# How much does a trip cost?

## Background information

Mark works as a programmer for a parcel delivery company. He has been asked to create a program to calculate the cost per mile for self-employed drivers who make deliveries in their own vehicles on behalf of the company. The drivers claim this money back from the logistics company. The program needs to allow the drivers to input the number of miles they have completed, and the output would be the amount of money the driver can claim for the cost of a delivery.

The following rules should apply to the program:

- The user must be able to add the number of miles as a decimal
- The cost per mile under 5 miles is £0.80 per mile
- The cost per mile over 5 miles is £0.40 per mile
- The user receives a written message containing the total cost that can be claimed for a trip

## Your task

Create a program using Python that enables the user to:

- input the number of miles travelled as a decimal
- receive an output for the total cost for a journey as a sentence

The program should:

- calculate the cost of the journey at £0.80 per mile if the number of miles is under 5 miles
- if the journey is over 5 miles calculate the cost as £0.80 for the first 5 miles and £0.40 for the remaining miles
- round the output value to 2 decimal places
- consider the user experience to create a suitable visual output

Areas to consider:

- What input is being asked for?
- How will you store the input?
- What data type should the input be?
- What is being output?
- What format will the output be in?
- What conditions need to be checked for calculations to take place?
- How will the program output start for the user, what information will they see?
- Can you use a function to make the program more efficient?

## Program Plan

Use the space below to plan your program and then create the algorithm before you start programming.

## Test your program

The table below contains the details of 6 delivery journeys. Once you have created the program, use this data to manually calculate the expected outcome. Then test your program to ensure it runs as expected and there are no bugs. Debug any errors.

| Test input | Expected outcome | Actual outcome from program | Any action |
|---|---|---|---|
| **56.0** | 5 * 0.8 = 4<br>51 * 0.4 = 20.4<br>Total = 24.40<br><br>The cost of the trip for 56 miles is £24.40 | | |
| **4.0** | 3.20 | | |
| **26.0** | 12.40 | | |
| **81.0** | 34.40 | | |
| **1.5** | 1.20 | | |
| **12.5** | 7.00 | | |

## Possible program solution

```
def calculate_trip_cost(miles):
    if miles <= 5:
        cost = miles * 0.80
    else:
        cost = 5 * 0.80 + (miles - 5) * 0.40
    return cost


print("")
print("Welcome to the trip management system")
print("-------------------------")
print("Enter the number of miles to calculate the cost per trip.")
print("-------------------------")

miles = float(input("Enter the number of miles: "))
if miles < 0:
    print("Miles cannot be negative. Please enter a valid number.")
else:
    cost = calculate_trip_cost(miles)
    print("-------------------------")
    print("The cost of the trip for", miles, "miles is £", cost)
```