

Straight Line Curves

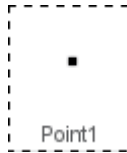
Aim: Draw curves using straight lines

Backdrop

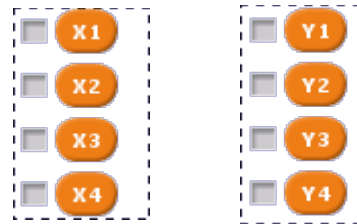
Black backdrop

Sprite

Replace Cats with a dot called **Point1**



Variables



```
when clicked clicked
  go to x: 0 y: 0
  clear

when x key pressed
  hide
  pen up
  clear
  stop other scripts in sprite

when 1 key pressed
  hide
  pen up
  clear
  show
  set pen color to 0
  point in direction 90
  set X1 to 0
  set Y1 to 180
  set X2 to 0
  set Y2 to 0
  set X3 to 0
  set Y3 to -180
  set X4 to 0
  set Y4 to 0
  clear
  broadcast Draw1
  go to x: 0 y: 0
  hide

when I receive Draw1
  repeat 37
    change pen color by 3
    go to x: X1 y: Y1
    pen down
    go to x: X2 y: Y2
    go to x: X3 y: Y3
    go to x: X4 y: Y4
    go to x: X1 y: Y1
    pen up
    set X2 to X2 + 5
    set Y1 to Y1 - 5
    set X4 to X4 - 5
    set Y3 to Y3 + 5
```

Save and Test

Duplicate Point1 to make Point2, Point3 and Point4

Modify as shown Point2

Point3

The image displays two sets of Scratch code blocks, each enclosed in a dashed-line box. The left box, labeled 'Point2', contains three event-driven scripts. The first script, triggered by a 'when clicked' event, sets the sprite to (0,0), hides it, and clears the stage. The second script, triggered by an 'x' key press, hides the sprite, clears the stage, and stops other scripts. The third script, triggered by a 'Draw2' broadcast, repeats 37 times: it changes the pen color by 3, moves the pen to four points (X1, Y1), (X2, Y2), (X3, Y3), and (X4, Y4), and then updates these coordinates by +5 for X and -5 for Y. The right box, labeled 'Point3', also contains three event-driven scripts. The first script, triggered by a 'when clicked' event, sets the sprite to (0,0), hides it, and clears the stage. The second script, triggered by an 'x' key press, hides the sprite, clears the stage, and stops other scripts. The third script, triggered by a '3' key press, sets the pen color to 120, points in direction 90, and repeats 37 times: it moves the pen to four points (X1, Y1), (X2, Y2), (X3, Y3), and (X4, Y4), and then updates these coordinates by +5 for X and -5 for Y. Both scripts include a 'broadcast' block to trigger the drawing sequence.

```
when clicked clicked
  go to x: 0 y: 0
  clear

when x key pressed
  hide
  pen up
  clear
  stop other scripts in sprite

when I receive Draw2
  repeat 37
    change pen color by 3
    go to x: X1 y: Y1
    pen down
    go to x: X2 y: Y2
    go to x: X3 y: Y3
    go to x: X4 y: Y4
    go to x: X1 y: Y1
    pen up
    set X1 to X1 + 5
    set Y1 to Y1 - 5
    set X2 to X2 + 5
    set Y2 to Y2 + 5
    set X3 to X3 - 5
    set Y3 to Y3 + 5
    set X4 to X4 - 5
    set Y4 to Y4 - 5

when 2 key pressed
  hide
  pen up
  clear
  show
  set pen color to 80
  point in direction 90
  set X1 to -180
  set Y1 to 180
  set X2 to 0
  set Y2 to 0
  set X3 to 180
  set Y3 to -180
  set X4 to 0
  set Y4 to 0
  clear
  broadcast Draw2
  go to x: 0 y: 0
  hide

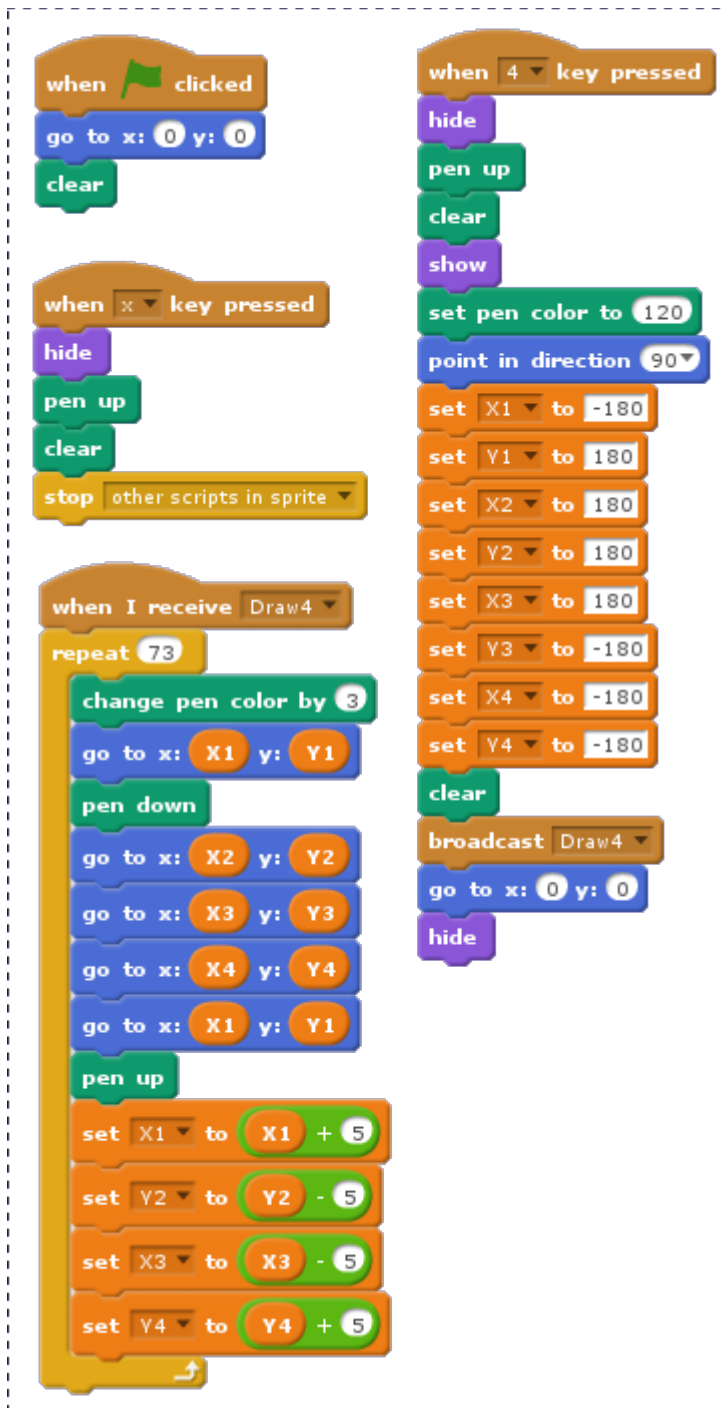
when clicked clicked
  go to x: 0 y: 0
  clear

when x key pressed
  hide
  pen up
  clear
  stop other scripts in sprite

when I receive Draw3
  repeat 37
    change pen color by 3
    go to x: X1 y: Y1
    pen down
    go to x: X2 y: Y2
    go to x: X3 y: Y3
    go to x: X4 y: Y4
    go to x: X1 y: Y1
    pen up
    set X1 to X1 + 5
    set Y2 to Y2 - 5
    set X3 to X3 - 5
    set Y4 to Y4 + 5

when 3 key pressed
  hide
  pen up
  clear
  show
  set pen color to 120
  point in direction 90
  set X1 to 0
  set Y1 to 180
  set X2 to 180
  set Y2 to 0
  set X3 to 0
  set Y3 to -180
  set X4 to -180
  set Y4 to 0
  clear
  broadcast Draw3
  go to x: 0 y: 0
  hide
```

Point4



```
when clicked clicked
  go to x: 0 y: 0
  clear

when x key pressed
  hide
  pen up
  clear
  stop other scripts in sprite

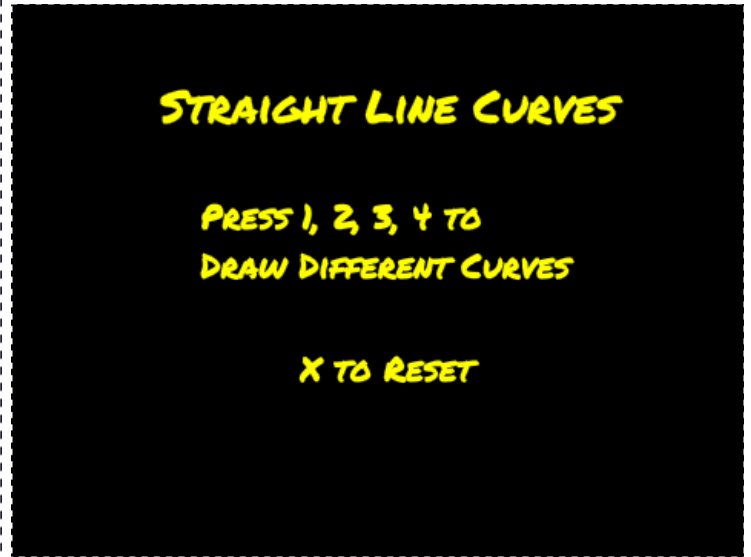
when I receive Draw4
  repeat 73
    change pen color by 3
    go to x: X1 y: Y1
    pen down
    go to x: X2 y: Y2
    go to x: X3 y: Y3
    go to x: X4 y: Y4
    go to x: X1 y: Y1
    pen up
    set X1 to X1 + 5
    set Y2 to Y2 - 5
    set X3 to X3 - 5
    set Y4 to Y4 + 5

when 4 key pressed
  hide
  pen up
  clear
  show
  set pen color to 120
  point in direction 90
  set X1 to -180
  set Y1 to 180
  set X2 to 180
  set Y2 to 180
  set X3 to 180
  set Y3 to -180
  set X4 to -180
  set Y4 to -180
  clear
  broadcast Draw4
  go to x: 0 y: 0
  hide
```

Save and Test

Backdrop


Create a second backdrop called opener



```
when clicked clicked
  switch backdrop to opener
```



```
when 1 key pressed
  switch backdrop to Black
```



```
when 2 key pressed
  switch backdrop to Black
```



```
when 3 key pressed
  switch backdrop to Black
```



```
when 4 key pressed
  switch backdrop to Black
```



```
when x key pressed
  clear
  switch backdrop to opener and wait
```

Parabolic Cube

Black Backdrop

Variables and Lists

Use

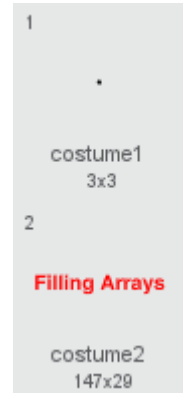
More Blocks

```
when clicked
  clear
  pen up
  set pen size to 0.5
  set pen color to
  go to x: 0 y: 0
  TurnPoint 60
  Draw
  go to x: 0 y: 0
  TurnPoint 180
  Draw
  go to x: 0 y: 0
  TurnPoint -60
  Draw
  stop all
```

```
define TurnPoint number1
  delete all of a
  delete all of b
  set count to 0
  set M to 120
  switch costume to costume2
  point in direction number1
  Array
  turn M degrees
  Array
  turn M / 2 degrees
  Array
  turn M degrees
  Array
  turn M / 2 degrees
  switch costume to costume1
  Array
```

```
define Draw
  switch costume to costume1
  set count to 0
  repeat 4
    repeat 25
      set count to count + 1
      go to x: item count of a y: item count of b
      pen down
      change pen color by 10
      go to x: item count + 25 of a y: item count + 25 of b
      pen up
```

Dot sprite



```
define Array
  repeat 25
    set count to count + 1
    insert x position at count of a
    insert y position at count of b
    move 7 steps
```

