Problem Set 2

# Notes

(1) You will need to consult the p5.js reference in order to solve these problems.

Link to the reference: <https://p5js.org/reference/>

(2) Experimenting with code will help you learn.

A place to experiment with code: <https://editor.p5js.org/>

# frameCount

\* What will the following code do?

function setup(){

createCanvas(101, 101);

}

function draw(){

ellipse(51, 51, frameCount);

}

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# frameRate()

\* How will (a) and (b) draw differently?

(a)

function setup(){

createCanvas(101, 101);

frameRate(5);

}

function draw(){

ellipse(51, 51, frameCount);

}

(b)

function setup(){

createCanvas(101, 101);

frameRate(25);

}

function draw(){

ellipse(51, 51, frameCount);

}

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# for

\* What will the following code do?

function setup(){

createCanvas(101, 101);

}

function draw(){

noFill();

for(let i=0;i<10;i++){

ellipse(51, 51, i\*10);

}

}

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\* What’s the difference between for(i=0;i<100;i++) and for(i=0;i<10;i++)?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\* What’s the difference between for(i=0;i<100;i++) and for(i=1;i<100;i++)?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\* How many times will ellipse(51,51,i\*10) run?

for(let i=0;i<10;i++){

ellipse(51, 51, i\*10);

}

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\* What will the largest possible value for d be within the for-loop?

for(let i=0;i<10;i++){

let d = i\*10;

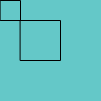
ellipse(51, 51, d);

}

\_\_\_\_\_\_

# translate()

\* Fill in the missing numbers to draw the image on the right.



function setup(){

createCanvas(101, 101);

}

function draw(){

background(100,200,200);

noFill();

rect(0,0,20,20);

translate(\_\_\_\_\_, \_\_\_\_\_);

rect(0,0,40,40);

}

# PI

\* Answer the following questions.

What’s 360 degrees in radians? \_\_\_\_\_\_\_\_\_\_\_\_

What’s 180 degrees in radians? \_\_\_\_\_\_\_\_\_\_\_\_

What’s 90 degrees in radians? \_\_\_\_\_\_\_\_\_\_\_\_

What’s 45 degrees in radians? \_\_\_\_\_\_\_\_\_\_\_\_

What’s 60 degrees in radians? \_\_\_\_\_\_\_\_\_\_\_\_

What’s 30 degrees in radians? \_\_\_\_\_\_\_\_\_\_\_\_

# rotate()

\* Fill in the missing number to draw the image on the right.



function setup(){

createCanvas(101, 101);

}

function draw(){

background(100,200,200);

noFill();

translate(40,40);

rect(0,0,20,20);

rotate(PI/\_\_\_\_\_);

rect(0,0,40,40);

}

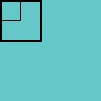
# scale()

\* To draw the image on the right, select the number to fill in the blank.

(a) 2

(b) 20

(c) 4



function setup(){

createCanvas(101, 101);

}

function draw(){

background(100,200,200);

noFill();

rect(0,0,20,20);

scale(\_\_\_);

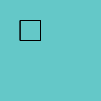
rect(0,0,20,20);

}

# push(), pop()

\* Explain how adding push() and pop() influences the drawing.

Before adding push() and pop():



function setup(){

createCanvas(101, 101);

}

function draw(){

background(100,200,200);

noFill();

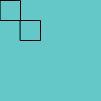
translate(20,20);

rect(0,0,20,20);

rect(0,0,20,20);

}

After adding push() and pop():



function setup(){

createCanvas(101, 101);

}

function draw(){

background(100,200,200);

noFill();

push();

translate(20,20);

rect(0,0,20,20);

pop();

rect(0,0,20,20);

}

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# sin()

\* Answer the following Math question.

What’s the value of sin(0)? \_\_\_\_\_\_\_\_\_\_\_\_

What’s the value of sin(PI)? \_\_\_\_\_\_\_\_\_\_\_\_

What’s the value of sin(-PI)? \_\_\_\_\_\_\_\_\_\_\_\_

What’s the value of sin(PI/2)? \_\_\_\_\_\_\_\_\_\_\_\_

What’s the value of sin(-PI/2)? \_\_\_\_\_\_\_\_\_\_\_\_

\* Which graph will the following code draw?

function setup() {

createCanvas(101, 101);

}

function draw() {

translate(51,51);

let radius = 25;

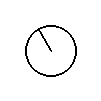
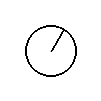
noFill();

ellipse(0,0,radius\*2);

let radian = (30/360) \* (2 \* PI);

line(0,0,cos(radian)\*radius,sin(radian)\*radius);

}

(a)(b)(c)