the original field, rather than having a field of its own on the Pop-up. This feature is usually used for more complex expressions.

Let's look at how you might use *AccuDraw's Pop-up Calculator* in everyday drawing tasks. In this exercise we will use *AccuDraw* and the *Pop-up Calculator* to draw a line within a block that is half as long as the block, and centered within it.

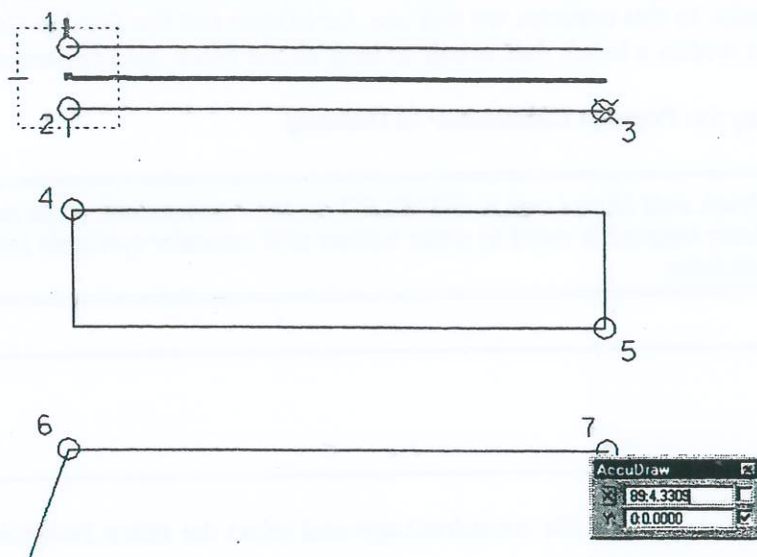➤ Utilizing the ***Pop-up Calculator*** in Drawing

Ask the students to check that Num Lock is ENABLED on their computers. This exercise works best if the numeric keypad is used to enter values and operator symbols into the AccuDraw Popup Calculator.

Notes:

1   Open the design file *accudrw2.dgn* and select the *Place SmartLine* tool.

2   Set the *line style* to **7**.

3   Snap to the endpoint at number ***1***.

4   Strike the *O* key to activate the *AccuDraw* shortcut *Set Origin*.

5   Snap to the endpoint at location ***2***.

6   Strike the **</>** key and then type the number ***2***. You will see that the starting point for the new line is now at the midpoint between ***1*** and ***2*** or simply put the tentative distance has been divided by 2.

7   Accept the start of the line with a data point.

8 Move the pointer toward the number *3* and hit *<Enter>* to activate *AccuDraw's Smart Lock* shortcut. This will lock the line along one of the major *AccuDraw* axes.

9 Since the axis is locked and all lines are parallel, you can snap to point *3* and accept with a data point then reset to end the command.
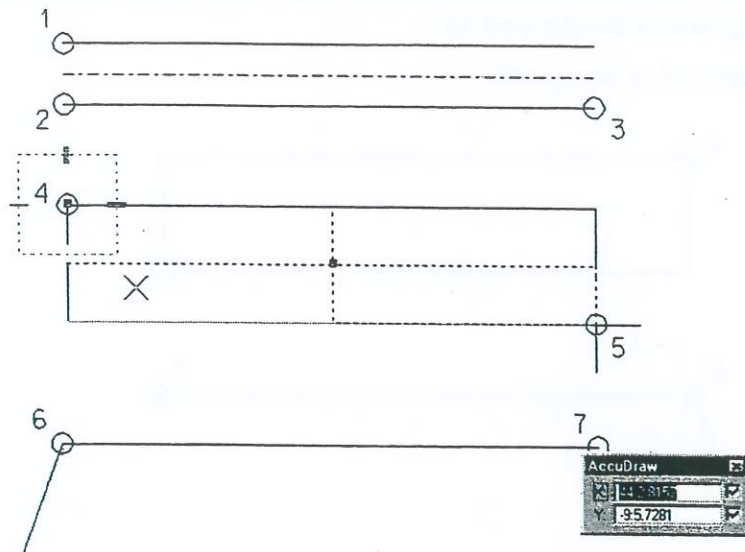
You have just bisected a road with a centerline without using construction lines to find the center.

Let's try finding the middle of a rectangle. We can assume it is a property boundary and that we want to find its center as a reference point to build from.

1 Set the *Line Weight* to **7**.

2 Select the *Place Point* command.

3 Snap to point *4* on the rectangle and type *<O>* to activate the *AccuDraw* shortcut *Set Origin*.

4 Snap to point *5*

5 Key *</>*, type the number *<2>* and hit *<Enter>*.

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6 Key `</>`, type the number `<2>` and hit `<Enter>` again.
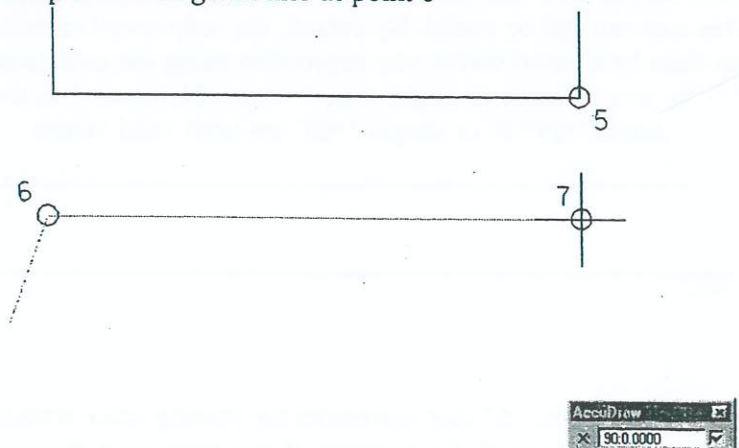

7 Accept the new point with a data point.

Once you perform a calculation on a particular field and accept it with *<Enter>*, *AccuDraw* automatically goes to the next field and awaits a command. This is why you did not need to move the pointer in the last three steps to locate the correct placement for the point.

In this last exercise we are showing a parking lot division and we want to make nine spaces.
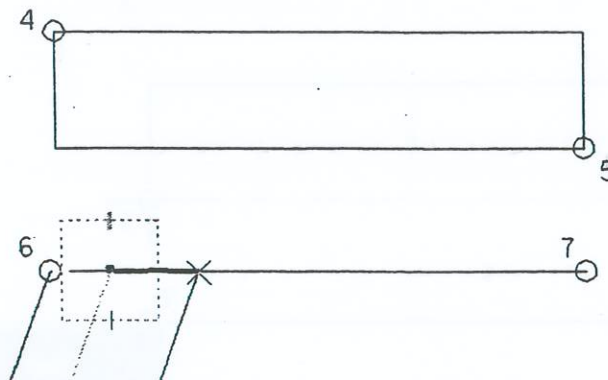
1 Select *Copy Element.*

2 Snap to the diagonal line at point 6

3 Accept the diagonal line with a data point.

4   Snap to the other endpoint of the horizontal line at point 7.

5   Key </> and then the number 9 and look at the *X field* in the *AccuDraw* dialog box, it should read 10.

6   Accept with a data point.

You have made your first space in the lot. Since we know that each lot space is a division of 10 we can proceed to copy the diagonal line at an increment of 10 in the X positive axis using *AccuDraw*.

✍ For comparison, try repeating this exercise without using *AccuDraw*.

Variables

You can also enter and save variables for use in the current design session. Although you cannot save variables to a file directly and there is no graphical user interface, this tool can still be useful. By default, the only saved variable is "*pi*." The variable can then be entered within any expression using the calculator. To use the variable directly as a distance or angle, type "=<*variable name*>" in the calculator window, for example "=*pi*90*" or simply "=*pi*" are both valid values.

Notes:

There is a special variable, "*$*," that represents the starting value whether measured or typed into *AccuDraw's* field. For instance, if you measure a distance with