

CREATING AN ANIMATION IN GEOMETRY:

Animated drawings can be created in the Geometry application, which can be very useful for illustrating some common geometrical properties.

e.g. Exterior angle property of a triangle

Tap Geometry in Application menu screen. If there is old work on the screen, tap File, New, OK

(A blank screen with no grid or axes is often best for this. If you do not get a blank screen – i.e. no grid - tap View and untick Integer Grid – see Fig 1 below)

Choose the line drawing tool (Fig 2), draw lines AB, AC and BD as shown in Fig 3 below.

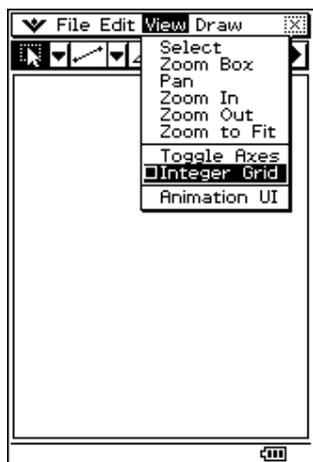


Fig 1

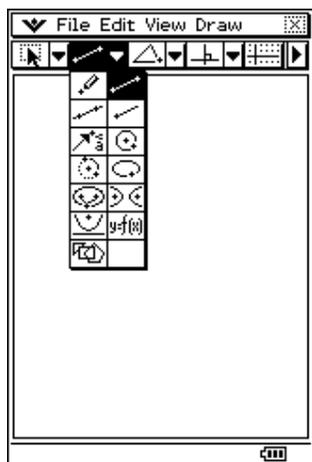


Fig 2

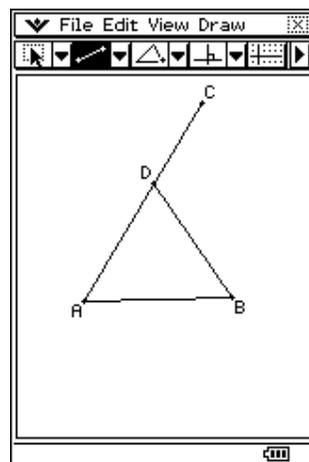


Fig 3

Choose the selection tool  in the toolbar, tap line AC and line AB to select them, then tap Draw in the toolbar, and choose Attached Angle (Fig 4). An angle arc and measure will be added to the angle BAC (Fig 5).

Then tap in blank space to unselect the angle symbol. Tap line AB and line DB and attach the angle measure as described before for angle ABD (Fig 6). Repeat process for line AC and line DB to attach angle measure to the angle at D (Fig 7).

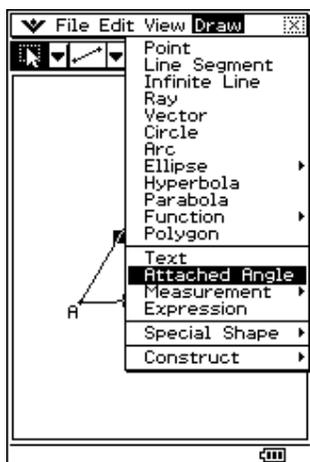


Fig 4

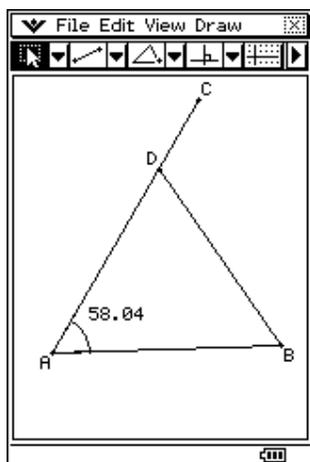


Fig 5

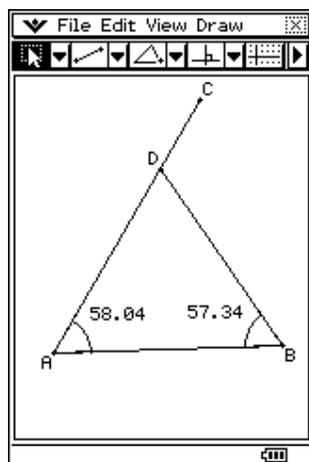


Fig 6

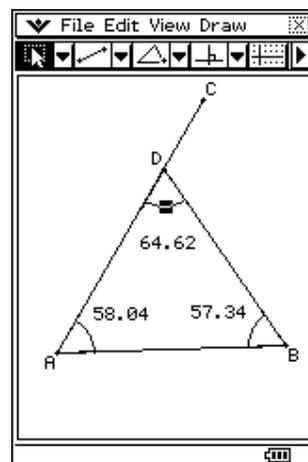
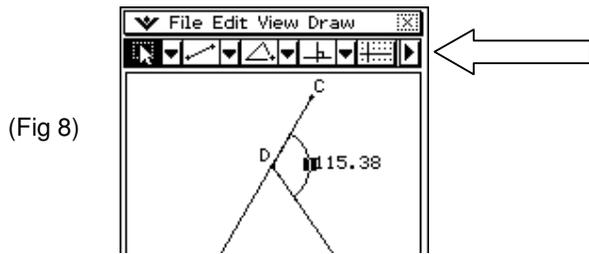


Fig 7

PTO

If the angle at D appears as the interior angle, (instead of the exterior angle that we want to show), tap on the interior angle to select it (a black square will appear), then drag and drop it into the exterior angle region. It will convert to the exterior angle. (See Fig 8)



We now want to add an expression to the display that will illustrate the relationship we want to demonstrate between the exterior angle and the two interior opposite angles.

i.e $\angle A + \angle B = \text{ext. } \angle D$

Tap the right arrow button at the right-hand end of the toolbar (next to big arrow in Fig 8 above) to access the measurement toolbar.

Tap Draw in the toolbar, choose Expression and little numbers will be added to the marked angles (See Fig 9 below). Tap the little 1, +, little 2, EXE. (this will make little 4 EXPR = the total of the angles 1 and 2) See Fig 10.

To replace EXPR= with $A + B = D=$, highlight EXPR=, tap the big A tool (see Fig 11 below),

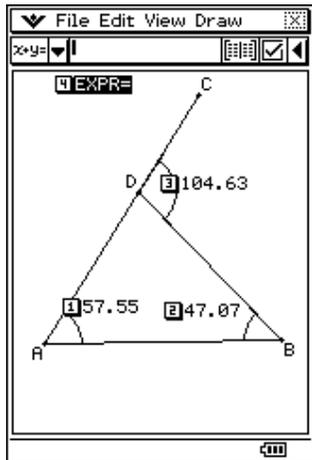


Fig 9

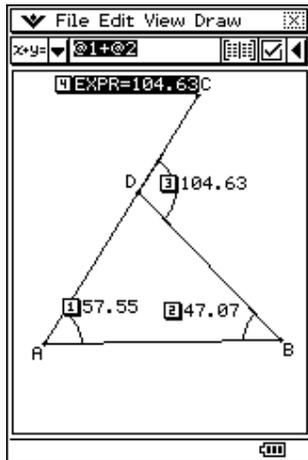


Fig 10

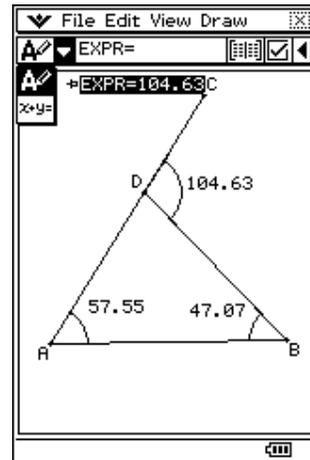
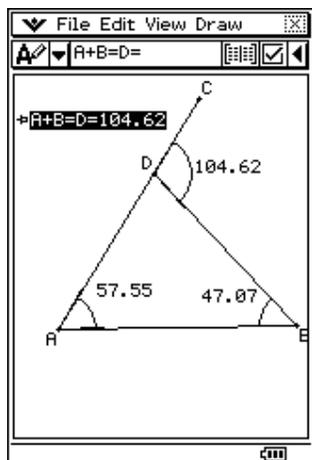


Fig 11

turn on keyboard, (EXPR= will be highlighted), tap $A+B=D=$ (from abc tab), EXE. (See Fig 12)



(Fig 12)

When the little drawing pin is showing (i.e. the expression is selected), the expression can be dragged and dropped anywhere in the screen

We now want the point D to move along line AC so the two interior angles and the exterior angle change in value.

To add this animation, tap on point D to select it and line AC to select it (make sure you had nothing else selected by tapping in blank space before selecting the items) See Fig 13.

Tap Edit in the toolbar and choose Animate, then Add Animation (Figs 14 and 15).

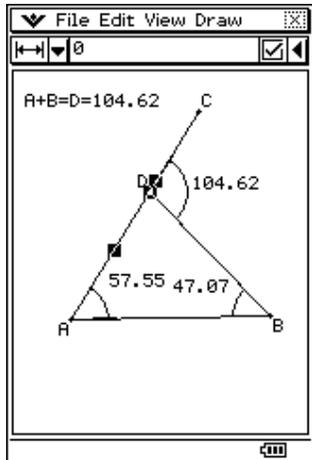


Fig 13

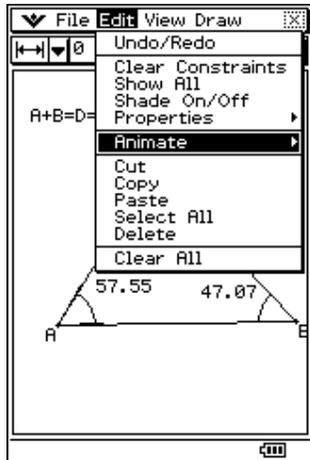


Fig 14

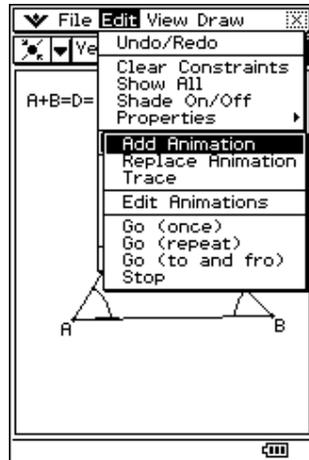


Fig 15

Then tap Edit, Animate, Go (to and fro) (Fig 16) and then the animation will start (Fig 17). You have 3 choices of how you can make the animation behave. You will observe the angles changing in value and, as this happens, the expression $A + B = D =$ changes also.

When you need to stop the animation, tap Edit, Animate, Stop (Fig 18) or tap ESC in the bottom right corner of the icon panel.

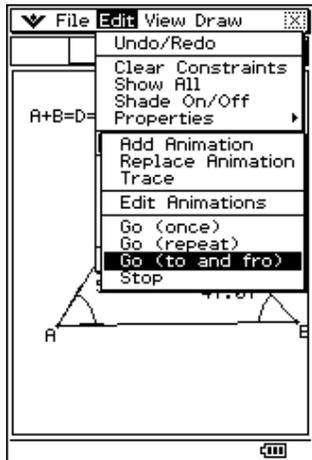


Fig 16

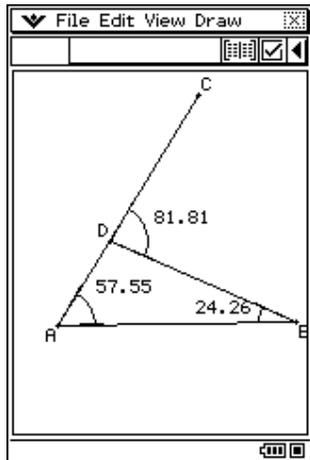


Fig 17

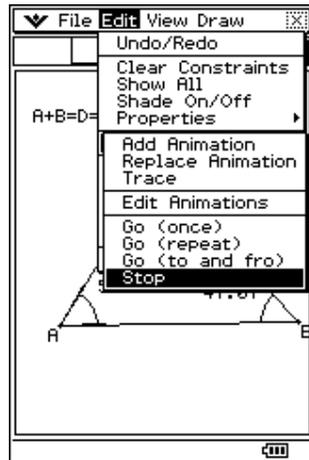


Fig 18

PTO

A drop down menu to control all of the animation features mentioned above is also available.

Tap View, Animation UI (Fig 19). The icon in Fig 20 will appear. Tap this and a drop down menu of commands will appear (Fig 21)

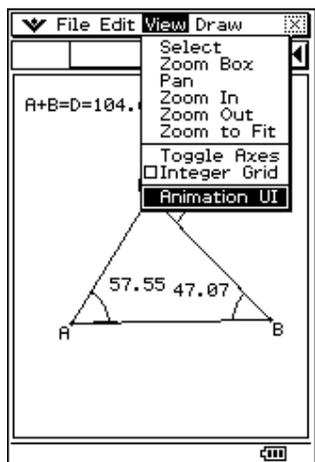


Fig 19

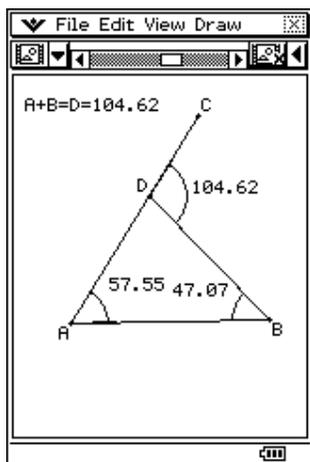


Fig 20

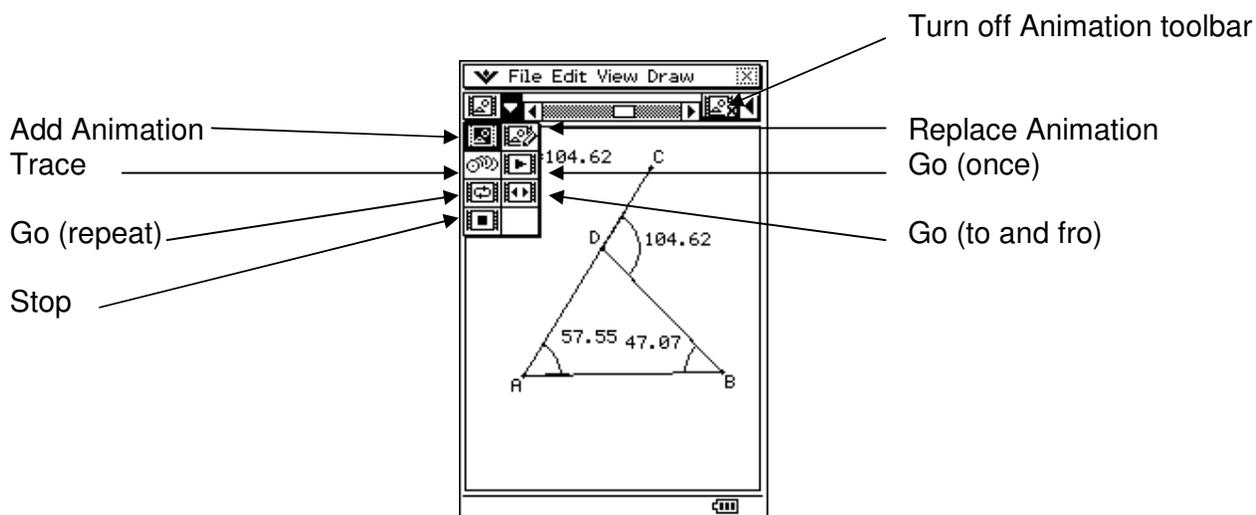


Fig 21

Animations like the one shown can be created to investigate lots of things such as

- Angle properties in circles
- Angles in polygons
- Angles between parallel lines
- Areas of polygons