# Homework #3 - SOLUTIONS

1. Write a function that takes a distance in kilometers as input, and prints to the screen this distance written in miles. The conversion formula is

\[ \text{Miles} = \text{Kilometers} \times 0.6214 \]

Write a program that asks the user for a distance in kilometers and uses your function to tell them the distance in miles.

```python
# SOLUTIONS: Homework 3 - Problem 1

def convert_to_miles(kilometers):
    local_miles = kilometers * 0.6214
    return local_miles

global_kilometers = float(input("How many kilometers did you travel? "))
global_miles = convert_to_miles(global_kilometers)
global_miles = format(global_miles, ',.1f')
print("You've travelled", global_miles, "miles.")
```

2. Sales tax in New York City is 8.875%. Write a function that takes the price of a purchase as input, and prints to the screen the amount of the purchase, the sales tax owed, and the total amount owed. Write a program that asks the user for a price and uses your function to tell them the tax owed and the total price.

```python
# SOLUTIONS: Homework 3 - Problem 2

def calculate_taxes(price):
    tax = price * 0.08875
    total = tax + price
    price = format(price, ',.2f')
    tax = format(tax, ',.2f')
    total = format(total, ',.2f')
    print("Price:", price, sep=' $')
    print("Tax:", tax, sep=' $')
    print("Total Price:", total, sep=' $')

purchase_price = float(input("How much did your purchase cost? "))
calculate_taxes(purchase_price)
```
3. One foot equals 12 inches. Write a function that accepts a length written in feet as an argument and returns this length written in inches. Write a second function that asks the user for a number of feet and returns this value. Write a third function that accepts a number of inches and displays this to the screen. Use these three functions to write a program that asks the user for a number of feet and tells them the corresponding number of inches.

# SOLUTIONS: Homework 3 – Problem 3

def convert_to_inches(feet):
    return 12 * feet

def get_feet():
    feet = int(input("Please enter a number of feet. "))
    return feet

def display_inches(inches):
    print("That is equivalent to", inches, "inches.")

global_feet = get_feet()
global_inches = convert_to_inches(global_feet)
display_inches(global_inches)

#Note: There are two different variables called feet in this program, one inside convert_to_inches and another in get_feet.

4. Your friend writes the following program that asks the user how fast they travelled and for how long, and then tells them the total distance travelled.

    def calculate_distance():
        return speed*time

    speed = int(input("How fast were you travelling? (in miles/hour) "))
    time = int(input("For how long were travelling? (in hours) "))
    distance = calculate_distance()
    print("The total distance you travelled is", distance)

You copy and paste his function into your program to get the following:
def calculate_distance():
    return speed*time

velocity = int(input("How fast were you travelling? (in miles/hour) "))
hours = int(input("For how long were travelling? (in hours) "))
distance = calculate_distance()
print("The total distance you travelled is", distance)

But for some reason your program doesn’t work even though your friend’s program does. Hmm... Rewrite your friend’s function so that it does not use global variables, and then rewrite your program so that it properly uses this new and improved function.

# SOLUTIONS: Homework 3 – Problem 4

def calculate_distance(speed, time):
    return speed*time

velocity = int(input("How fast were you travelling? (in miles per hour) "))
hours = int(input("For how long were you travelling? (in hours) "))
distance = calculate_distance(velocity, hours)
print("The total distance you travelled was", distance, "miles.")