End of Program and Recap

Coding & STEAM 2019

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Week 8: Coding and Mathematics Part 2

19th September 2019

End of Program 😞

- This is the last week of the Coding & STEAM program
- Before we start today, I am going to go over a few things about the research part of the program
- Like Week 1, we will ask you to complete a survey
- After this presentation and the survey, we will continue with some activities
- I can stay around for 30-60 mins at the end

Research

- This Professional Learning (PL) program is part of a research project
- The purpose is to help understand how teachers can be supported in learning and teaching Coding and Computational Thinking
- We hope this research helps other PL providers implement PL that is useful and relevant to teachers
- Please take 10-15 minutes to complete the End of Program Survey linked to on the session page

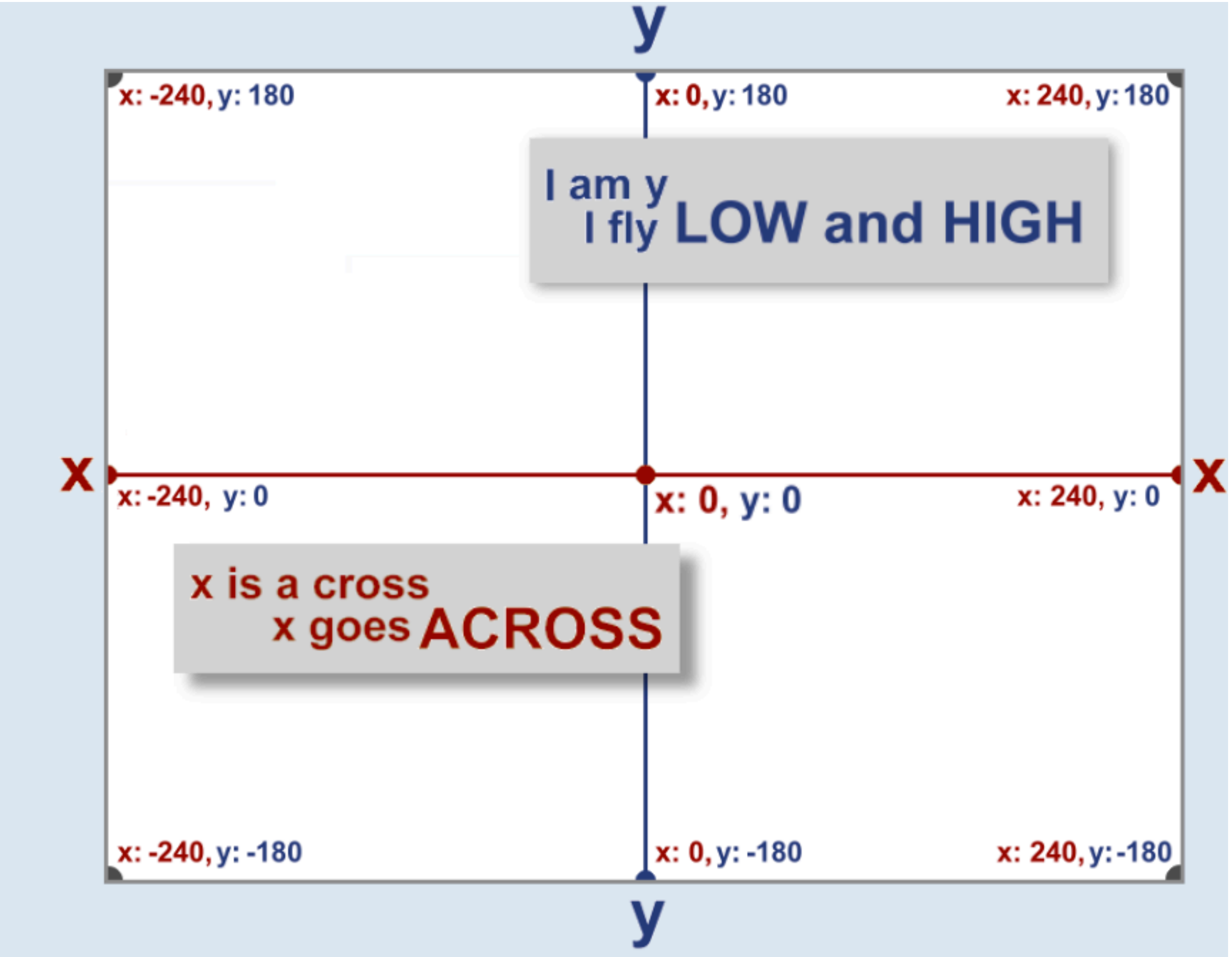
Homework & Accreditation

- If you have completed all of the tasks and attended/ caught up all of the sessions, I will ask the office staff to process your accreditation hours asap
- I would like to finalise the hours and accreditation by the end of the school holidays (October 11th)
- We will send out certificates around October 11th as well, please let me know if you need the certificate before then

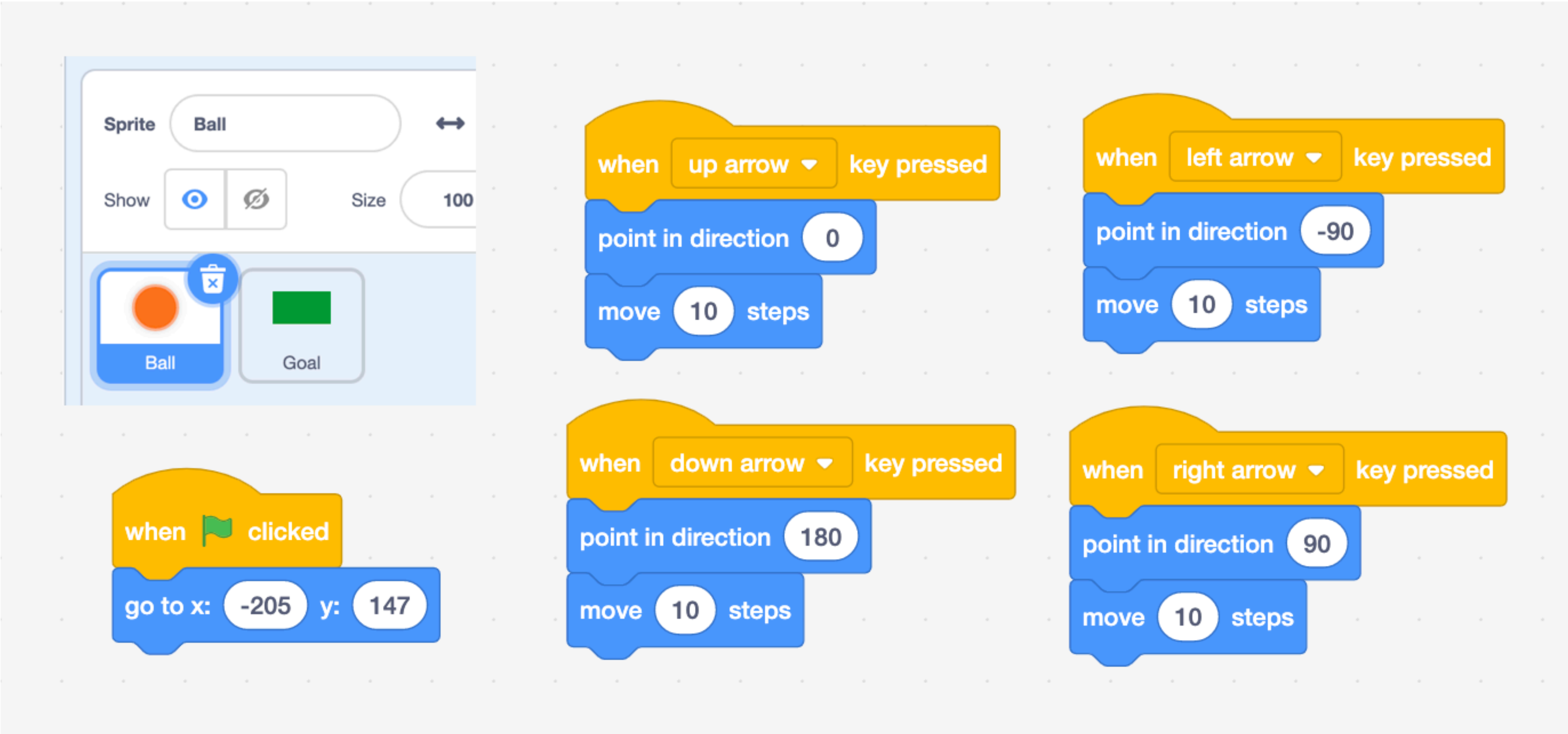
Coding and Mathematics

- Last week we started the Games unit of the Creative Computing Guide
- Also looked at some ways that Game Design can be linked to the teaching of Mathematics
- Coding, the design of games and the teaching of Mathematics have been intertwined since the first educational Coding languages (for example, LOGO)
- What mathematical concepts and computational concepts were in the Week 7 activities?

Motion (Coordinates & Geometry)



Motion (Coordinates & Geometry): Maze



Sprite: Ball

Show: ● ○

Size: 100

```
when 🏴 clicked
go to x: -205 y: 147
```

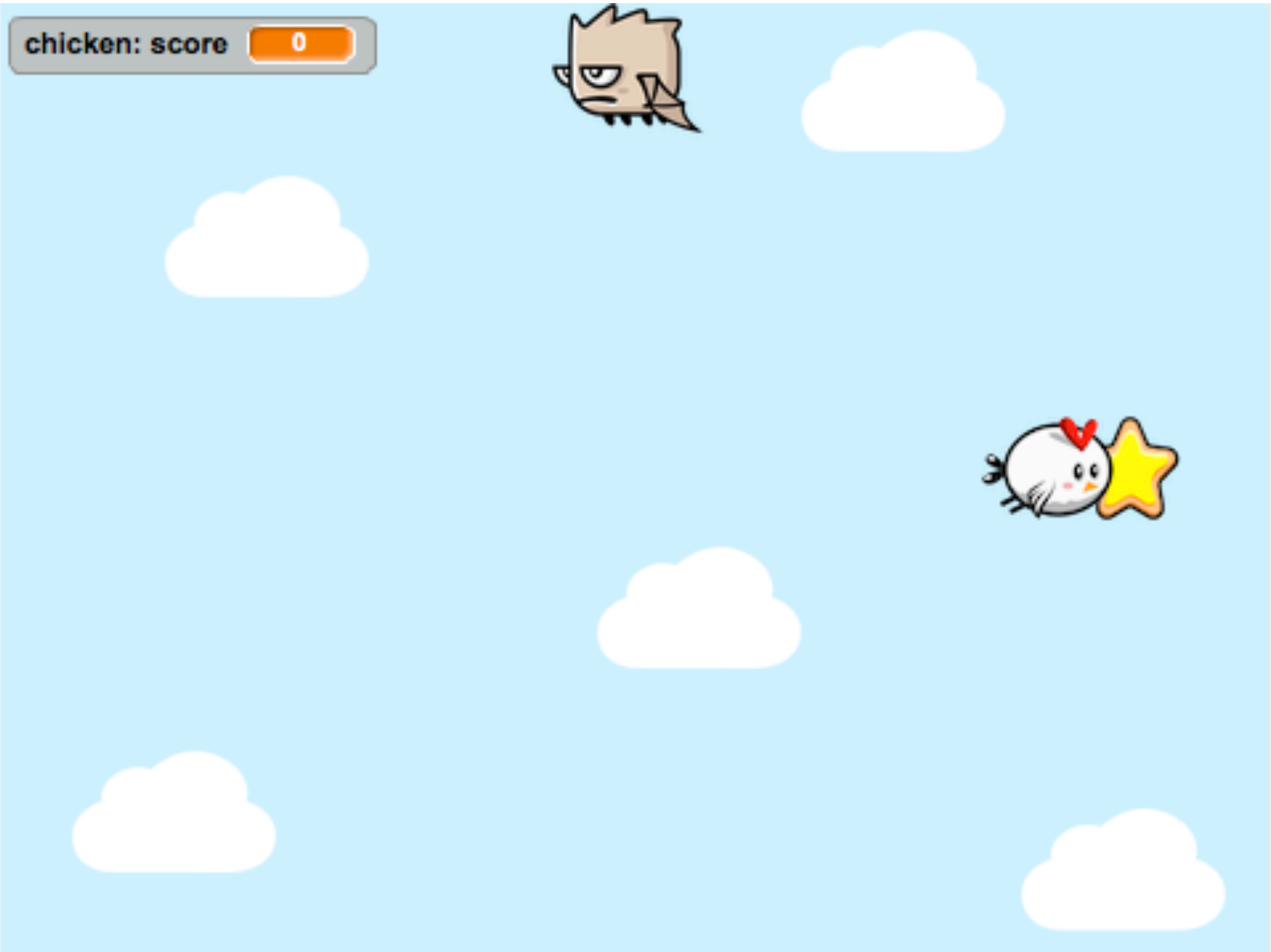
```
when up arrow ▾ key pressed
point in direction 0
move 10 steps
```

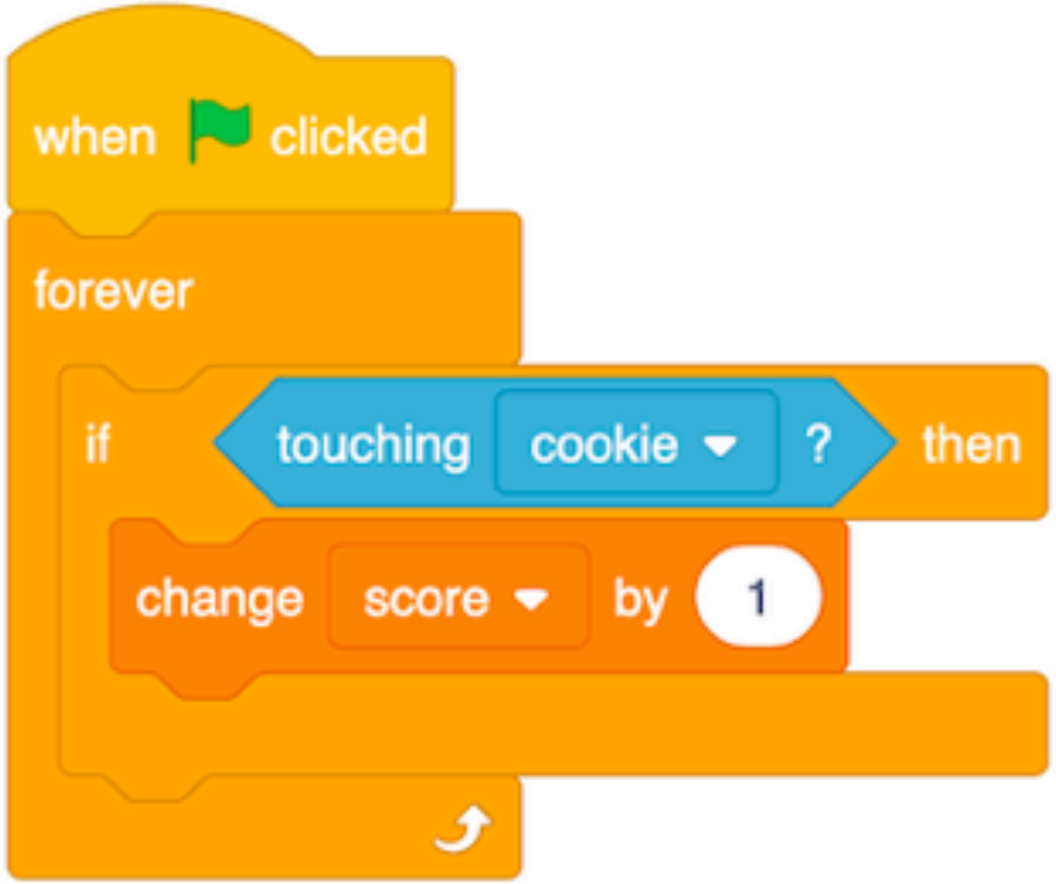
```
when left arrow ▾ key pressed
point in direction -90
move 10 steps
```

```
when down arrow ▾ key pressed
point in direction 180
move 10 steps
```

```
when right arrow ▾ key pressed
point in direction 90
move 10 steps
```

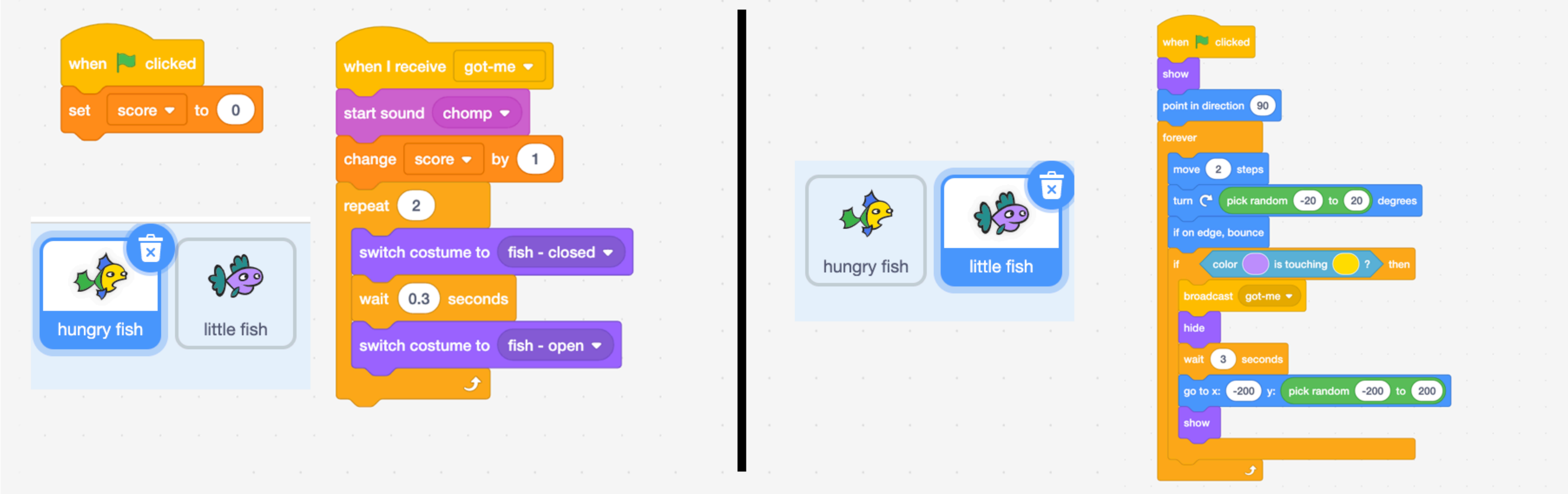
Scores (Formulas & Variables)





```
when 🏁 clicked
forever
    if <touching (cookie ▾) ?> then
        change (score ▾) by (1)
```

Scores (Formulas & Variables): Fish Chomp

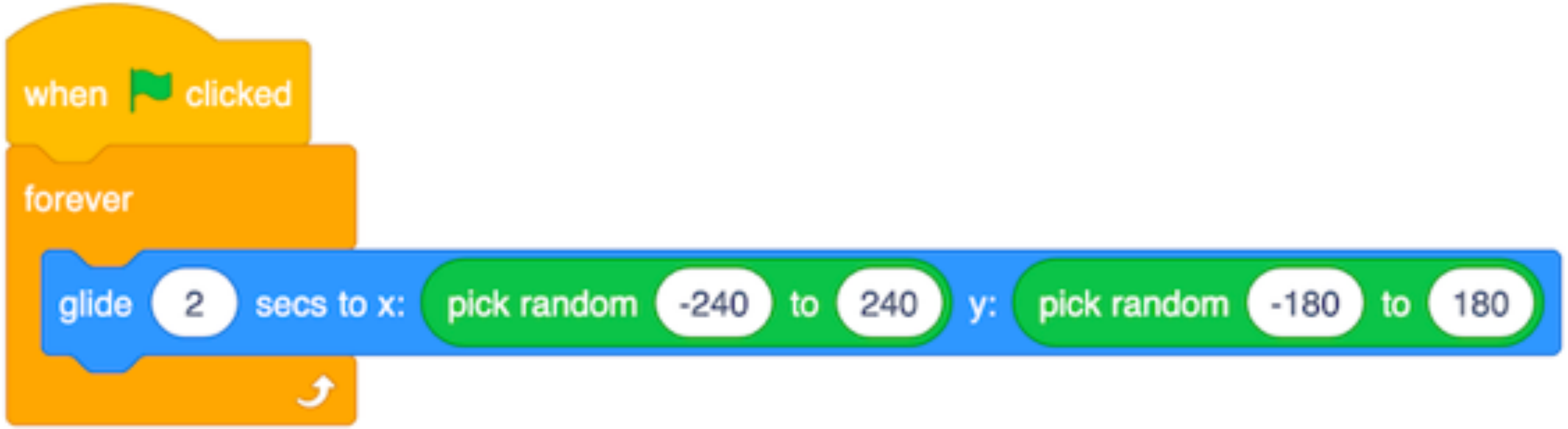


```
when ⚑ clicked
set score ▾ to 0
```

```
when I receive got-me ▾
start sound chomp ▾
change score ▾ by 1
repeat 2
    switch costume to fish - closed ▾
    wait 0.3 seconds
    switch costume to fish - open ▾
```

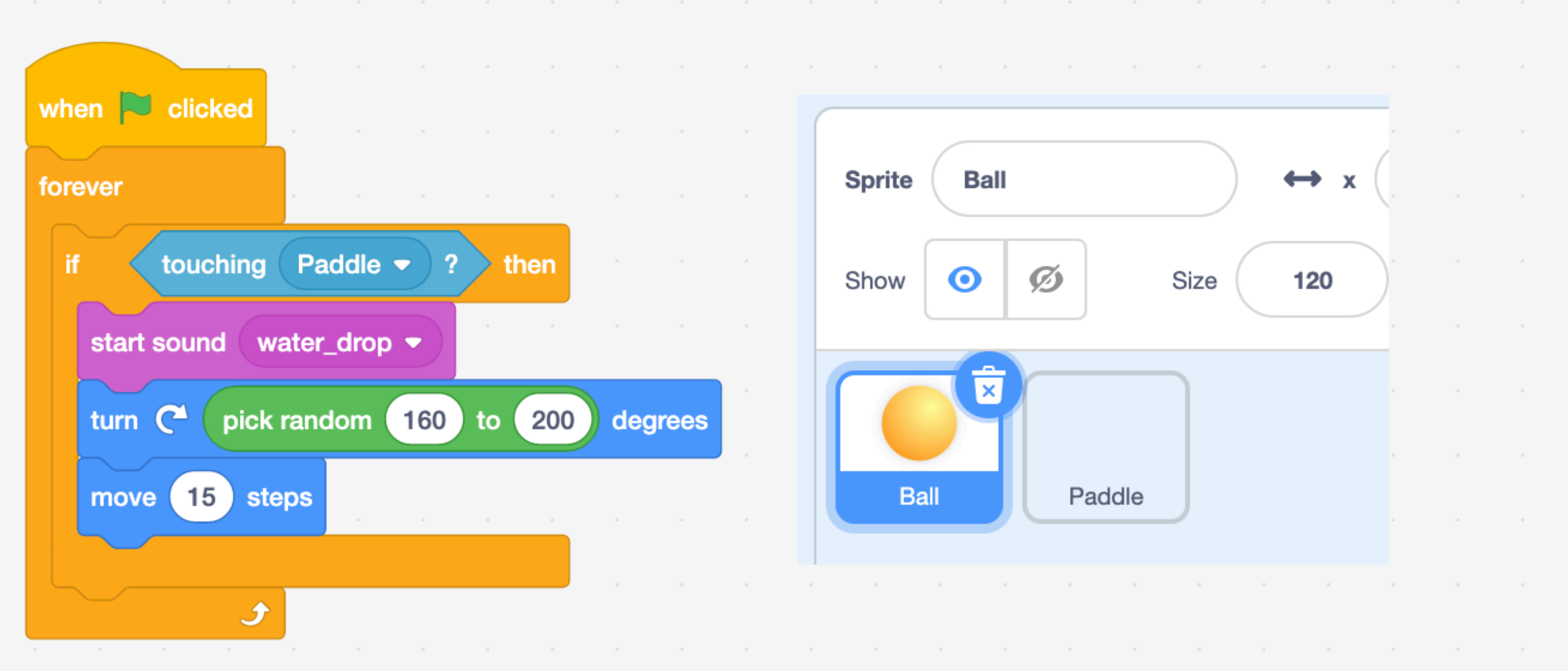
```
when ⚑ clicked
show
point in direction 90
forever
    move 2 steps
    turn ↻ pick random -20 to 20 degrees
    if on edge, bounce
    if color ● is touching ● ? then
        broadcast got-me ▾
        hide
        wait 3 seconds
        go to x: -200 y: pick random -200 to 200
        show
```

Randomness (Probability & Statistics)



```
when 🏁 clicked
forever
    glide (2) secs to x: (pick random (-240) to (240)) y: (pick random (-180) to (180))
```

Randomness (Probability & Statistics)



```
when 🏁 clicked
forever
    if touching Paddle ▾ ? then
        start sound water_drop ▾
        turn ↻ pick random 160 to 200 degrees
        move 15 steps
```

Sprite Ball

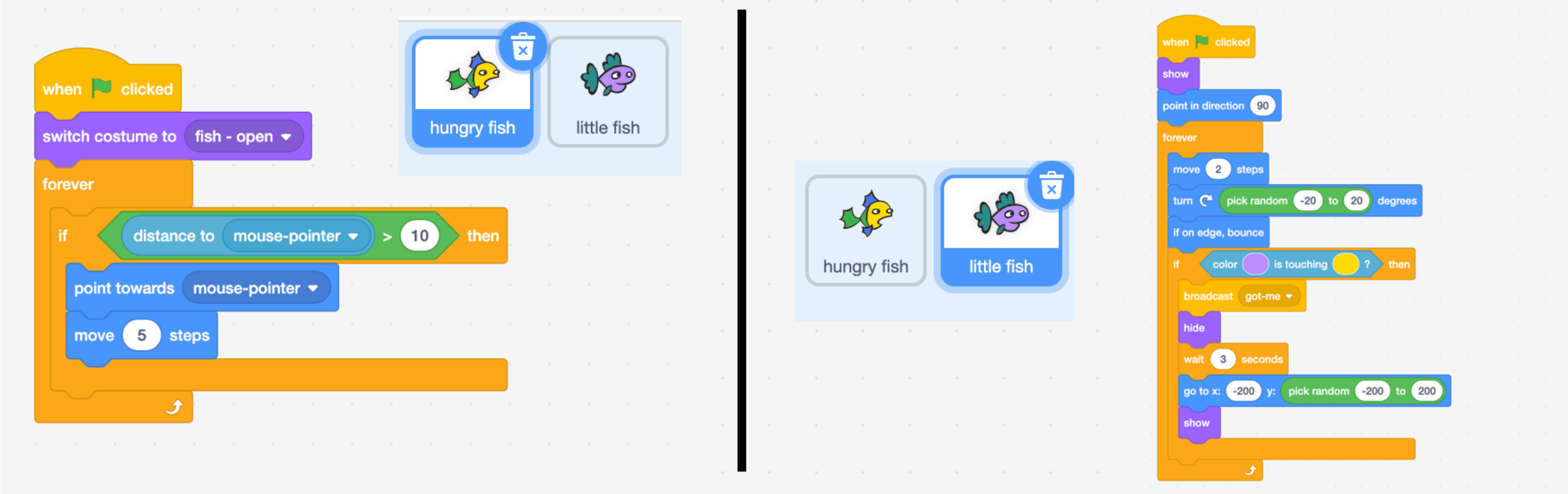
Show

Size 120

Computational Concepts

- The activities last week involved using some different **Computational Concepts**, such as:
  - Parallelism
  - Conditionals
  - Operators
  - Data

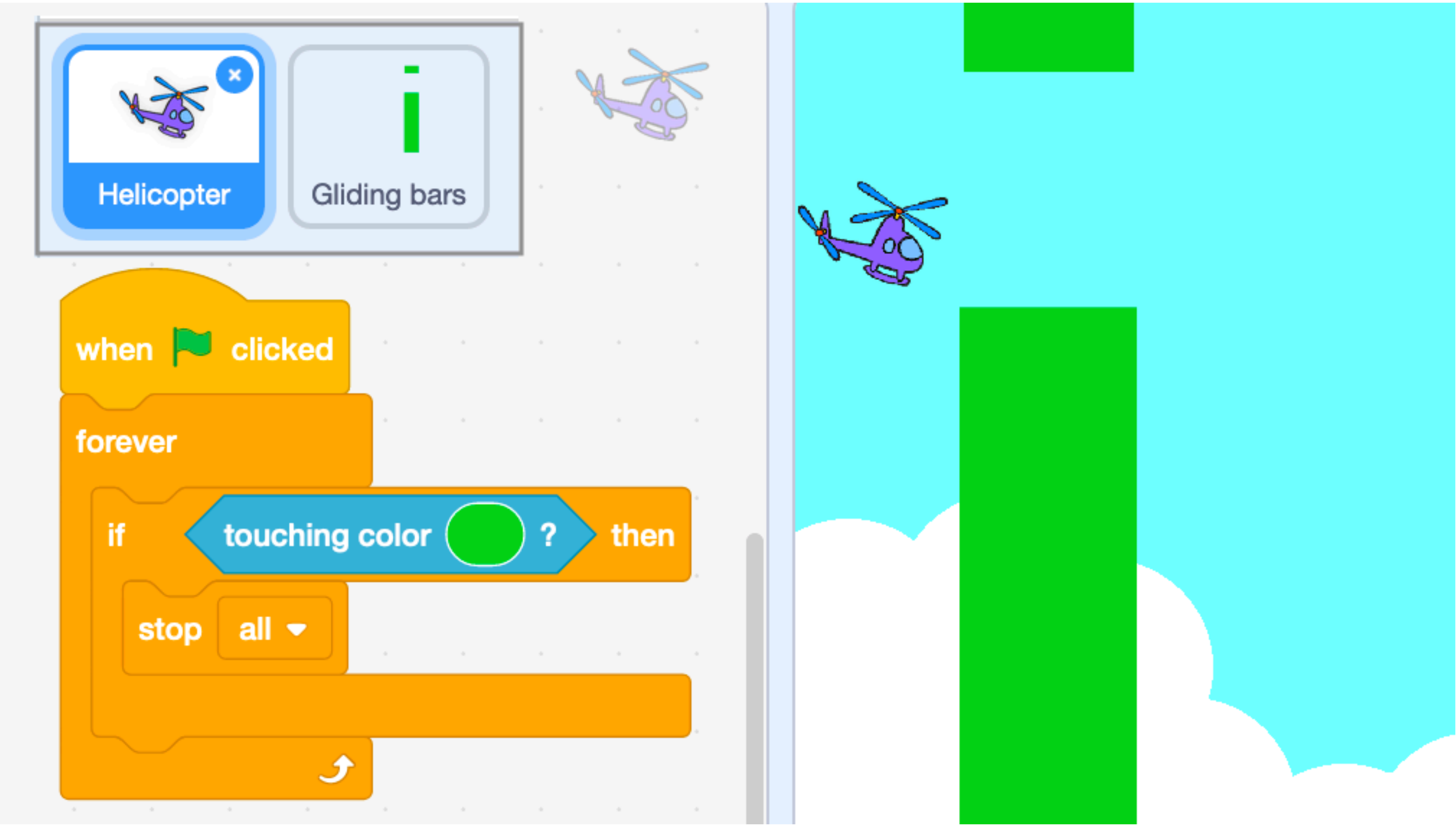
Computational Concept: Parallelism (Fish Chomp)



```
when ⚑ clicked
switch costume to fish - open ▾
forever
    if distance to mouse-pointer ▾ > 10 then
        point towards mouse-pointer ▾
        move 5 steps
```

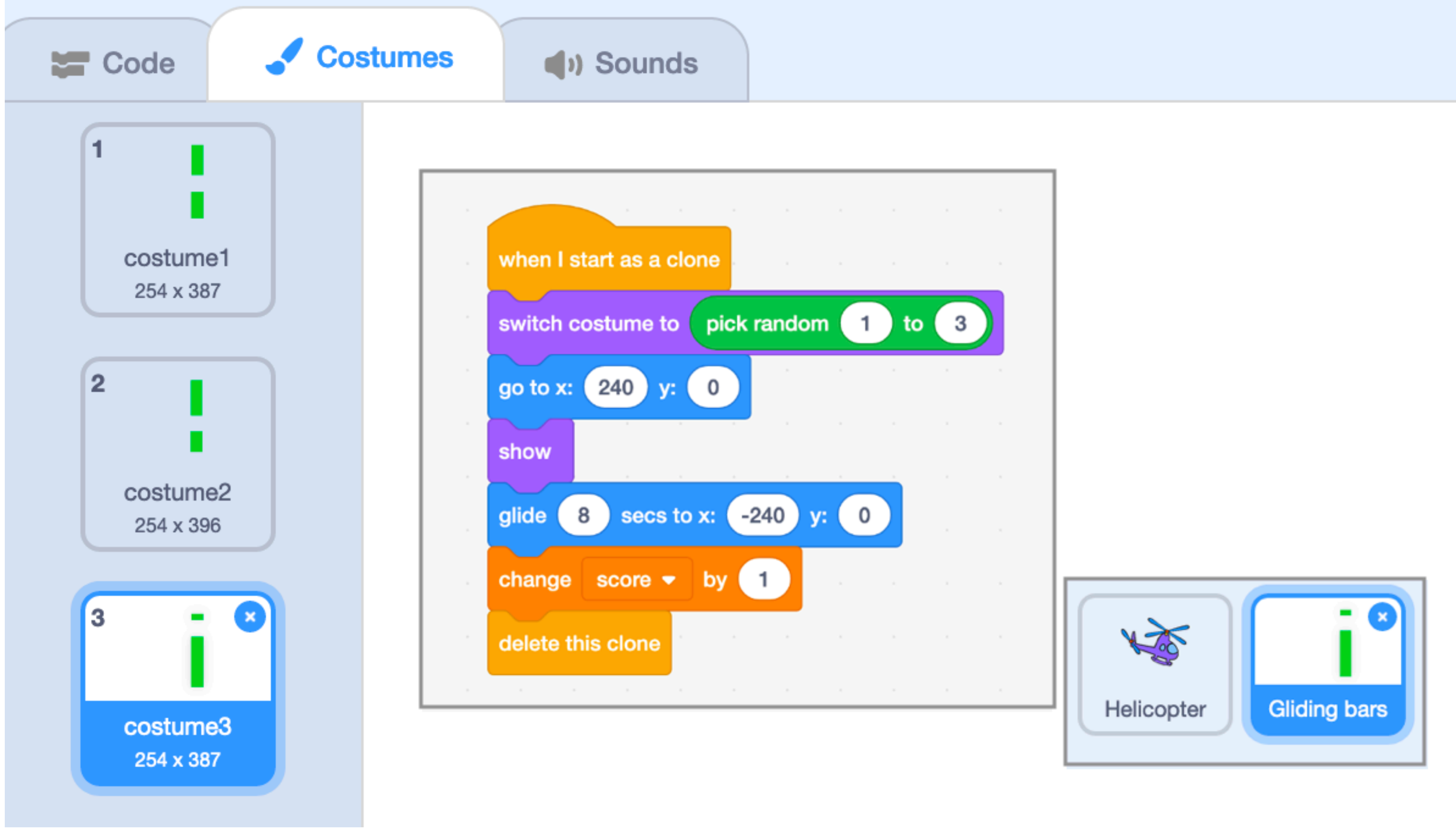
```
when ⚑ clicked
show
point in direction 90
forever
    move 2 steps
    turn ↻ pick random -20 to 20 degrees
    if on edge, bounce
    if color ● is touching ● ? then
        broadcast got-me ▾
        hide
        wait 3 seconds
        go to x: -200 y: pick random -200 to 200
        show
```

Computational Concept: Conditionals (Scrolling)



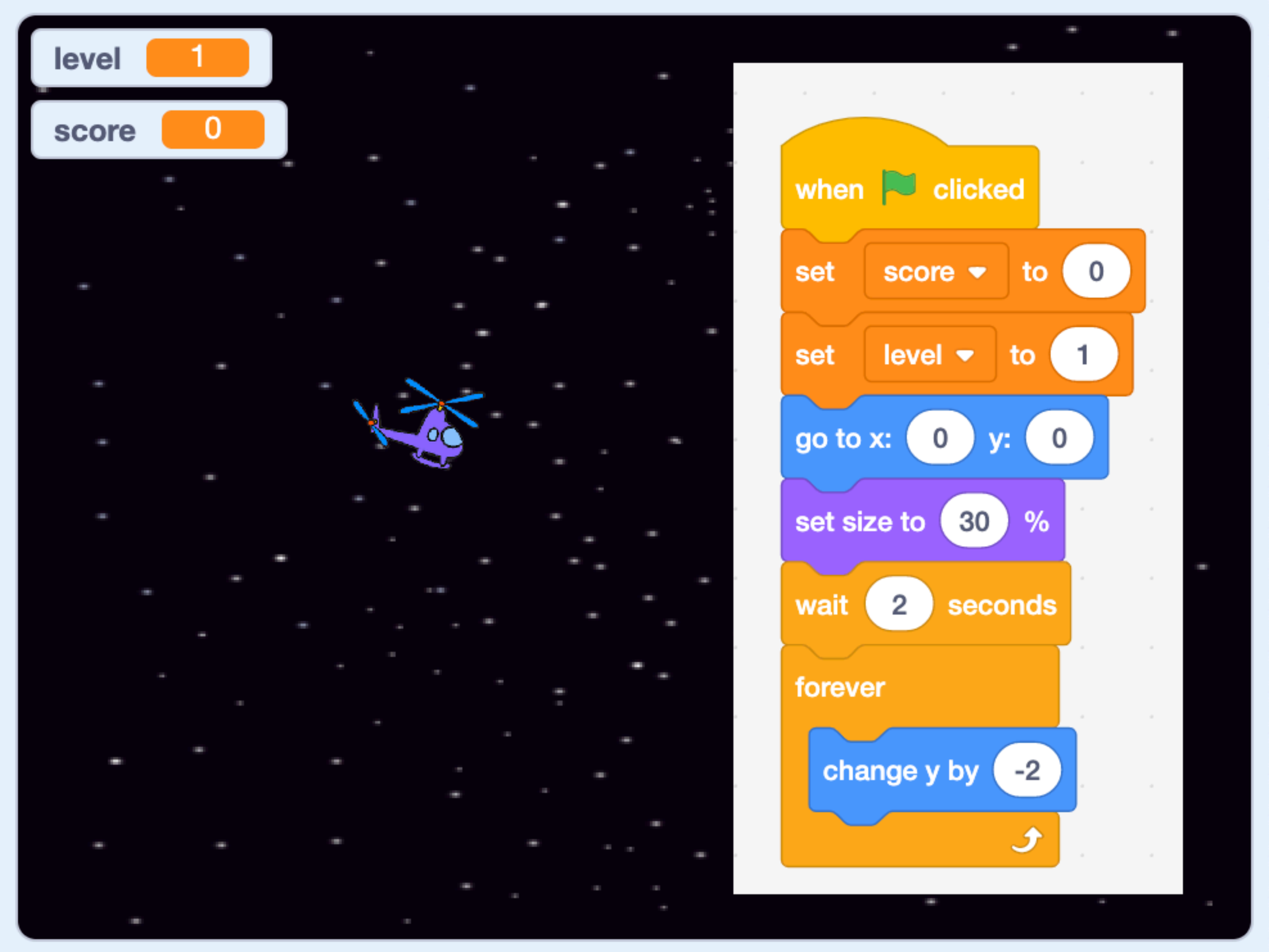
```
when 🏁 clicked
forever
    if touching color 🟩 ? then
        stop all ▾
```

Computational Concept: Operators (Scrolling)



```
when I start as a clone
switch costume to (pick random (1) to (3))
go to x: (240) y: (0)
show
glide (8) secs to x: (-240) y: (0)
change [score ▾] by (1)
delete this clone
```

Computational Concept: Data



level 1

score 0

```
when ⚑ clicked
set score ▾ to 0
set level ▾ to 1
go to x: 0 y: 0
set size to 30 %
wait 2 seconds
forever
    change y by -2
```