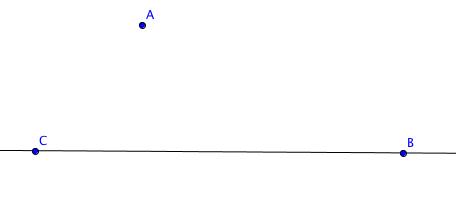
**Activity 2.5.4 Parallel Lines and Corresponding Angles**

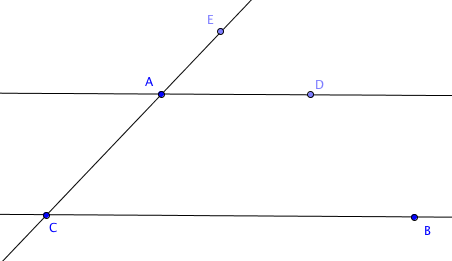
1. Open the file Activity\_2\_5\_4\_file.gbb. You will find with point *A* not on as shown.



1. Use the parallel line tool to draw a line through *A* parallel to .



1. Use the line tool to draw a transversal to the two parallel lines through *A* and *C*.

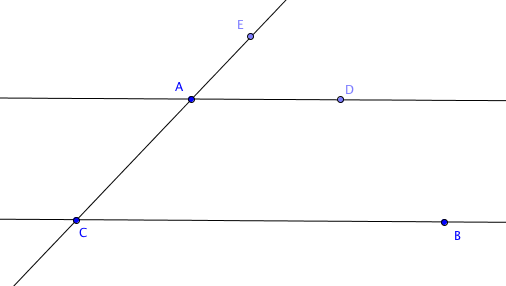


1. Use the point-on-object tool to create point *D* on the line parallel to and point *E* on line .
2. Measure *BCA* and *DAE*. What do you notice?
3. *BCA* and *DAE* are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles.



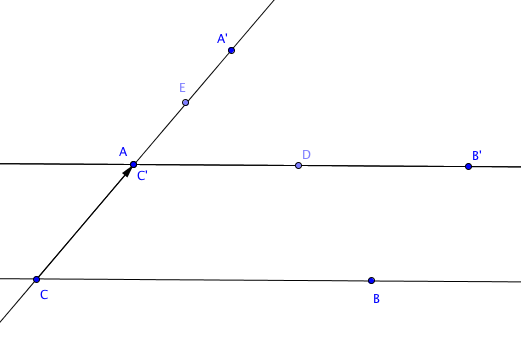
1. Use the translate tool to translate by the vector from *C* to *A*. Follow these steps.
2. First select the line Then select points *C* and *A* (in that order) to create the vector. You should now see the image of highlighted and the vector should appear as an arrow.
3. You will now translate individual points. With the translate tool select point *A* and then the vector. Then select point *B* and the vector. Finally select point *C* and the vector.
4. Describe the positions of points *A’*, *B’,* and *C’.*
5. *B’C’A’* is another name for which angle?
6. How do you know that m*BCA*  *=* m*B’C’A’*?
7. Study this proof of the Parallel Lines Corresponding Angles Theorem and discuss it with your classmates.

**Parallel Lines Corresponding Angles Theorem**

If two parallel lines are cut by a transversal, then pairs of corresponding angles are congruent.

Given:.

Prove:

Proof:

Translate by the vector from *C* to *A*.

Then *C*’ coincides with *A* and *A*’ lies on ,

by special property (a) of translation: the line containing the translation vector and any line parallel to the vector is mapped onto itself.

Also by special property (b) of translation: a line not containing the translation vector is mapped onto a line parallel to itself.

By the Parallel Postulate there is exactly one line through *A* that is parallel to . Therefore and coincide. This means that coincides with so they are names for the same angle. Because is the image of under an isometry, . Therefore

12. Why is the Parallel Postulate needed to complete this proof?