LESSON _04: DATA TYPES & CONCATENATE DIFFERENT TYPES OF DATA

OBJECTIVES
Students will be able to:
- Identify data types in python.
- Convert between data types.
- Concatenate different types of data using (+) operation

STANDARDS
7-8.CT.1, 7-8.CT.5, 7-8.CT.7

VOCABULARY:	CODE SYNTAX
Concatenate, string, int, float, boolean	str(5) → "5" str("hi")--> "hi" int("4")--> 4 int("hey")--.error print("hello" + str(5))

WARM_UP (DISCUSS IN PAIRS)

CODE PREDICTION

First: Make a prediction about what the following code will do. Write that prediction down somewhere

x = 5 y = 7 print (x = y)	x = "5" y = "7" print (x + y)	x = "hello" y = 5 print (x + y)

Then: Click on this link repl.it and hit "Fork" in the top right to see this code in action!

```
12
57
Traceback (most recent call last):
  File "main.py", line 11, in <module>
    print(x + y)
TypeError: can only concatenate str (not "int") to str
>
```

LESSON DEVELOPMENT (WHOLE GROUP)

❖ Ask students if their predictions match the output. Any surprise!

Let's go over data types: will discuss back again.

➔ Data Types in Python

Type	Description	Examples
string	text, words	"Hello world123" 'yellow!!!@@@' (note the " " or ' ' around strings)
int	whole numbers and their opposites	3 -8 90 0 -10000
float	+/- numbers with decimals	1.34 6.0 -9.7976
boolean	Only two values	True False (note upper and lower case)

string	text, words	testVar = "1"
int	whole numbers and their opposites	testVar = 1
float	+/- numbers with decimals	testVar = 1.00
boolean	Only two values	testVar = True

✅ CHECK FOR UNDERSTANDING

1. What type of data is "hello"?
2. What type of data is 5?
3. What type of data is "5"?

✅ ERROR ANALYSIS (Turn and Talk)

4. Read the error message. Then look at the meaning of concatenate. What does **Concatenate** mean?
5. What do you think is the meaning of this error message?

```
Traceback (most recent call last):
  File "main.py", line 11, in <module>
    print(x + y)
TypeError: can only concatenate str (not "int") to str
>
```

Explanation

A string (**str**) represents text (uses quotes)

➔ Let's See How Can We Convert Between Data Types

Converting between Data Types

If you WANT this data type	Use this function!	Examples
string	str()	str(5) ⇒ "5" str("hey") ⇒ "hey"
integer	int()	int("4") ⇒ 4 int("hey") ⇒ ERROR

We use the + operation to concatenate and str() or int() functions

ACTIVITY(WORK IN PAIRS)

Task#1_Debug

Fix the print statement below, so the output is hi 5 (Refer to the converting between data types table and use replit.com to check.

Print ("hi" + 5)

Task#2

What is the correct way to display the number of tickets purchased using the following variable?

tickets_purchased = 10
```
     A.   print("You purchased " + tickets_purchased + " tickets.")

     B.   print("You purchased " + int(tickets_purchased) + " tickets.")

     C.   print("You purchased " + str(tickets_purchased) + " tickets.")

     D.   print("You purchased + int(tickets_purchased) +  tickets.")
```

SHARE OUT

- Have students share out their predictions

Explain why option A and D in the above task would produce an error message?

SUMMARY

BIG IDEA

We need to convert the int to a string when concatenating a string and an integer