

Teacher Instructions

The idea here is that you print a few sets of these cards and let your students choose which programs to try. This allows for differentiated instruction. You could also have the student rotate through and complete all tasks if desired.

Task Cards

Conditional Statements

Task 1 – Calculator Only

- Write program that will compute an employees Gross Pay (pay without taxes removed). Your program should ask the user to enter number of hours worked as well as hourly pay rate. If the hours are less than or equal to 40 the pay will simply be the hours worked times the pay rate. However, if hours worked is greater than 40 the employee will receive time and a half for the hours above 40.

Task 2 – Calculator Only

- Write program that will have a menu asking the user to either 1 - convert from Celsius to Fahrenheit OR 2- Fahrenheit to Celsius. Once a decision is made allow the user to enter a temperature in one unit and convert to the other.

Task 3 – Calculator Only

- Write a program that allows the user to enter an integer between 1 and 10. Use if statements to translate the integer entered into its Roman Numeral equivalent.

1	I
2	II
3	III
4	IV
5	V

6	VI
7	VII
8	VIII
9	IX
10	X

Task 4 – Calculator Only

Write a program to determine the real roots of the quadratic equation $ax^2 + bx + c = 0$ (where a is not = to 0). Request the values of a , b , and c . Make sure to write code to insure that “ a ” is not zero.

The equation has 2, 1, or 0 solutions depending on whether the value of $b^2 - 4ac$ is positive, zero, or negative. In the first two cases, the solutions are given by the quadratic formula

$$(-b \pm \sqrt{b^2 - 4ac}) / (2a).$$

Test values for your program:

$a=1, b = -11, c = 28 \rightarrow$ Solutions are 4 and 7

$a 1, b = -6, c = 9 \rightarrow$ Solution is 3

$a=1, b=4, c=5 \rightarrow$ No solution

Task 5 – Calculator Only

- The Institute of Medicine and the American Heart Association recommend most kids and teens should get 25% to 35% of total calories each day from fat. Although food labels give the number of calories and the amount of fat per serving, they often do not give the percentage of calories from fat. Write a program to allow the user to enter total calories per serving and the amount of fat per serving and compute the percentage of fat. Once computed determine if the amount of fat meets the recommended standards.

Task 6 – Calculator and Hub

- Write a program that uses the Hub brightness sensor to collect and display the light intensity. Based on the intensity of the light, make a different RGB Color appear. For example, if the intensity is less than 5 turn use the RGB color to turn on a yellow light. Your program should have at least 3 different pathways.

Task 7 – Calculator and Hub

- Write a game program so the Hub displays a certain light and plays a distinct sound depending on if the answers is correct or not.

Task 8 – Calculator and Hub

- Write a program that asks the user to enter is numeric birthday month and based on the month born the hub will display RGB color to match the birthstone and plays the “Happy Birthday” song.

Task 9 – Calculator and Rover

- Write a program that generates a random integer between 1 and 10. If the number generated is even the rover should move forward by an amount equal to the number generated and turn right by an angle 5 times the number generated. If the number generated is odd, the Rover should move backwards 5 units and turn left 90 degrees. Have your program repeat this process 10 times.

Task 10 – Calculator and Rover

- Write a program that makes the Rover operate like an autonomous vacuum cleaner, redirecting to a new angle just before it collides with an object.

Task 11 – Calculator and Rover

- Write a program that makes the Rover's LED match the color it is driving over.

Task 12 – Calculator and Rover

- Write a program that makes the Rover trace out a geometric shape based on input from the user. You should allow for at least 3 choices.