

Section C

Unit #5

Create
Graphics



Section C Unit 5 Create Graphics

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Introduction to Unit #5 create graphics

This is a powerful function that is also extremely fun (in my opinion). It gives you the opportunity to put images, photos, videos and even draw on the faces of a shape while it is moving.



Sketch C5.1 starting sketch

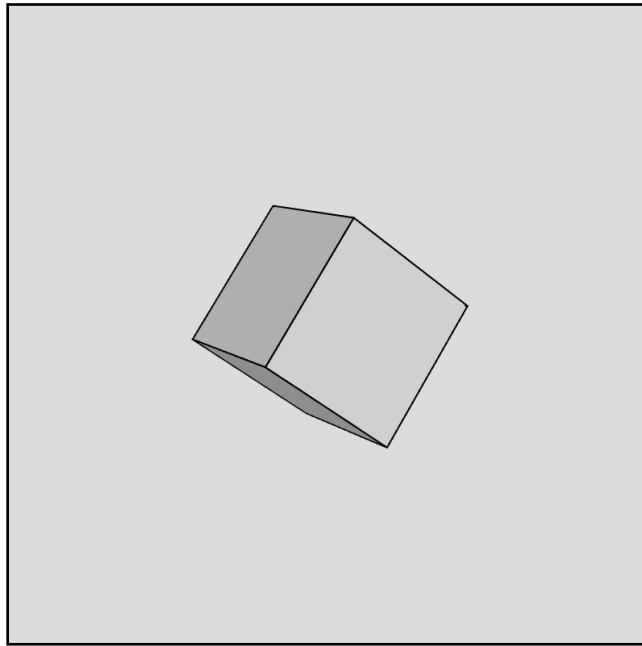
Our starting sketch, we get a nice rotating box

```
let angle = 0

function setup()
{
  createCanvas(400, 400, WEBGL)
  angleMode(DEGREES)
}

function draw()
{
  background(220)
  lights()
  rotateX(angle)
  rotateY(angle)
  rotateZ(angle)
  box(100)
  angle++
}
```

Nothing unusual here





Sketch C5.2 applying texture

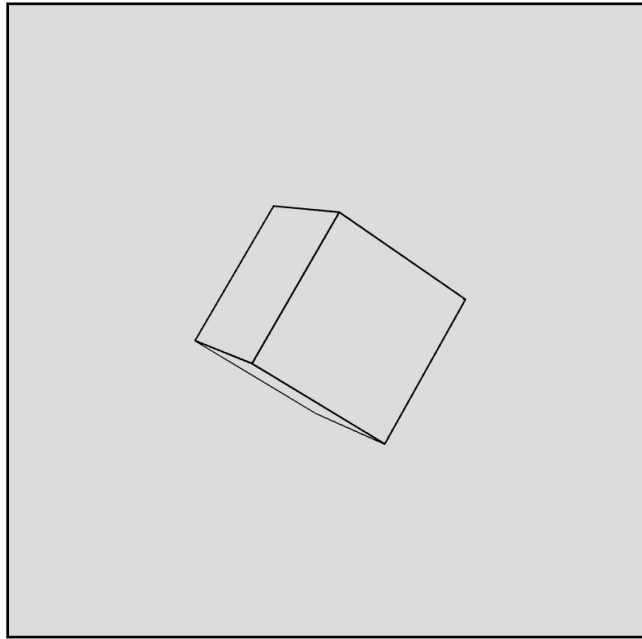
We create a square object 400 by 400 and apply texture it to the box

```
let angle = 0
let graphics

function setup()
{
  createCanvas(400, 400, WEBGL)
  angleMode(DEGREES)
  graphics = createGraphics(400, 400)
}

function draw()
{
  background(220)
  lights()
  rotateX(angle)
  rotateY(angle)
  rotateZ(angle)
  texture(graphics)
  box(100)
  angle++
}
```

Now we have this, nothing





Sketch C5.3 separate canvas

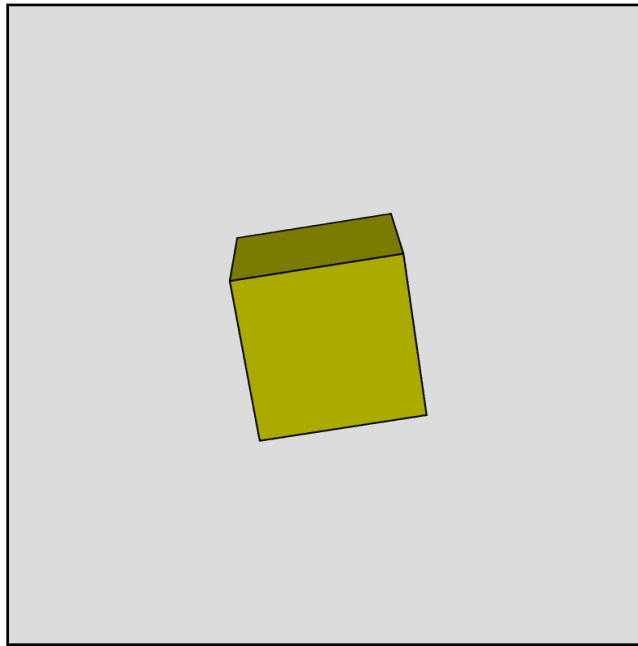
Now we can manipulate the texture as a separate canvas. Starting simple we give it a yellow background.

```
let angle = 0
let graphics

function setup()
{
  createCanvas(400, 400, WEBGL)
  angleMode(DEGREES)
  graphics = createGraphics(400, 400)
}

function draw()
{
  background(220)
  graphics.background(200, 200, 0)
  lights()
  rotateX(angle)
  rotateY(angle)
  rotateZ(angle)
  texture(graphics)
  box(100)
  angle++
}
```


We have applied the graphics background





Sketch C5.4 adding graphics

We can draw shapes on the side of the box, in this case we can draw a circle which appears on all the surfaces of the box.

```
let angle = 0
let graphics

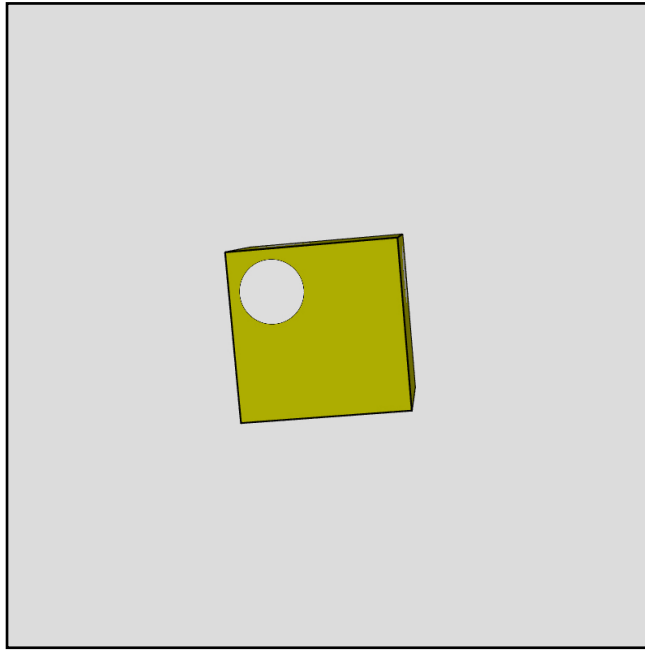
function setup()
{
  createCanvas(400, 400, WEBGL)
  angleMode(DEGREES)
  graphics = createGraphics(400, 400)
}

function draw()
{
  background(220)
  graphics.background(200, 200, 0)
  graphics.circle(100, 100, 150)
  lights()
  rotateX(angle)
  rotateY(angle)
  rotateZ(angle)
  texture(graphics)
  box(100)
  angle++
}
```

Challenges

You could try drawing other shapes and adding colour.

Drawing a circle on the side of the box
using createGraphics()





Sketch C5.5 drawing on the sides

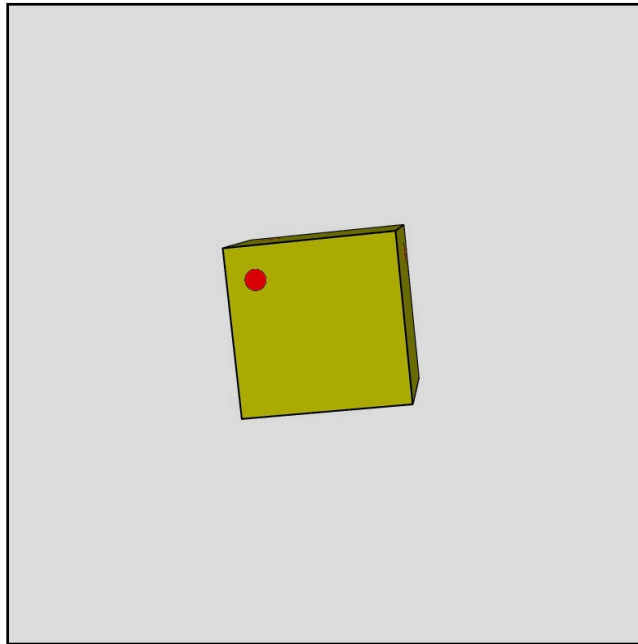
We can also have the circle move across the sides of the box as you move your mouse across the canvas

```
let angle = 0
let graphics

function setup()
{
  createCanvas(400, 400, WEBGL)
  angleMode(DEGREES)
  graphics = createGraphics(400, 400)
}

function draw()
{
  background(220)
  graphics.background(200, 200, 0)
  graphics.fill(255, 0, 0)
  graphics.ellipse(mouseX, mouseY, 50)
  lights()
  rotateX(angle)
  rotateY(angle)
  rotateZ(angle)
  texture(graphics)
  box(100)
  angle++
}
```

When you move the mouse around the canvas the red circle moves around each of the sides simultaneously





Sketch C5.6 a bit of fun tweaking

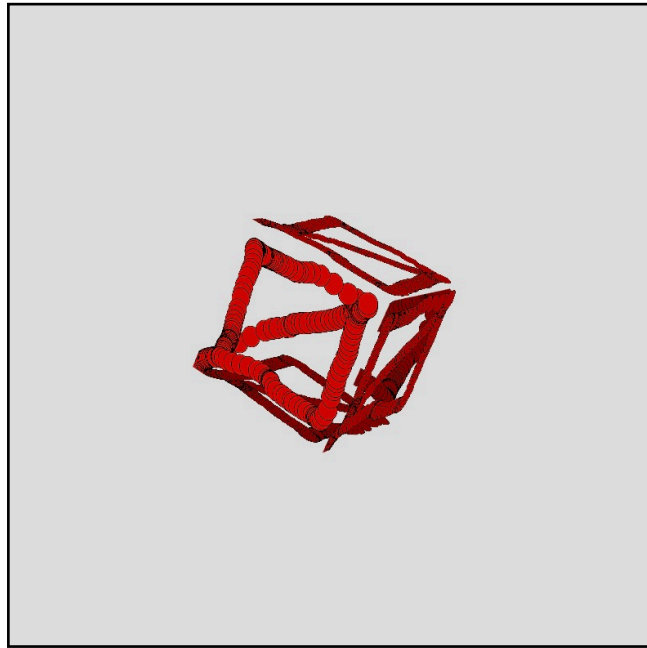
Watch what happens when we comment out the graphics background and add in `noStroke()`

```
let angle = 0
let graphics

function setup()
{
  createCanvas(400, 400, WEBGL)
  angleMode(DEGREES)
  graphics = createGraphics(400, 400)
}

function draw()
{
  background(220)
  // graphics.background(200, 200, 0)
  graphics.fill(255, 0, 0)
  graphics.ellipse(mouseX, mouseY, 50)
  noStroke()
  lights()
  rotateX(angle)
  rotateY(angle)
  rotateZ(angle)
  texture(graphics)
  box(100)
  angle++
}
```

You paint on the box but it is also transparent





Sketch C5.7 creating text

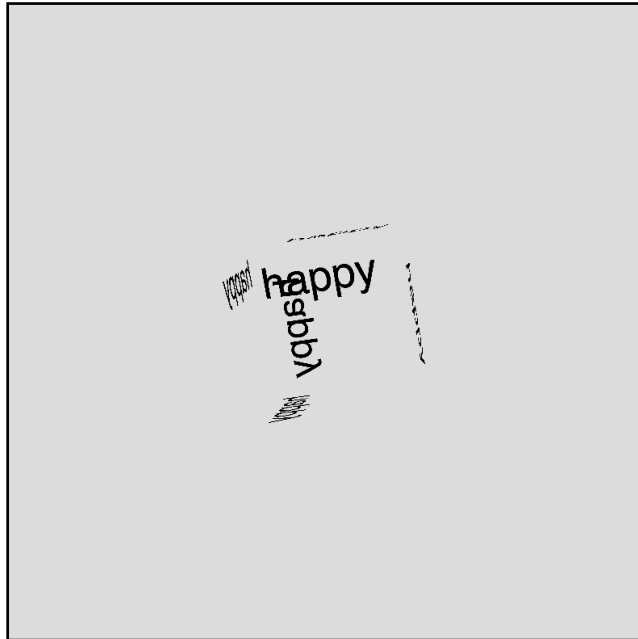
We can also create text. Remove all references to graphics and replace with the following.

```
let angle = 0
let words

function setup()
{
  createCanvas(400, 400, WEBGL)
  angleMode(DEGREES)
  words = createGraphics(400, 400)
}

function draw()
{
  background(220)
  words.textSize(100)
  words.text('happy', 100, 100)
  noStroke()
  lights()
  rotateX(angle)
  rotateY(angle)
  rotateZ(angle)
  texture(words)
  box(100)
  angle++
}
```

Text floating in space with a transparent background





Sketch C5.8 words on a plane

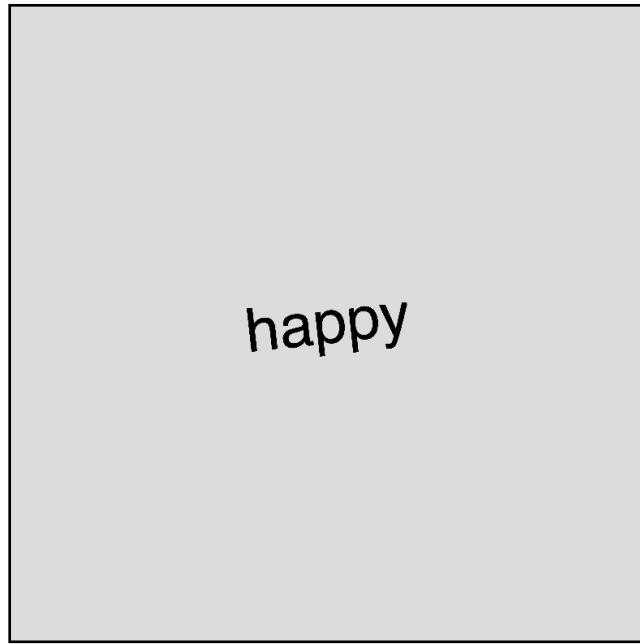
If we put it on a plane it is a single word

```
let angle = 0
let words

function setup()
{
  createCanvas(400, 400, WEBGL)
  angleMode(DEGREES)
  words = createGraphics(400, 400)
}

function draw()
{
  background(220)
  words.textSize(100)
  words.text('happy', 100, 100)
  noStroke()
  lights()
  rotateX(angle)
  rotateY(angle)
  rotateZ(angle)
  texture(words)
  plane(100)
  angle++
}
```

Single text floating in space





Sketch C5.9 text on a cylinder

What about round the side of a cylinder? We need to make some adaptations to get this to work reasonably, you can play with everything later.

```
let angle = 0
let words

function setup()
{
  createCanvas(400, 400, WEBGL)
  angleMode(DEGREES)
  words = createGraphics(400, 100)
}

function draw()
{
  background(220)
  words.textSize(50)
  words.text('happy birthday', 0, 50)
  noStroke()
  // lights()
  // rotateX(angle)
  rotateY(-angle)
  // rotateZ(angle)
  texture(words)
  cylinder(100, 125)
  words.background(220)
  angle++
}
```

Challenges

Try different shapes

Add colour

Could you get the text to move up and down

Text rotating on a cylinder

