

Unit 5 Assessment 2- Review

1-

Content: Unit 5 Lesson 8 -- conditionals, if statements

The statement is " $a < b$ " and since $a = 5$, $b = 10$, and 5 is less than 10, then the statement is true. Following the arrow for a "true" statement, the computer is told to print the value of b. As the value of b is 10, the program will display "10."

2-

Content: Unit 5 Lessons 7, 8 -- requires transfer of turtle and simple repeat loops

Going through the code line by line while keeping track of the value of "turn",

- The variable "turn" is set to 0
- The code enters a for loop that will run 4 times
- Breaking down the code within the loop, the turtle moves forward each time
- Now, if "turn" is 0 then the turtle will turnLeft and "turn" is set to 1
- However, if "turn" is not 0, the turtle will turnRight and "turn" is set back to 0
- As the loop runs 4 times and "turn" is initially set to 0 and "turn" changes between 1 and 0, the turtle will move forward, turn left, forward, turn right, forward, turn left, and forward turn right

The most important idea in this problem is the if-else statement. If a statement is true, enter the first set of code. Otherwise, execute the other piece of code.

3-

Content: Unit 5 Lesson 6

Strings can be any combinations and any types of characters if it is surrounded by quotation marks "". This includes having numerical digits as a string; however, it is important to note that the number will be treated as a string and not as an integer.

For example:

- `var num1 = "5";`
- `var num2 = "3";`
- If you add num1 and num2 together, you are combining the strings and not the values of the strings.
- `num1 + num2 = "53"` and NOT 8 because the variables are of a string type.

4-

Content: Unit 5 Lesson 6

To format content inside a string in JavaScript, there are set letters that follows a backslash that denotes what the programmer wants the string to look like. In this case, `\n` means go print this in the next line.

Below is a key that states the other possibilities that are not correct to this particular question:

- `\t` - horizontally tabs the string at the given place (not covered in lessons)
- `\b` - backspace (not covered in lessons, and relatively unused)
- `\newLine` - `newLine` is not a valid command
- `\nl` - `nl` is not a valid command

5-

Content: Unit 5 Lesson 6

The most important idea in this problem is that when a number is added to a string, the number is treated like a string.

Going through the code line by line:

- A variable num holds the integer 5
- A variable str holds the string "hello"
- Evaluating the right side first, num + str combines the two together to get "5hello"
- Variable result is set to "5hello"
- The result is then printed out, and since result holds "5hello", "5hello" is the output for this code

6-

Content: Unit 5 Lesson 6

- Since there are quotation marks around the numbers, str1 and str2 are set to a string with the number five inside it.
- The variable "result" wants to combine the strings (*not* the values of the digits) which puts them next to each other and the result is now the string "55"
- The console wants to print out the value of result which is the string "55" and thus, 55 is printed out.

You can relate this to any character that is inside the string, even if it is a numerical digit. It may be easier to start out with an example that uses letters such as:

- var first = "h";
- var second = "i";
- var result = first + second
- If result were printed, "hi" would be the output

As long as the variable is of type string, combining letters and digits have the same concept.

7-

Content: Unit 5 Lesson 8

Boolean Definition: A variable that has two possible values, “true” and “false”

8-

Content: Unit 5 Lesson 8

Going through the code line by line:

- A variable "age" is set to 35
- Going into the IF statement, it checks if age is less than 35. 35 is equal to 35 and NOT less than it so the condition is false.
- Therefore, since age is not less than 35, the program executes the code that is in the else statement.
- The program displays "You are old enough to be President!"

9-

Content: Unit 5 Lessons 8, 9 -- nested if similar to else-if

Going through the code line by line if variable grade is set to 70:

- The IF statement checks to see if grade is greater than or equal to 70.
- Since $70 = 70$, the condition is true and the code inside the first IF statement will be executed.
- "You passed!" is displayed.

10-

Content: Unit 5 Lesson 8

Inside the IF statement, the alarm is set to 9:00am. The alarms should only be set to 9:00am if it is a weekend so therefore, the IF statement should check if it is the weekend or not. Since there are 2 weekend days and 5 weekdays, it would be easier to check if it was a Saturday or a Sunday.

Inside IF statements:

- Two equal signs in a row "==" are used to see if the values are equal and
- Two vertical lines "||" checks if one *or* the other statement is true
- Alternatively, the notation "&&" means "and" which checks if both statements are true
- Therefore, to check if the day EQUALS "Saturday" OR if the day EQUALS "Sunday", the code is written as

(day == "Saturday") || (day == "Sunday") which will be true if the day is a weekend or, if it is a weekday, this statement will be false.

11-

Content: Unit 5 Lesson 9 - compound conditionals with AND (or &&)

DISPLAY ("Enter the hour of day (0-23)")

hour <- *INPUT* ()

```
IF ( hour ≥ 8 AND hour ≤ 15)
{
    DISPLAY ("Nice to see you!")
}
ELSE
{
    DISPLAY ("It's time to go home")
}
```

Since students haven't written much with the AP pseudocode a JavaScript-y pseudocode - using && instead of AND, and using `console.log` instead of `DISPLAY`, is fine here too.

Don't nitpick over the exact syntax, as long as the meaning/intent is clear.

```
if( hour >= 8 && hour <= 15)
    console.log("Nice to see you")

else
    console.log(It's time to go home)
```

12-

Content: Unit 5 Lesson 8, 9 - compound conditionals and else-if

Going through this code line by line:

- Set `val` to `a` -- assume it's the largest
- If `b` is bigger than both `a` and `c` -- then `b` is the largest
- Else if `c` is bigger than both `a` and `b` -- then `c` is the largest

Display `val` which should be the largest of the 3.

13-

Content: Unit 5 Lesson 6, 8, 9 -- requires incorporating new knowledge about strings, plus nested if reasoning.

Going through the code line by line:

- The variable word is set to "hello", which has a length of 5
- Since the length of the word is not greater than 10, we go into the else statement
- Inside the else statement, since the length of hello is not less than 3, we go into the else statement
- Since the word length is not greater than 6, we go into the else statement where the code displays "I have never heard that before." in the console

14-

Content: Unit 5 Lesson 6, 8, 9 -- requires incorporating new knowledge about strings, plus nested if reasoning.

Going through the code line by line:

- The variable word is set to "goodbye", which has a length of 7
- Since the length of the word is not greater than 10, we go into the else statement
- Inside the else statement, since the length of hello is not less than 3, we go into the else statement
- Since the word length is greater than 6, the code displays " Use that word on the SAT." in the console

15-

Looking at the two else if statements in the middle, we notice that (time < 20) comes before (time < 10). Since code executes sequentially, "Good Morning" will never be displayed because all values that are between 6 and 10 will first go into the (time < 20) statement due to the order of the code.

16-

Content: Unit 5 Lessons 7, 8, 9 (primarily 9)

This code will work if the luggage is under 50 pounds because it will go into the else statement and setText to "Your luggage is accepted as is"; however, there is an error with the if and else if statement. The if and else if statement should be switched because the code will never enter the else if statement. Any luggage over 120 pounds will set the text incorrectly because it will automatically go into the first if statement. The correct code should look like:

```
var weight = promptNum("How much does your luggage weigh?");
if (weight > 120){
    setText("response", "Your luggage is too heavy for this flight");
} else if (weight > 50){
    setText("response", "There is a 25 dollar fee to take this luggage");
} else {
    setText("response", "Your luggage is accepted as is");
}
```

It should check if the weight of the luggage is above 120 pounds before checking if it is above 50 pounds.

17-

Content: Unit 5 Lesson 9

The variable temperature is set to 30.

The last two are false.

- (temperature > 0) && (temperature < 32) --> True - 30 is between 0 and 32
- (temperature == 0) || (temperature < 32) --> True - it is the case that 30 is equal to 0 OR 30 is less than 32.
- (temperature != 0) && (temperature < 32)--> True - 30 does not equal 0, and is less than 32.
- (temperature == 0) || (temperature > 32) --> **False** - 30 does not equal 0 nor is it greater than 32.
- (temperature < 0) || (temperature > 32) --> **False** - 30 is not less than 0 nor is it greater than 32.