variable names from equations directly onto the Variable sheet above. TK! evaluates the equation and prints the variables in the Name column on the Variable sheet in the same order as they appear in the equation. Then an asterisk is displayed in the Status column next to the equation. The asterisk means that the equation is unsatisfied, because no values have been input on the variable sheet. We then enter the second equation in the same way:

distance/fuel=mileage

When this equation has been entered, all five of the variables defined will be listed in the Name column on the Variable sheet as shown below.

Equations And Variables

Press the semi-colon (;) key to move the cursor from the Rule sheet to the Variable sheet, into which we can now enter values. The cursor appears in the input column next to our first variable, distance. The following values are entered by typing them in the appropriate space, then pressing Return or the down arrow key.

INPUT	NAME	OUTPUT
500	distance	
8.5	time	
	speed	
14	fuel	
	mileage	

The speed and mileage values are left blank for TK! to solve. Their calculated values will be displayed in the OUTPUT column. To solve for speed and mileage, press the exclamation mark (!), which TK! calls the 'action' key. TK! will display the phrase Direct Solver above the Variable sheet because the program has been given all the data required to find a direct solution. Shortly, the values for speed and mileage will be displayed as output. We can delete the values previously input and obtain a figure for distance by giving TK! new values for speed and time, or for mileage and fuel.

UNIT CONVERSION

The values entered in our model so far have no units attached. We cannot simply type miles, or gallons, in the unit column on the Variable sheet,

because units may not be used until they have been defined. We move the cursor into the Rule sheet by pressing the semi-colon (;) key and then typing =U. TK! replaces the Rule sheet in the bottom window with the Unit sheet.

The Unit sheet has four columns:

From   To   Multiply by   Add Offset

The cursor is displayed below the word From. We can then enter the units we want TK! to know and the conversion values as shown below.

Unit Conversion Table

Press =R to restore the Rule sheet, then ; to move into the Variable sheet. We can now enter the defined names into the Unit column — m for distance; h for time; m/h for speed; g for fuel, and m/g for mileage. Blank all the current values and replace them with these: 1,247 for distance; 22.5 for time; and 43.9 for mileage. Press ! to solve, and the metric values are displayed.

Imperial To Metric Conversion
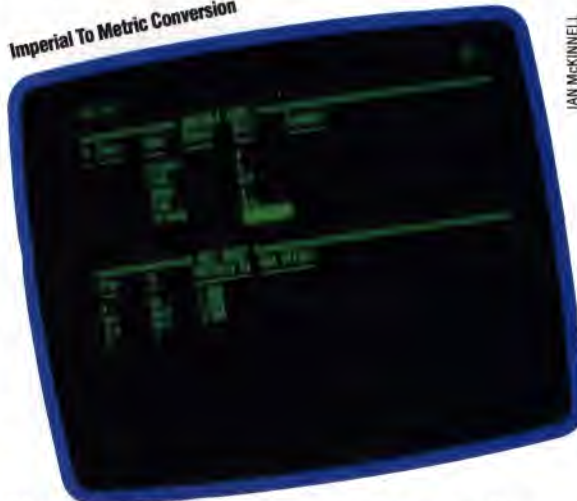
Now place the cursor over m in the unit column and type km for kilometres. Press Return, and TK! will automatically convert the value of 1,247 for distance from miles to kilometres, so the value of distance changes to 2006.423.

We have used only a few of the facilities offered by TK!Solver in this simple model. In the next instalment, we will look at a more sophisticated model, using TK!'s function and plotting abilities.

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