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**  
**expressions: \*, -, /, +**

2. What is the difference between string and variable?

>> **String is a datatype used for textual values and it should be given inside single or double quotes.**  
**Ex: “Hello World”, “1234”**  
**The above example is of datatype string. We can check the datatype using type() function**  
  
**Variable is used to store the values of different datatypes**  
**Ex: var1 = “Hello World”**  
**Here var1 is a variable which stores string value**

3. Describe three different data types.

>> **The three different datatypes are:**

* **int: int is a numeric datatype used for integer values. Integer values are positive and negative whole number. Since python is a dynamically typed language there is no need to define the datatype while declaring the variable. But for typecasting** **int() is used.**  
  **Ex: a = 3, b = -5, c =** **int(“100”)**
* **float: float is a numeric datatype used for floating point values. Floating point values are positive and negative decimal values.**  
  **Ex: a = 5.62, b = -8.9574, c = float(“9.6547”)**
* **str: String is a data type which contains sequence of characters enclosed between single or double quotes.**  
  **Ex: str\_1 = “This is a string”, str\_2 = “1234”**

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

**>> Expression is made up of operators and operands. Operators are special symbols which helps to perform operation of operands. The expressions perform mathematical, logical, concatenation, comparison operations.**  
**Ex: exp1 = 2 + 3**  
**In the above expression 2 and 3 are operands and + is operator. This expression is used to perform mathematical operation (addition)**

**exp2 = “Data” + “Science”**  
**In the above expression “Data” and “Science” are operands and + is operator. This expression is used to perform concatenation operation. The result will be “DataScience”.**

**The values can also be defined in a variable and can be used in expression.**  
**Ex: a = 5**  
**b = 10**  
**c = a + b**  
**This will give 15 as output if c is printed, because datatypes of ‘a’ and ‘b’ are int and it will perform mathematical operation**

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

**>>** **Expression is used to perform operations, but statement is used for assignment.**

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

bacon = 22

bacon + 1

**>> after running the following code, bacon contains 22 as value.**  
**The value of bacon is increased by 1 in the 2nd line of code. But it's not assigned to variable hence value doesn't change for bacon. To increase the value of bacon by 1 use below expression:**

**bacon = bacon + 1**

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

'spam' + 'spamspam'

'spam' \* 3

>> **'spam' + 'spamspam' gives ‘spamspamspam’ since it performs concatenation operation**

**'spam' \* 3 gives ‘spamspamspam’ since it performs string repetition operation**

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

>> **There are set of rules defined for variable name. They are:**

* **The variable name should contain only letters, numbers or under-score**
* **The variable name should strictly start with either with a letter or under-score**
* **Reserved keyword cannot be used as a variable**

**eggs is a valid variable since it holds good with the above set of rules. Since 100 starts with a number it's not a valid variable**

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

>> **Three functions used to get the integer, floating-point number, and string version of a value are int(), float() and str() respectively.**

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

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

**>> The above expression is trying to perform concatenation operation but throws a runtime error because integer cannot be used to perform concatenation.**

**To fix the error, we need to convert 99 to string by typecasting which can be done as follows:**

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