Hello Y12, we can't wait to meet you in September

To help you prepare for the **Double** KS5 course, see the preparation work below

You will be developing your coding skills – this will help you as one of the first units you study will be coding. Don't worry if you are a novice, I will also help you in September!

Don't worry if you get any bugs (errors), try to fix them but it is ok if there are still issues, it doesn't have to be prefect code. The logic is what is important!

If you have never coded before, start at challenge 1. If you have coded, start from challenge 6!

To code, if you can download and install Mu Editor on your computer, or you can set up an account with https://trinket.io/ and code using the language **python**

Challenge 1

Type this in and run to see what happens:

```
print ("Hello World")
```

Challenge 2:

Type this in and run to see what happens:

```
name = input("Hi. What's your name?  ")
print ("Hello, ", name)
```

We recommend that there is a space after a question mark and before the end quote mark. When the program is run, this space helps the user to see where to start their response to the question

Challenge 3 – write your own code using Challenge 1 and 2 to help you:

1. Asks the user for their first name, in a way that allows the computer to save their response as first_name
2. Asks the user for their surname, so that it can be saved using the variable surname
3. Prints the first_name and then the surname name
4. On the next line print the sname and then the first name

Use variable names:

first_name

surname

Extension: The name may not have a space between first and second names - can you work out how to add one?
Save as: Challenge 3 – Names

Challenge 4 – Write a program that joins two strings together:

Use a new variable **full_name.** Add these extra lines to your program from challenge 1:

1. fullName = first_name + surname
2. print (fullName)

Click save

Challenge 5 – Type this in:

```
numberOne  = int(input("Enter a number between 0 and 10 "))
numberTwo = int(input("Enter a number between 0 and 10 "))
print  (numberOne + numberTwo)
```

Find out what int and float do

Challenge 6

Now let's build a calorie counter. The NHS recommends that an adult male takes on board 2,500 calories per-day and an adult woman takes on 2,000 calories per-day. Build your program for a woman or a man.

Save your program as **CalorieCounter**

```
print("Your calorie counter")
calories = int(input("How many calories have you eaten today? "))
s=2000-calories
print("You can eat", s, "calories today")
```

Line 2 of the code asks the user to enter how many calories they have eaten as the **variable** c. It stores it as an integer (whole number)

Line 3 of the code subtracts how many calories they've eaten and stores it as the **variable** s

Line 4 then prints **s** outs in between 2 'strings' of text

1. Write a program that asks the user to enter how much they have spent on their school dinner in a way that the computer can remember as dinnerCost.
2. Then make the program subtract the dinnerCost from the money the user had at the start of the day.
3. Display the result on the screen.

As an extension – program the computer to repeat this for 5 days and if the total goes negative, give a warning message that they do not have enough money on their account.

Save your work as **SchoolDinner**

Challenge 7

Jennifer wants to carpet her new room with pink carpet. Create a program that will ask the user for the two dimensions of a room (length and width) and then calculate the area of the room, (length x width), before finally displaying the answer.

*Save as **Area***

Challenge 8

Write a program to work out how long a user has been alive for to the nearest year for the moment - there are 365 days in a year

Get the program to ask for the user's name and age.

Use the age variable value to work out how many hours that is – there is 24 hours per day

Develop the program further so that it can work out how many minutes and seconds the user has lived for – 60 minutes per hour / 60 seconds per minute.

Make sure all the information is clearly displayed on the screen.

Save as Age

Challenge 9

Write a program that monitors a user's shopping trip and calculates how much the spent

Get the program to ask for the firstItem bought so that the computer can remember this

Develop the program to ask for and remember the costofthefirstItem bought, what the secondItem bought was, and the costofthesecondItem.

Develop the program further so that it calculates the total cost of the items bought and then displays what was bought and the total amount spent.

Challenge 10

Pizzas come in various shapes and sizes. We can use python to calculate which pizza is the best in terms of size and price

The mathematical formula for area is 3.142 times radius squared if it's a circle and length times width if it's a rectangle.
Imagine a pizza 20cm in diameter costing £4.99 and another 20cm in length by 15cm wide and costing £6.99.

a. Write a program in python that calculates the surface are per £ and displays to the program user which is the best value pizza, the round one or the rectangular one

Challenge 11

Create your own scenario game using selection (if statements)

```
import random
print ("you will be given something that will help you out of here but it's not as easy as you think")
selection = random.choice(["key","sword","rope"])
if selection == ("key"):
        print ("here is your key use it wisely as it only opens one door")
elif selection == ("sword"):
        print ("here is your sword incase you run into some trouble use it wisley as it might break")
elif selection == ("rope"):
```

Challenge 12

We've all played the rock, paper, scissors game. The computer will play against you.

Get the computer to ask for the player's name.

The game rules are simple: rock beats scissors, scissors beat paper, paper beats rock. Two of the same gives a draw.

An idea to get you started

```
import random
selection=random.choice(["rock","paper","scissors"])
print (selection)
```

You might need to plan to help you identify the steps needed.

Add **comments** using # to the game so it's clear what the code in the game is going.

Save your code and be ready to share it with me in September! Good luck and have fun