



A company representatives weekly work schedule requires a visit to customers in each of the following 21 towns:

1. Athlone, Co. Westmeath
2. Balbriggan, Co. Dublin
3. Carrick-on-Shannon, Co. Leitrim
4. Drogheda, Co. Louth
5. Enniscorthy, Co. Wexford
6. Freshford, Co. Kilkenny
7. Greystones, Co. Wicklow
8. Headford, Co. Galway
9. Kilcullen, Co. Kildare
10. Lismore, Co. Waterford
11. Mountrath, Co. Laois
12. Nenagh, Co. Tipperary
13. Oranmore, Co. Galway
14. Portlaoise, Co. Laois
15. Rathkeale, Co. Limerick
16. Swinford, Co. Mayo
17. Tullamore, Co. Offaly
18. Urlingford, Co. Kilkenny
19. Virginia, Co. Cavan
20. Westport, Co. Mayo
21. Youghal, Co. Cork

The attached table of distances gives the Automobile Association preferred routes and distances between each of the towns listed.

**NOTE:** Identify and list the reference for all details used in your solution.

1. Using the ***attached table of distances***, plan and write down the shortest route that should be taken to minimise the distance travelled to visit all of the towns in one complete circuit, starting in Athlone as home-base and returning to that base following the final visit.
2. Using a suitable chart, table or otherwise, illustrate the route you have chosen, itemising the distance between each town in turn.
3. Using the Statistics section of the SIMI (Society of the Irish Motor Industry) website, find the most popular 152-registered car – make and model - sold in the Republic of Ireland .
4. Using the “combined driving” performance claimed by the manufacturer in their Product Guide for the car model, find the amount of petrol, in litres, used by the car on those trips (the rep is provided with a 1.4 litre, 150HP, manual, 5-door car of the make and model identified in Q3).
5. If the rep was driving the 1.6 litre manual, 90HP, 5 door diesel version of the **same** car model, calculate the amount of diesel, in litres, used by this car, again using the “combined driving” performance claimed by the manufacturer.
6. If diesel is 10.2 cent per litre cheaper than petrol, calculate the difference between the cost of fuelling the two cars for all 21 journeys, rounded to the nearest 5 cent.
7. Again, using the manufacturer’s statistics, calculate which car is cleaner for the environment in terms of CO<sub>2</sub> emissions by using the CO<sub>2</sub> emissions figures provided in the Product Guide for each vehicle and state the difference between these emissions for the total journey, correct to the nearest gram.

