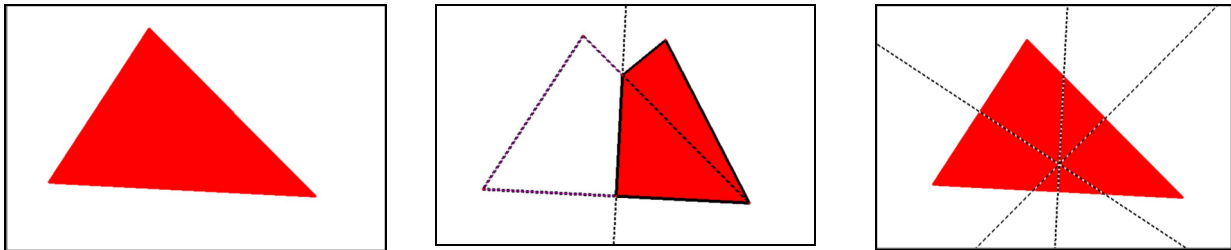TI-*nspire*™

Mediators of a triangle
Student Notes

Introduction

Start by drawing a triangle on a piece of reasonably transparent paper (e.g. tracing paper).
Fold each *side* of the triangle exactly in half (corner to corner) and crease along the fold.   Open
the triangle out again and repeat for the other two sides.

Questions:
- Where do the folds meet? (Inside or outside the triangle?)
- Do the folds meet at a single point? Does this always happen?
- What happens with particular types of triangles or angles?
- Investigate further.
- How could TI-Nspire help with this investigation?

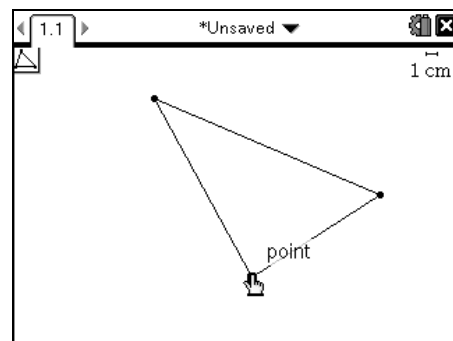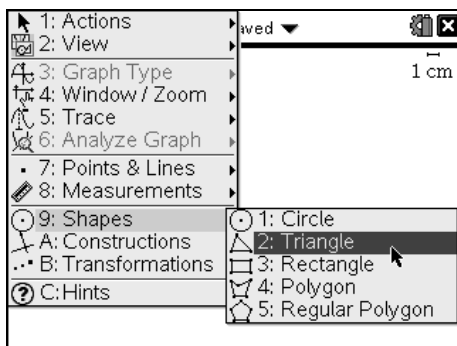The instructions below show you how to construct a TI-Nspire file yourself.

Construction notes

Step 1 Triangle

Press ⟨🏠on⟩⟨1⟩⟨3⟩ to open a new document with a Geometry page.
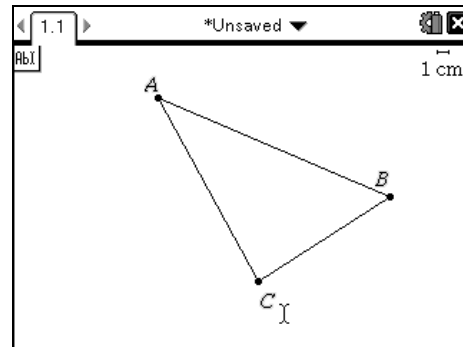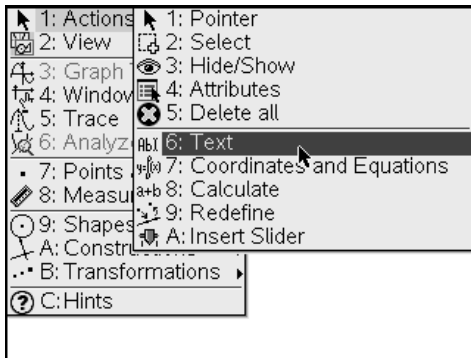Press ⟨menu⟩ and select 9: Shapes and then 2: Triangle.
Fix one point then drag to a second point, select and repeat for the third point.
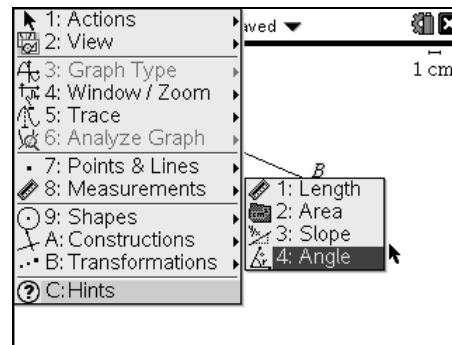
Step 2: Labels

Press (menu). Select 1: Actions and then 6: Text.
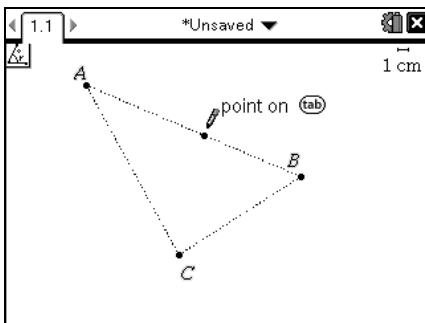Move to each vertex of the triangle in turn. Select the point and label the vertices A, B and C.

Step 3: Angles

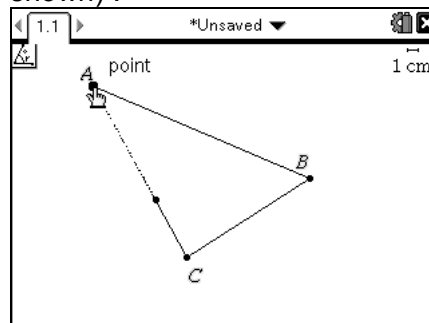Press (menu). Select 8: Measurements.
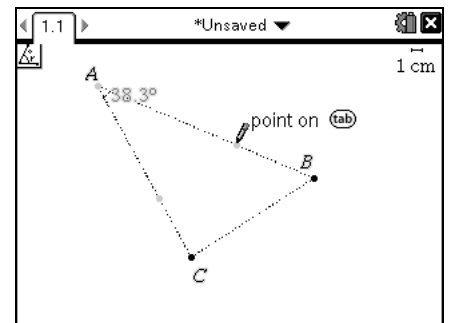Select 4: Angle.

At each vertex A, B, C

First put a *point on* one of the sides that encloses the angle.

Then move to and select the vertex (*point A* in the example shown) .

Then put a *point on* the other side that encloses the vertex.

Repeat for all three vertices.

Once the size of the angles are shown, you can hide the points marked on each side by pressing (menu) and choosing 1: Actions and 3: Hide/Show' and selecting each point in turn.

Step 4: Constructing the fold lines
Press (menu) and select A: Constructions.
Which of the constructions on this menu do will produce the same lines as your fold lines?
Which will produce lines like these if you move to and select each side of the triangle in turn?
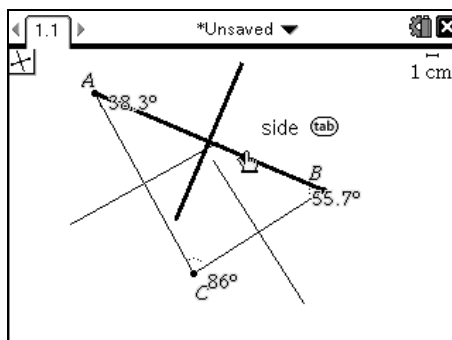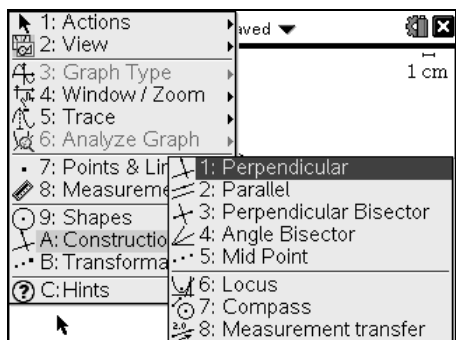
Step 5: Investigation and notes:
Now that you have constructed the triangle, angles and mediators you can continue your investigation of the questions at the start of these notes by dragging the vertices A, B or C.
You could insert a Notes page to write about your findings by pressing (ctrl) (doc▾) (6): 'Notes'.

Extension questions:
- What happens if you construct the circle whose centre is at the point where the mediators meet and which goes through one vertex of the triangle?
- Does it always go through the other vertices?
- Does this circle help to explain any of the observations that you made earlier?
- Can you explain your findings and your reasoning to someone else?
  You could also use a Notes page to explain your findings?