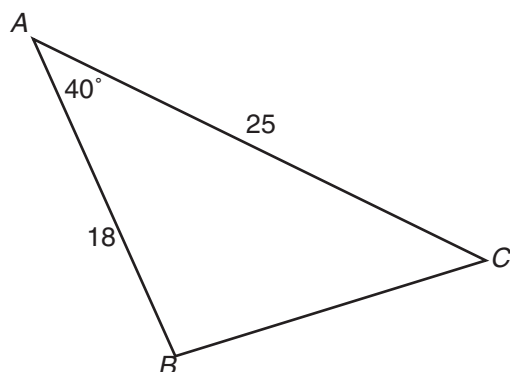# Unit 4: Geometry Lesson 4.5

Coach's Corner – VII

1.   Determine the unknown side and the two unknown angles in the triangle shown.

2.   In *Game On! 4.4*, you devised a strategy to solve for *a* in the triangle shown. In the process, you likely discovered that using the sine law to solve for *a* was fairly involved. Unfortunately, using the cosine law to solve this problem is also challenging.
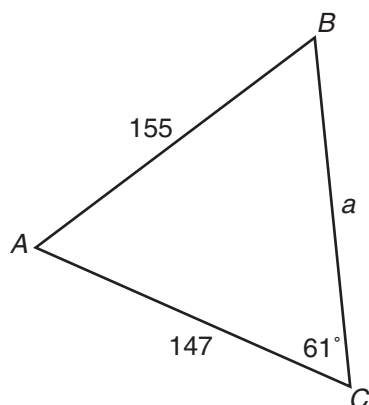
a. Explain why it is difficult to use the cosine law to solve for *a* without determining any further information.

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b. Rashid solved this problem using the cosine law as shown below. Explain the steps in his solution.

Step	Explanation
$c^2 = a^2 + b^2 - 2ab\cos C$	
$155^2 = a^2 + 147^2 - 2a(147)\cos 61°$	
$24025 = a^2 + 21609 - 142.53...a$	
$0 = a^2 - 142.53...a - 2416$	
$a = \dfrac{142.53... \pm \sqrt{(142.53...)^2 - 4(1)(-2416)}}{2(1)}$	
$a = \dfrac{142.53... \pm \sqrt{29979.9...}}{2}$	
$a = \dfrac{142.53... \pm 173.14...}{2}$	
$a \doteq 157.8, \cancel{-15.3}$	
$a \doteq 157.8$	

3. Having two eyes is important for depth perception. One reason is that your eyes need to look more inward when looking at an object nearby than they do for an object far away. One of the clues your brain uses to determine the distance to an object is the convergence angle between the line of sight from each eye.

    a. Janet has a pupillary distance of 60 mm. This means the pupils of her eyes are 60 mm apart. Determine the convergence angles for objects that are 1 m, 2 m, 100 m, and 200 m from her eyes (assume each eye is the same distance from the objects). Start by drawing a diagram for an object that is 1 m away. In this diagram, *A* and *B* represent the eyes and *C* represents the object the eyes converge on.
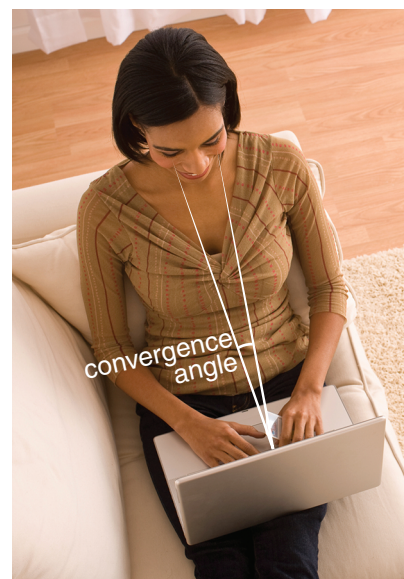

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    b. Based on the information determined in part a, do you expect it to be easier to distinguish the distance between objects 1 m and 2 m away, or between objects 100 m and 200 m away? Explain.

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Please go to the *Equipment Room* to check your solutions before proceeding to *Game On!*, on the next page of this *Workbook*.

After you have assessed your work, reflect on your understanding of the concepts addressed in the *Coach's Corner* exercises in the table provided.

Question Number	Got it!	Almost there…	Need to retry or ask for help.
1			
2			
3			
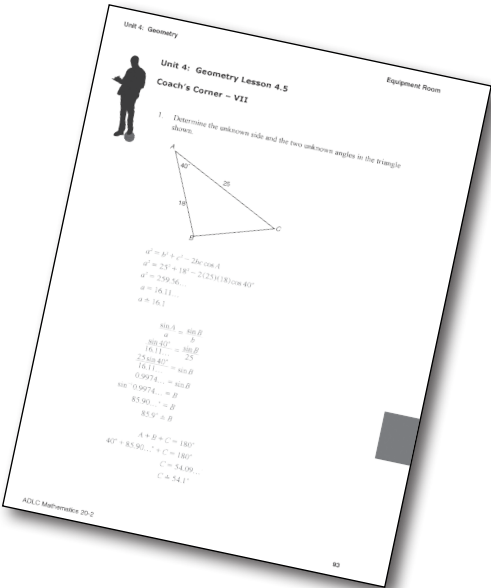
Note: Before you complete *Game On!*, you may review your skills and get more practice by completing the following problems in *Principles of Mathematics 11*.

- Page 150, #1, 4a, 5a, 6a, 6c, 8, 10, 11a, and 12
- Page 162, #6, 7, 9, 12, and 14

Check your work in *Strengthening and Conditioning*.