**Lesson plan – Information Technologies**

**Excel spreadsheet exercise – Class 12 G**

Water Truck

In the summer heat a water truck cooled and cleaned the streets of a town. The water delivery rate, that is, the amount of water delivered per metre was controlled by the driver of the water truck in distinct stages during its route.

File waybill.txt contains the daily route of the water truck with the names of the streets, the distances covered on them and the position of the switch that controls water delivery. In the town the street names are unique, if a street name appears several times, it means that the water truck passed on at least a segment of it again.

Solve the following exercises using a spreadsheet processor. During the solution take the followings into consideration.

* You can perform auxiliary calculations to the right of column M.
* Whenever possible, use a formula, function or reference in the solution to get a correct result even if the source data are modified.
* There are parts in the exercise that use the results from a previous question. If you could not solve the previous part completely, use its solution as it is, or enter a reasonable result and work on with that value. This way you can receive marks for that exercise part as well.

Import text file waybill.txt, which is tagged by tabs and has UTF-8 encoding, into the worksheet of the spreadsheet processor starting from cell A1. Save your work as journal in the default format of the spreadsheet processor.

The driver of the water truck can control the water delivery rate by a switch during the journey. The switch position is given in column D. The water delivery rate has several stages: 0 means no delivery, 3 means maximum water delivery. The amount of water delivered per metre corresponding to the switch positions can be found in the cells of range K1:L5.

Cells I2 and F2 contain the amount of water in the tank of the water truck upon departure. During the journey the amount of water in the tank decreases. If at the end of a street section the amount of water falls below the lower limit given in cell I3, then the driver fills 8000 litres into the tank there. (You can assume that the tank is never emptied completely on any road section.)

1. In the cells of range C3:C86 calculate the distance covered from the departure.
2. In the cells of range E3:E86 determine the amount of water delivered by the water truck on the given street in litres using a formula that can be copied flawlessly.
3. In the cells of range F3:F86 calculate the amount of water left in the tank of the water truck in litres after completing the given street section. Take into consideration that if the amount of water in the tank falls below the lower limit given in cell I3, then the driver fills 8000 litres into it.
4. In cell I4 determine the total distance covered by the water truck in kilometres on the given day using a formula. Set the format of the sum so that it does not contain decimal figures and display the result with unit “km”.
5. In cell I5 display the total amount of water delivered by the water truck in litres during its journey. Set the format of the result so that it does not contain decimal figures and display the result with unit “l”.
6. You have to determine the number of street sections that the vehicle passed without delivering water. In column G, display a “+” sign in the rows where the switch was in position 0, otherwise leave the cell empty. In cell I6 determine the number of passes outside the site where the vehicle did not deliver water using a formula.
7. Format the table according to the following description and the example.
8. Set the thousands separation and the number of decimal figures in columns E, F, I and L according to the example.
9. Highlight the text in the cells of range A1:F1 and H2:H6 using bold font style.
10. Display the contents of the cells of range A1:F1 according to the example.
11. Use font style italics in the cells that contain calculated values.
12. Align the contents of the cells of columns B:D centred horizontally.
13. Set a thick border around ranges A1:F86 and H2:I6 and a thin border between the cells of the ranges according to the example. Do not set a border around the other cells of the table.
14. Change the background colour of cells I2:I3 to light blue.
15. Set the column widths so that all data is visible.
16. 9. Create a Scatter (XY) chart on a separate worksheet that uses connected points to show the amount of water in the tank of the water truck as a function of distance covered.
17. Set upper limit of the scale of the vertical axis to 10,000 litres.
18. The chart should not contain a legend.
19. The title is “Amount of water in the tank”.
20. The label of the vertical and horizontal axis is “Litres” and “Distance covered”, respectively.
21.  Use Arial (Nimbus Sans) font type and a font size of 14 points for the title and the labels of the axes of the chart. 