

AP CSP
Unit 3 Test Review

Name: Key

1. Define the following words:

- Programming language - a formal computer language designed to communicate instructions to a machine, particularly a computer
- Algorithm - a precise sequence of instructions for processes that can be executed by a computer
- Abstraction - pulling out specific differences to make one solution work for multiple problems
- Function - a piece of code that you can easily call over and over again
- API - a collection of commands made available to a programmer
- Documentation - a description of the behavior of a command, function, library, API, etc.
- Library - a collection of commands/functions, typically with a shared purpose
- Parameter - an extra piece of information that you pass to a function to customize it for a specific purpose
ex: changing the distance to move forward (3)
- For Loop - a particular kind of looping ~~structure~~ construct provided in many languages. Typically, a for loop defines a counting variable that is checked and incremented on each iteration in order to loop a specific number of times.
- Loop - the action of doing something over and over again

2. How is a programming language similar and different than a real human language?

- precision - programming languages must be precise because there can be no ambiguity in instructions to a computer
 - unique terms - programming terms that have synonyms would add confusion
 - completely predictable - there must only be one way to interpret a command which results in a single, repeatable action
3. What does it mean for a program to be written efficiently?

This can mean many things:

- fewest lines of code
- least amount of storage
- runtime

4. Why do you write functions? How is using functions in your code and example of abstraction?

- enables programmers to write code in larger, more logical chunks
- enables programmers to focus on what something does rather than how it does it. (this is abstraction)
- streamlines code into shorter, but more readable sequences
- enables programmers to reuse code segments

5. Explain what Top-Down Design is.

This is an informal strategy of repeatedly dividing a system into simpler subsystems. As these pieces of the original problem get smaller and smaller, eventually you will arrive at pieces that you can program solutions to in a straightforward manner.

6. What is the purpose of an API? When might you use an API?

An API is a reference guide which catalogs the functionality of a programming language. If a programmer develops the practice of referencing an API, she can make full use of that functionality without undergoing the tedium of memorizing every detail of the language.

7. Give an example of a function with a parameter.

~~function~~

function drawSunBeam(size)

note: size refers to the length of the sunbeam

8. Looping: What does the following code do?

```
for (var i = 0; i < 10; i++)  
  penUp();  
  moveTo(randomNumber(0, 320), randomNumber(0, 450));  
  penDown();  
  sb = 8
```

This function makes 10 random dots with radius 8 on the screen

location →

9. I would recommend practicing with code. Study by logging into Code Studio and try writing functions and loops!