14-29: Solution to Example 15 – Part I.



**Fig. 14-30: Solution to Example 15 – Part II.**



**Fig. 14-31: Determining the area of a triangle illustrated.**





**Fig. 14-32: Solution to Example 16.**

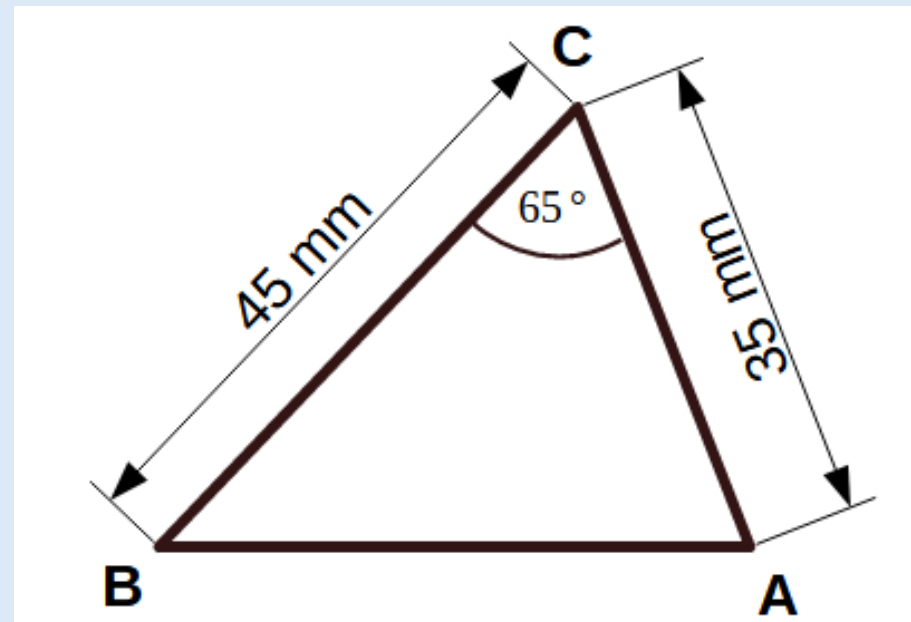


Fig. 14-33: Example 17.

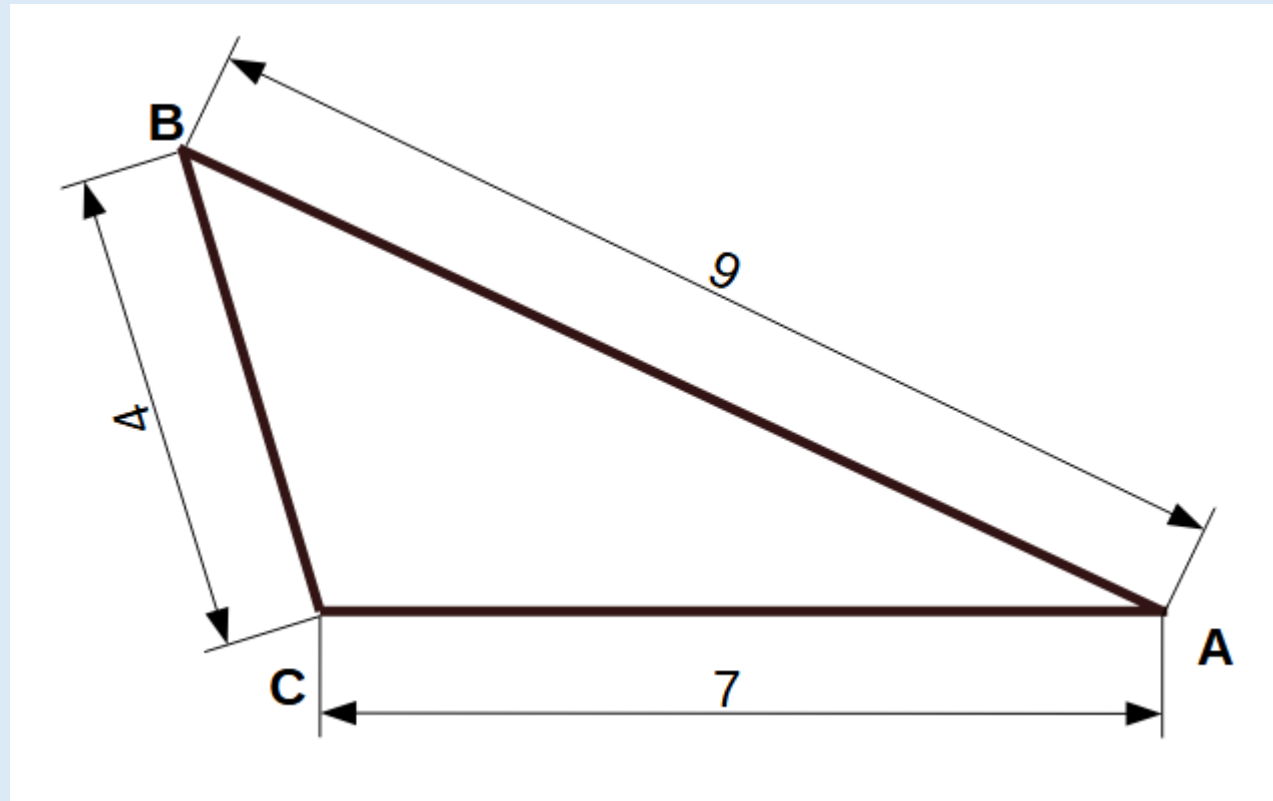
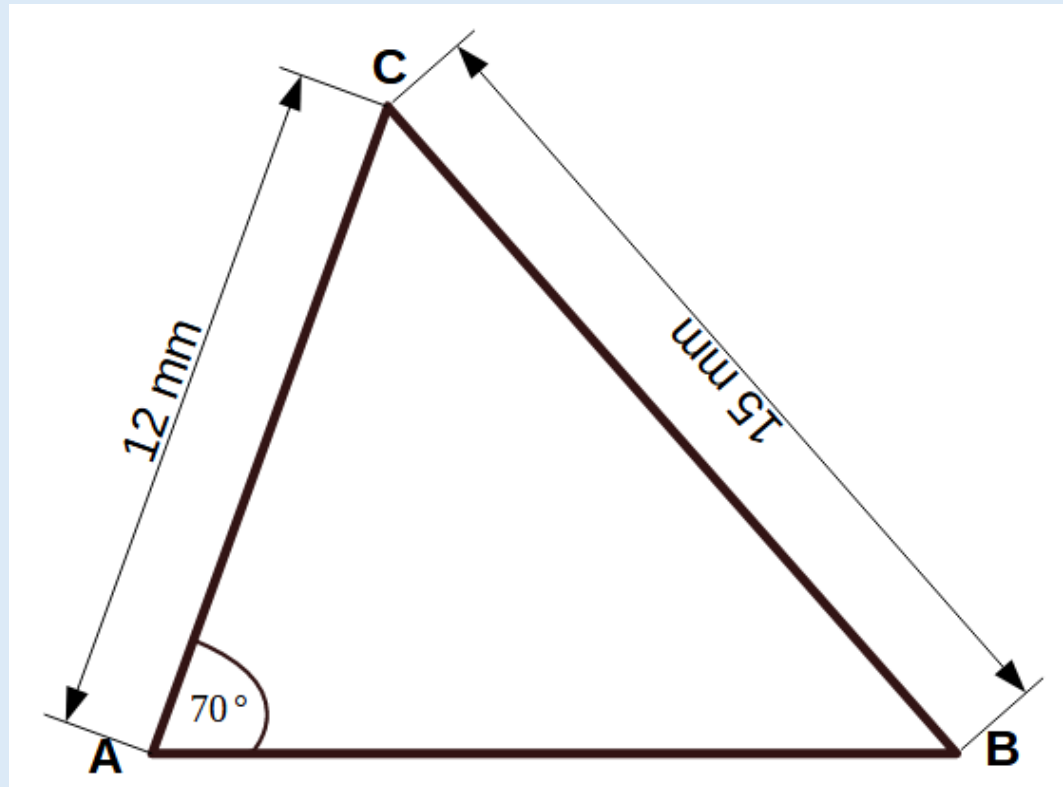
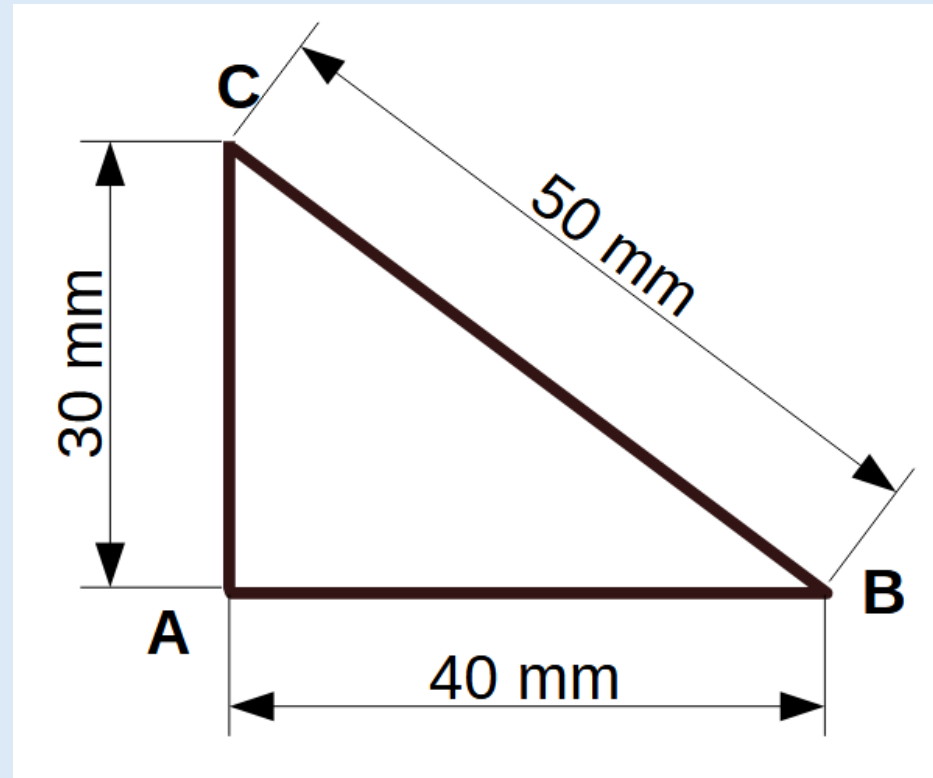


Fig. 14-34: Example 18.



**Fig. 14-35: Solution to Example 20.**



# Thank You

