

This is a closed notes, closed book exam.

1. Which answer best describes the behavior of this Processing sketch?

```
int xPos, yPos;

void setup() {
  size(400,400);
  yPos = 0;
  xPos = 0;
}

void draw() {
  background(255);
  ellipse(xPos, yPos, 5, 5);

  yPos = yPos + 1;
  xPos = xPos + (1-yPos/200);
}
```

- A. A ball moves from the upper left corner to the lower right corner.
- B. A ball moves from the upper left corner to the middle of the display then to the lower left corner.
- C. A ball moves from the upper left corner to the middle of the display then to the upper right corner.
- D. A ball moves from the upper left corner to the middle of the display then straight down.
- E. A ball moves from the upper left corner to the middle of the display then horizontally to the right edge of the display.

2. Which answer best describes the behavior of this Processing sketch?

```
int dia = 5;
void draw() {
  noFill();
  ellipse(width/2, height/2, dia, dia);
  dia = dia + 10;
}
```

- A. A small white circle with a black outline appears in the center and expands, always showing a single circle with a white center until the entire display is white.
- B. A small black circle appears in the center of the display and then expands as a circle until the entire display is black.
- C. A small white circle with a black outline appears in the center in the center of the display and doesn't change.
- D. A small black circle appears in the center of the display and doesn't change.
- E. A set of concentric circles appears, like a target, that grows until it fills the display.

3. What is the value in Java of the expression
- $11\%6$
- ?

A. 1 B. 1.833333 C. 2 D. 5 E. 6

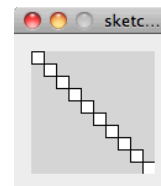
4. What is the value in Java of the expression
- $11/6$
- ?

A. 1 B. 1.833333 C. 2 D. 5 E. 6

5. Add the missing line to the code below so it produces the image shown.

```
int pos = 0;
void draw() {
  rect(pos, pos, 10, 10);
```

- _____
- A. translate(10,10);
- B. pos = pos + 10;
- C. either A or B
- D. neither A nor B



6. What is the output of the following processing sketch?

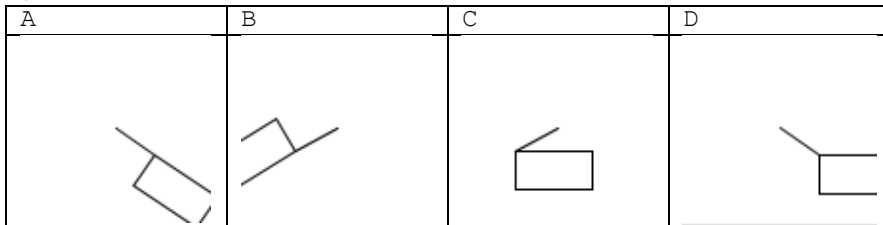
```
int x = 10;
if (x == 10) {
  x = 11;
}
if (x == 11) {
  x = 12;
}
println( "x is now: " + x );
```

- A. x is now: 10
- B. x is now: 11
- C. x is now: 12

7. Which of these images could be produced by this program? Check ALL that apply.

```
float angle=0;
void draw() {
  background(255);
  translate(50, 50);
  rotate(angle);
  line(0,0,25,0);
  translate(25, 0);
  rect(0,0,40,20);
  angle = angle + .1;
}
```

Hint: All images shown were drawn with programs that include calls to `line(0,0,25,0)`; and `rect(0,0,40,20)`;



E. None of A-D

8. What is printed at the start of the second frame of this program?

```
int lengthOfCar = 200;
int carBodyHeight = lengthOfCar/4;
int wheelDiameter = lengthOfCar/4;
void draw() {
  println(lengthOfCar);
  println(carBodyHeight);
  println(wheelDiameter);
  // some code might go here to do the actual drawing
  lengthOfCar = lengthOfCar - 1; // make the car shrink
}
```

A.	B.	C.	D.
200	199	199	199
50	49	49.75	50
50	49	49.75	50

9. Which answer applies to this program?

```
int counter = 0;
void draw() {
  background(255);
  int xPos = width - (2*counter)%width;
  fill(255,0,0);
  ellipse(xPos, 25, 5, 5);
  fill(0,255,0);
  ellipse(counter*width, 75, 5, 5);
  counter = counter + 1;
}
```

- A. The red one is moving left to right and the green one right to left.
- B. The red circle is moving faster than the green circle.
- C. Both A and B.
- D. Neither of A nor B.

10. What does this program print? The function `print()` is like `println()` except that it does not print a new line character after printing the value so if more than one of the `print()` statements executes all output will be on one line.

```
int x = 10, y = 10, z = 5;
if (x == y) {
  print("A");
  if (x < z)
    print("B");
}
else
  print("C");
```

- A. A
- B. B
- C. C
- D. AB
- E. AC