

Scratch Programming: 3. Calculator

Task: Create a calculator that adds, subtracts, multiplies and divides two numbers.

Lesson Objectives:

To learn how to use a control statements, user input and variables. The user may enter a value, and this is saved using two variables 'a' and 'b'

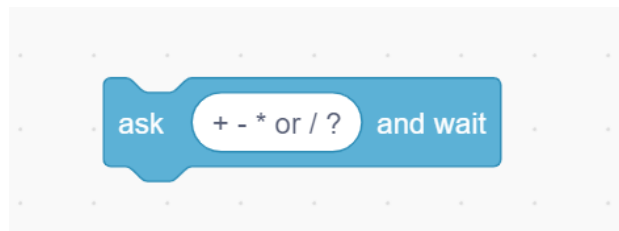
Variable	Value (e.g.) = User input
a	10
b	2

What do you need to do?

Follow the instructions below. Always remember to save your work (Save as) in a place you can remember and test your program. Regular saving of your programs will help you if you make mistakes or if there is problem and you lose your work.

Instructions

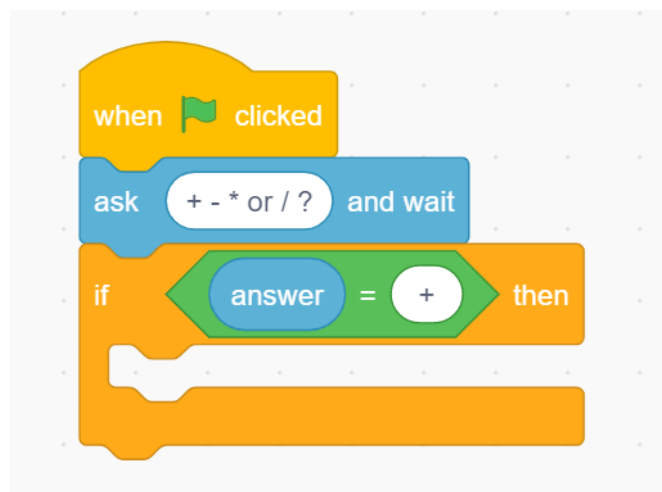
The sprite needs to ask the user for input. Use the 'ask _____ and wait' block from the 'Sensing' options. Then type the following users instruction - 'type +, -, *, or / ?'



The user now has options of each of the four mathematical symbols to enter. Start by creating the '+' and we will copy the others after. Add the following blocks:

- Control – if statement (if-then)
- Operators _ = _
- Sensing <answer>

Put them together so you have a block that consists of the following: if answer = '+' then

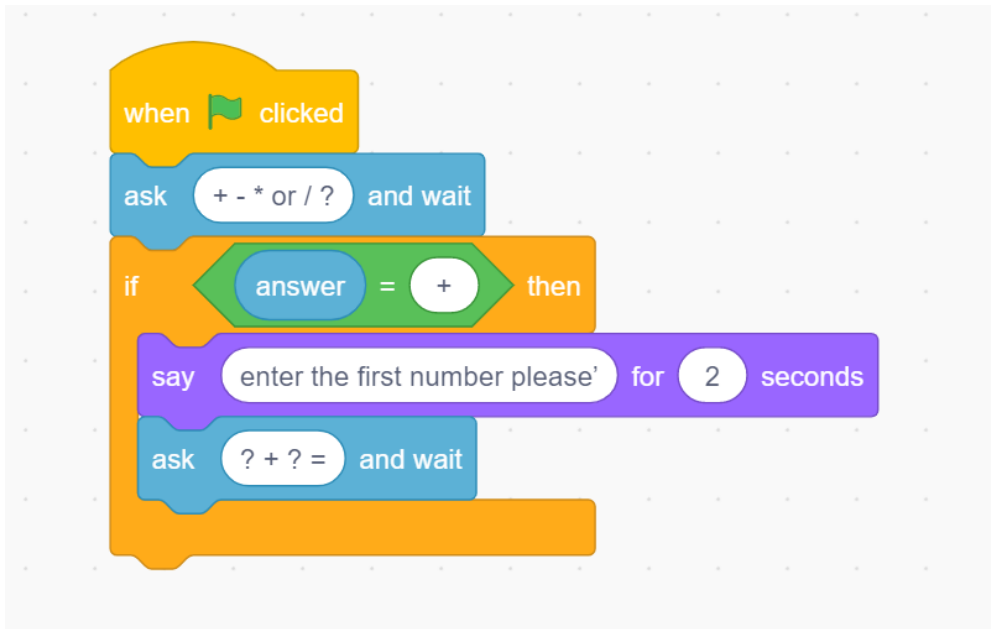


What is needed next?

- The cat will say something – then get the first number
- User enters the first number
- The cat will say something – then get the second number
- User enters the second number
- We need to add the two numbers, and
- Show the answer

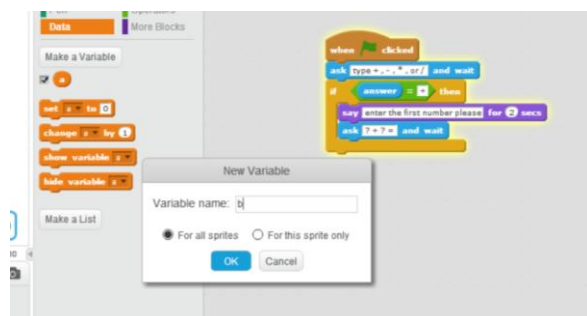
Use the following blocks and instructions:

- say ___ for 2 seconds (purple block)
- Change hello to 'enter the first number please'
- 'ask _____ and wait' block (blue-sensing blocks)
- Change text to '? + ? ='
-



Now we add two variables

- Go to Data – make a variable
- Make two variables called 'a' and 'b'
- Now set a to answer

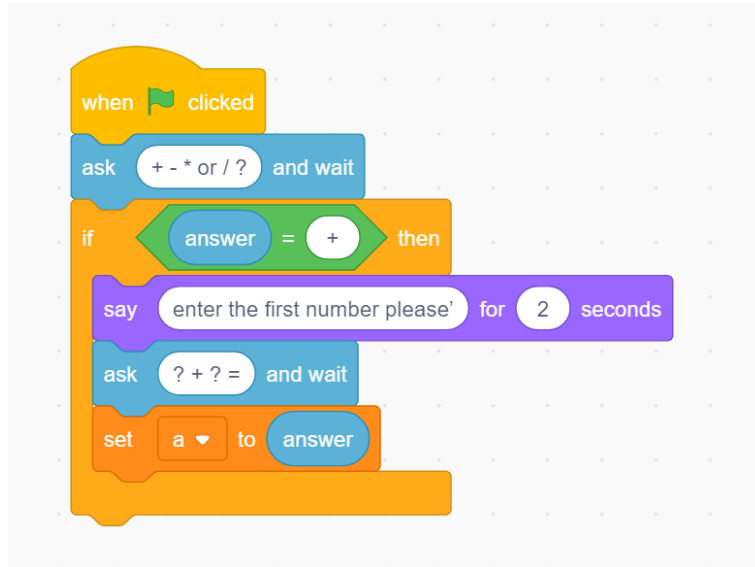


- Use the 'set _ to 0' block
- select 'a' on the drop down menu

- move it onto the script area
- put the 'answer' block inside the set box (blue-sensing blocks)

TEST – test to see if it works so far

- Click the green flag, enter the '+' symbol and the number 5
Notice the x variable is set to 5 (top-left)

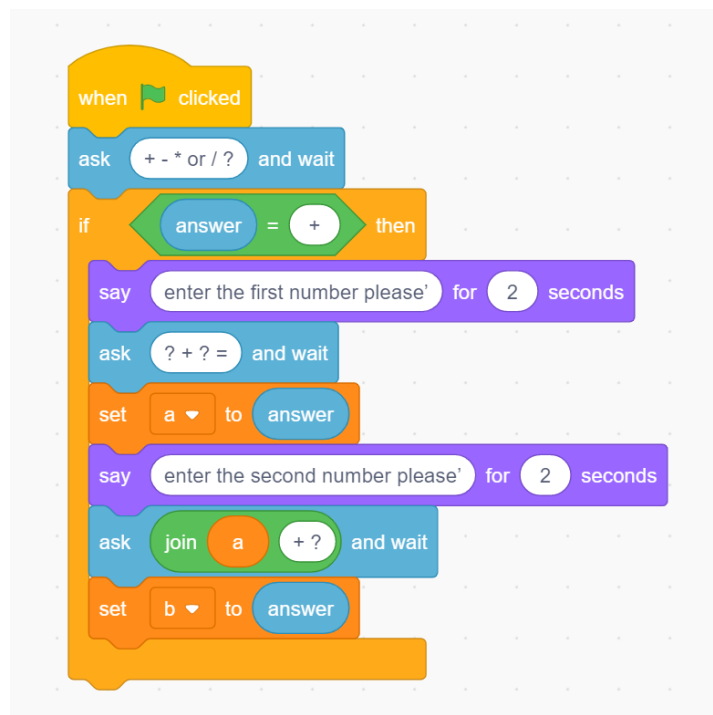


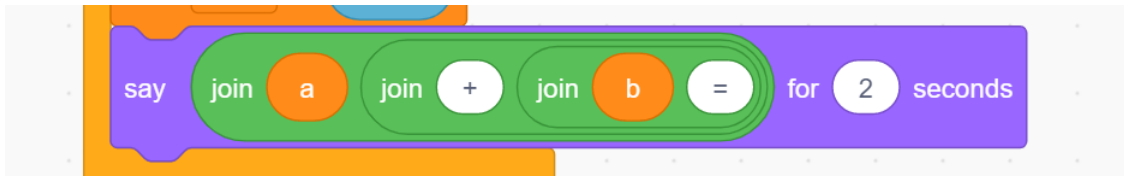
We need to show the input is correct so now we ask for the second number.

It is good to also show the first number.

Add these blocks:

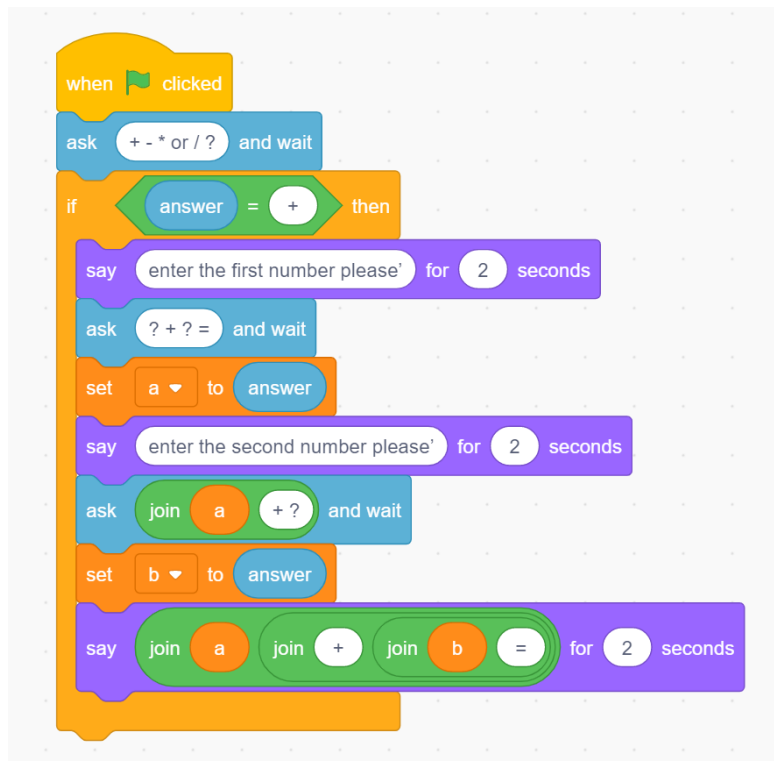
- say ___ for 2 seconds
- change to “enter the second number please”
- Ask ___ and wait
- use the join operator (Operators are in green)
- Join the 'a' from data and type '+ ?'





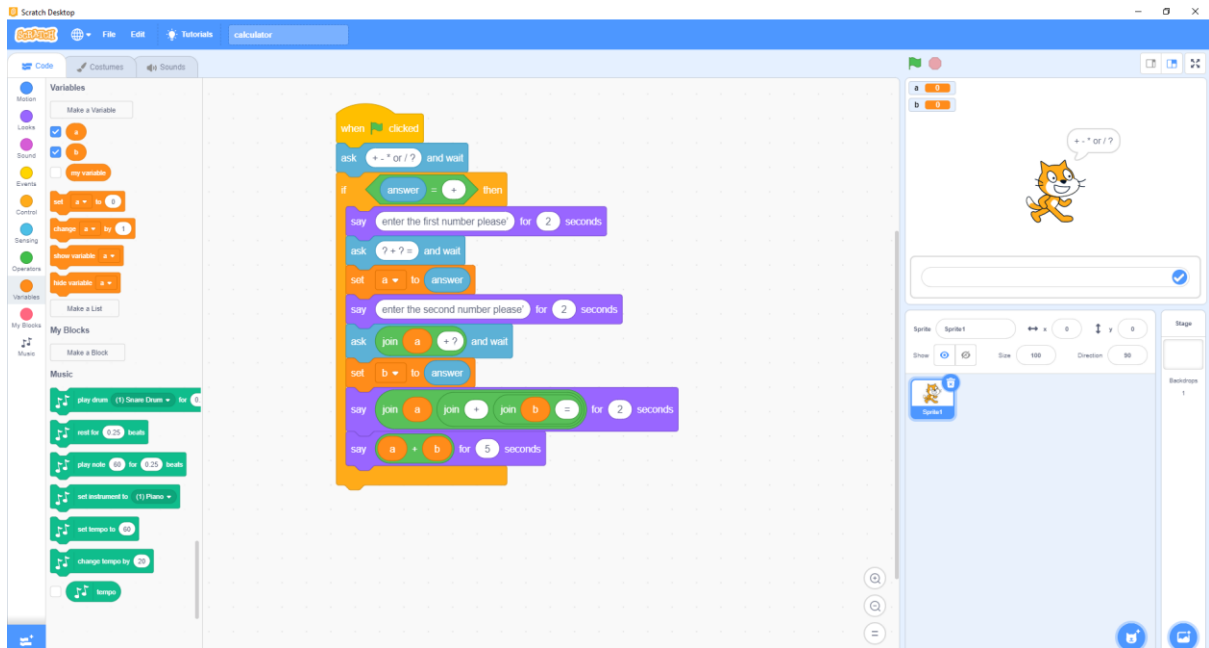
Now we need to set the variable 'b', confirm the problem, and do the math.

- Set b to answer
- get 3 joins
- join them so you have join hello – hello – hello world (see above)
- now add the 'a'
- type ' + ',
- add the 'b',
- type ' ='
- now put all of those blocks together in the say ___ for 2 sec block



Now to need to give the user the answer, add these blocks:

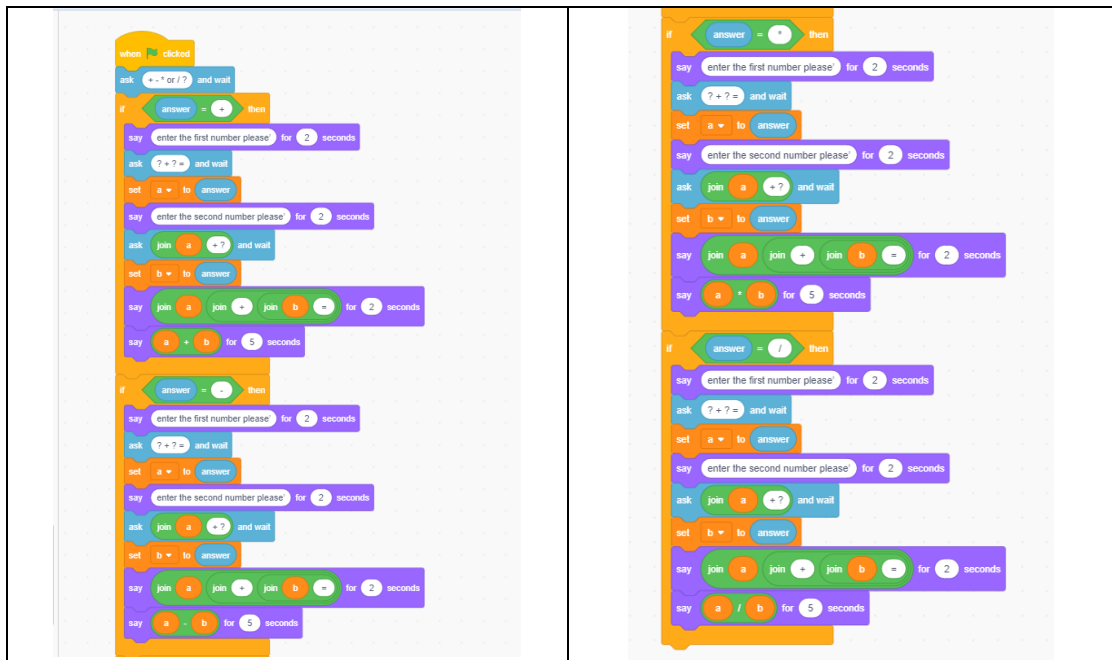
- say for 2 seconds
- In operators choose __ + __
- Get the data a and b and put them either side of the '+'
- Change it to 5 seconds



TEST – try it out! Great!

We need to apply the same code for the other three math symbols. The code is identical so we can duplicate it and then change the math symbol.

- Duplicate all the if code and change the values for the '-', '*', and '/' symbols
- Join all the if blocks then test your program



Well done you have completed Task 3