Snap Exam 1

Read through the entire exam before you begin. Remember if you get stuck to move on to the next question and come back later if you have time. **Don't spend too much time on any one question.**

When you are finished, download the Snap! code, save it as a .xml file and upload it to the dropbox.
Turn in this exam sheet to the instructor.

Part 1 - Short Blocks (10 points each, 60 points total)

Remember to make well-named blocks that use input parameters and report back values (except for #1). If there are multiple tasks, you may want to make another "helper" block. Some of these blocks (or helper blocks) may be useful later in the exam.

1. Make a command block that uses two **repeat until** loops to have the sprite *say* the numbers from 1 to 5 - first forwards from 1 to 5, and then backwards from 5 to 1. (Half credit for using a different type of loop.)

2. Make a block to report true if the first and last letter of a word are the same letter and false otherwise.

3. Make a block that reports true if a letter is a vowels (a, e, i, o, or u) and false otherwise.

4. Make a block to report how many times a letter occurs in a word. For example:
    ○   if the word is pizza and the letter is z, the result should be 2.
    ○   if the word is pizza and the letter is e, the result should be 0.
    Both the word and the letter to look for should be input values for the block.

5. Make a block to replace all occurrences of a letter in a word with another character. For example:
    ○   if the word is apple and the letter is p and we replace it with -, the result should be a--le
    ○   if the word is apple and the letter is p and we replace it with nothing (or an empty character), the result should be ale.
    You will need 3 inputs: the word, the letter to replace, and the value to replace it with. The block should report back the new value.

6. Make a block to take a number of inches and report the value in feet. Remember 1 foot is 12 inches.
    For example:
    ○   If the input is 12 inches, the result should be 1
    ○   If the input is 6 inches, the result should be 0.5
    ○   If the input is 24 inches, the result should be 2

Part 2 - Fill-in the Blank (1 pts each, 5 pts total)

Make sure your answer is readable, specific, and accurate to get full credit for the question.
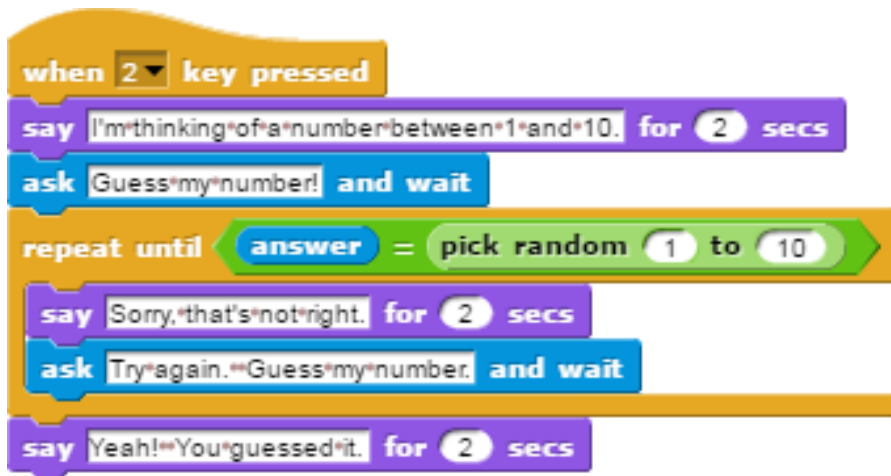
1. In Snap! _____ blocks can NOT report back a value.

2. Hiding the details of how something is done is a key purpose of _____.

3. Variables that are visible and can be used anywhere in the program are _____ variables.

4. A true or false value is called a _____.

5. Using a smaller, simpler function to build a more complex function illustrates _____.

Part 3 - Short Answer (5 pts each, 10 pts total)

Make sure your answer is readable, detailed and clear to get full credit for the questions below.

1. List at least three characteristics of good functions (or blocks in Snap).

2. Explain why you would use input values (or input parameters) when making a block (function).

3. Take a look at the following code for a number guessing game which starts when the 2 key is pressed.

```
when 2▾ key pressed
say I'm thinking of a number between 1 and 10. for 2 secs
ask Guess my number! and wait
repeat until ( answer = pick random 1 to 10 )
    say Sorry, that's not right. for 2 secs
    ask Try again. Guess my number. and wait
say Yeah! You guessed it. for 2 secs
```

There have been reports that the game seems to "cheat". People have guessed all of the numbers more than 10 times, and still haven't won. Explain what is wrong with the code and how you would fix it?

Part 4 - User Interaction Script (10 pts)

For this problem, we will write a short script to interact with the user. Parts of this script may utilize code from earlier in the exam. You should re-use your blocks where possible instead of duplicating it.

Make a block (5 pts)
Make a block that will report back a word entered by the user. Make sure that the word entered is not empty or blank. If the word is empty or contains only spaces, show an error and ask the user to enter a word again.

Make a script (5 pts)
This script should start when the green flag is clicked.

1. Get a word from the user by using the block made above.

2. Spell the word for the user by saying each letter for 1 second.

3. Tell the user how many characters are in the word.

4. Tell the user how many characters are vowels.

5. Replace all the consonants (non-vowels) with a - and say the new word for 2 seconds.