1. In the below elements which of them are values or an expression? eg:- values can be integer or string and expressions will be mathematical operators.

\*

'hello'

-87.8

-

/

6

Values: 'hello', -87.8, 6

Expression: \*,-,/,+

2. What is the difference between string and variable?

String: A string is a sequence of characters.

Variable: A variable is a memory location where data like strings, integers, or floats can be stored.

3. Describe three different data types.

Int: An integer is a decimal value without a decimal point, such as 1, 2, -1, or 100.

Float: A float is a number with a decimal point or fractional value, such as 1.5, -1.9, or 199.0.

Str: A string is a combination of characters, such as "Hello".

4. What is an expression made up of? What do all expressions do?

Expressions consist of mathematical operators and numbers, fractions, or random variables. For instance, in y = mx + c, y is the dependent variable and x is the independent variable or feature.

5. This assignment statements, like spam = 10. What is the difference between an expression and a statement?

A statement assigns a value to a variable, like `spam = 10`, while an expression includes mathematical operators, such as `spam\_avg = spam / 1`.

6. After running the following code, what does the variable bacon contain?

bacon = 22

bacon + 1

Variable bacon will be 23 (22 + 1 = 23).

7. What should the values of the following two terms be?

'spam' + 'spamspam'

'spam' \* 3

'spam' + 'spamspam' = 'spamspamspam'

'spam' \* 3 = 'spamspamspam'

8. Why is eggs a valid variable name while 100 is invalid?

In Python, a variable must start with a letter or underscore; thus, '100' is an invalid variable name.

9. What three functions can be used to get the integer, floating-point number, or string version of a value?

There are three type casting functions:

* `Int()`: used to obtain the integer representation of a whole number value.
* `Float()`: used to obtain the floating-point representation of a number.
* `Str()`: used to obtain the string representation of a value.

10. Why does this expression cause an error? How can you fix it?

'I have eaten ' + 99 + ' burritos.'

According to Python rules, an integer cannot be added to a string directly. To resolve this issue, the integer 99 must be converted to a string using type casting with `str(99)`.

Incorrect: `'I have eaten ' + 99 + ' burritos.'`

Correct: `'I have eaten ' + str(99) + ' burritos.'`