Constellation

CONTROL
FREAK™
Powered by Crumble

Aims
- Through this activity students will learn to use sparkles. The aim is to make them flash randomly. There is the option to advance to using motors and light sensors (see bottom of page)

Basic Code
To make sparkles 'twinkle' randomly (all the same colour)

```
program start
do forever
    set all sparkles to [ ]
    turn sparkle (random 0 to 6) off
    wait 10 milliseconds
    set all sparkles to [ ]
loop
```

Resources
- Crumble board
- Sparkles x 7
- Battery pack
- Wires x 27/29
- USB cable
- Light Sensor (advanced)
- Paper/card
- Black fabric

Construction Tips
Using card, stick the sparkles on the front and make holes for the wires to poke through and 'hold' them in place. Secure black fabric over the top so the lights shine through.

Suggested Uses
- Create a classroom 'space' display – use planets on motors as well as moons. Each student can create their own constellation and give it a name. What's the story behind your stars?

Challenge Questions
- Can you add a motor into the advanced and intermediate codes to make a moon 'come up' and 'go down'? How could you incorporate this into your design so the moon disappears when it goes down?

Basic Code
Making sparkles 'twinkle' and a moon spin round

```
program start
do forever
    motor 1 FORWARD at 50 %
    set all sparkles to [ ]
    turn sparkle (random 0 to 6) off
    wait 10 milliseconds
    set all sparkles to [ ]
loop
```

Intermediate Code
Making sparkles 'twinkle' randomly using variables

```
program start
set all sparkles to [ ]
do forever
    let (t) = (random 0 to 6)
    turn sparkle (t) off
    wait 10 milliseconds
    set sparkle (t) to [ ]
loop
```

Advanced Code
Making sparkles 'come out' and 'twinkle' using a light sensor as a switch

```
program start
do forever
    turn all sparkles off
    let (v) = (analogue A)
    if (v) < 170 then
        let (t) = 0
        do 7 times
            set sparkle (t) to [ ]
            wait (random 200 to 1000) milliseconds
            increase (t) by 1
        loop
        do until (v) > 170
            let (u) = (random 0 to 6)
            let (v) = (analogue A)
            turn sparkle (u) off
            wait 10 milliseconds
            set sparkle (u) to [ ]
        loop
        turn all sparkles off
    end if
loop
```

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