(A) Lesson Context

BIG PICTURE of this UNIT:	• mastery with algebraic skills to be used in our work with co-ordinate geometry (midpoint, length, slope) • understanding various geometric properties of quadrilaterals & triangles • how do you really prove that something is "true"?		
CONTEXT of this LESSON:	Where we've been You know how to find a midpoint, a length & slope and how to work with Geogebra	Where we are Using length, slope & midpoint in verifying properties of geometric figures - triangles	Where we are heading How can I prove various geometric properties of quadrilaterals and triangles?

(B) Lesson Objectives:

    a. Use dynamic geometry programs (geogebra) to verifying properties of triangles
    b. Use dynamic geometry programs (geogebra) as a tool to decide on what needs to be proven and how to then plan an algebraic approach to verify the property in question
    c. Use algebraic methods to verifying properties of triangles

(C) Teacher Led Example ➜ How to Organize & Present a "Proof"

Show that any mid-segment constructed from any two sides of the triangle with vertices at P(-7,9), Q(9,11), and S(1,-11) is parallel to the third side.

      Key Steps to be demonstrated:

1. Set up the diagram on Geogebra
2. Research unknown concepts (what is a midsegment?)
3. Use Geogebra to generate "relevant information"
4. We will use this "relevant info" to help us to "show" what we are required to show
5. Organize & present an solution
6. Present complete solution to class via poster & presentation &video

Using the same triangle with vertices at P(-7,9), Q(9,11), and S(1,-11), use algebraic methods to determine its area

      Key Steps to be demonstrated:

1. Set up the diagram on Geogebra
2. Research unknown concepts (what is a midsegment?)
3. Use Geogebra to generate "relevant information"
4. We will use this "relevant info" to help us to "show" what we are required to show
5. Organize & present an solution
6. Present complete solution to class via poster & presentation &video

Ex for DAY 1/2: Teacher Guided Example ➔ How to Organize & Present a "Proof"

Given the circle defined by $x^2 + y^2 = 125$,
  (a) Show that A(10,5) and B(-11,2) are on the circle
  (b) Show that the perpendicular bisector of CHORD AB goes through the center of the circle.

  Key Steps to be demonstrated:

7. Set up the diagram on Geogebra

8. Research unknown concepts (what is a CHORD?)

9. Use Geogebra to generate "relevant information"

10. We will use this "relevant info" to help us to "show" what we are required to show

11. Organize & present an solution

12. Present complete solution to class via poster & presentation &video

(D) Ex for DAY 2/3: Teacher Guided Example ➔ How to Organize & Present a "Proof"

Q1: Show that the diagonals of the quadrilateral with vertices at A(-6,4), B(-2,6), C(1,0) and D(-3,-2) are equal in length.
Q6: Make a conjecture about the type of quadrilateral. Use analytical geometry to explain why your conjecture is either true or false.

  Key Steps to be demonstrated:

1. Set up the diagram on Geogebra

2. Research unknown concepts (what is a diagonal?)

3. Use Geogebra to generate "relevant information"

4. We will use this "relevant info" to help us to "show" what we are required to show

5. Organize & present an algebraic solution

6. Present complete solution to class via poster & presentation &video

(E) Student Practice

Complete Q3,8 from Nelson 10 Chap 2.5 – Verifying Properties of Geometric Figures, p109-110, or any question from the HW from Nelson 10, Chap 2.4 (Q4,6,7,8,9)

Challenge: Start with a circle and draw any diameter & label the diameter end points as A & B. Then place a point anywhere else on the circle and call it point C. Construct triangle ABC and prove that this is a right triangle.