Clearly print (not sign) your name:

_____

If you are sick or otherwise temporarily impaired, then request that you take the exam at a later time. This examination is an opportunity for you to demonstrate the great things you know about the topic. It is not intended as a test of how well you can perform while sick or otherwise unduly stressed.

You may use one page of handwritten notes (both sides) and a non-electronic dictionary. **No** phones, calculators, tablets, laptops or other electronics are allowed. Write your answers on the exam. You may use extra scratch paper (blank, ruled or graph).

When a question asks: "What is displayed on the canvas?" then, you need only answer what is actually displayed (there is no need to give a complete sentence). For example, if the question says:

> The JavaScript / Processing.js code below runs without errors and displays a number on the HTML canvas. What number is displayed?

```
var z = 2;
z = z + 1;
fill(0, 0, 0);
textSize(12);
text(z, 30, 30);
```

Then the full-credit answer is simply:

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Usually, a box around the answer is not necessary; however, if you think your answer might be difficult to distinguish from any intermediate scratch work you might have written on the page, then draw a box around the part you want graded as your answer.

If your answer is correct, then any scratch work is ignored. However, if your answer is wrong, then any scratch work you provide may be useful for awarding partial credit. If you choose to use extra scratch paper, you may keep it or turn it in with your exam. If you choose to turn in extra scratch paper, then ***print your name*** at the top of each page and label scratch work with the question number to which it pertains.

This exam is designed for a 75 minute period.

1) The JavaScript / Processing.js code below runs without errors and displays a number on the HTML canvas. What number is displayed? Note: you are only asked what number is displayed; you do not need to show where on the canvas it is displayed.

```
var zu = 3 + 3 * 2;
fill(0, 0, 0);
textSize(28);
text(zu, 30, 30);
```

2) The JavaScript / Processing.js code below runs without errors and displays text on the HTML canvas. What is displayed? Note: you are only asked what is displayed; you do not need to show where on the canvas it is displayed.

```
var marcos = 25;
var olivia = 3;
olivia = olivia + 1;
if (olivia > marcos)
{
   marcos = marcos + 7;
}
if (olivia > 10)
{
   marcos = marcos + 2;
}
fill(0, 0, 0);
textSize(30);
text("marcos="+marcos, 30, 30);
text("olivia="+olivia, 30, 60);
```

3) The JavaScript / Processing.js code below runs without errors and displays text on the HTML canvas. What is displayed? Note: you are only asked what is displayed; you do not need to show where on the canvas it is displayed.

```
1)    var a = 10;
2)    var b = 3;
3)    var c = b * 3;
4)    if (c < a)
5)    {
6)       c = c - 1;
7)    }
8)    else if (a > b)
9)    {
10)      a = a - b;
11)   }
12)   b = b - 2;
13)   fill(0, 0, 0);
14)   textSize(30);
15)   text("a="+a, 30, 30);
16)   text("b="+b, 30, 60);
17)   text("c="+c, 30, 90);
```

4) What would be displayed on the HTML canvas if line (1) of the program in question #3 was changed to the line below?

```
1) var a = 8;
```

5) The JavaScript / Processing.js code below runs without errors and displays text on the HTML canvas. What is displayed? Note: the text is displayed on different lines. Make sure you get the order of the text correct, but do not worry about the correct spacing between lines.

```
1)  fill(0, 0, 0);
2)  textSize(30);
3)  var msg = "a is now ";
4)  var a = 1;
5)  var y = 30;
6)  while(a < 10)
7)  {
8)     text(msg + a, 30, y);
9)     a += 3;
10)    y += 30;
11) }
12) text("Done: " + msg + a, 30, 200);
```

6) What would be displayed on the HTML canvas if line (6) of the program in question #5 was changed to the line below?
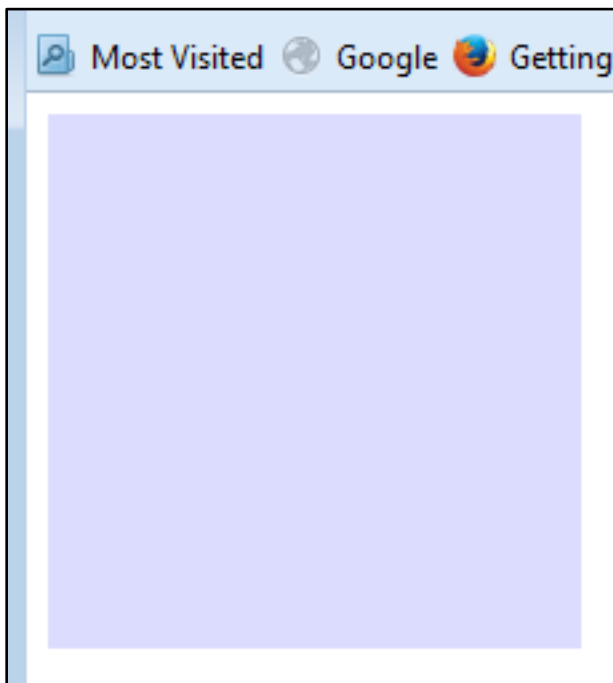
```
6)   if(a < 10)
```

7) The JavaScript / Processing.js code below runs without errors and displays text on the HTML canvas. What is displayed? Note: the text is displayed on different lines. Make sure you get the order of the text correct, but do not worry about the correct spacing between lines.

```
1)    fill(0, 0, 0);
2)    textSize(30);
3)    text("3+2   =" + 3+2,     30, 30);
4)    text("4+2*3 =" + 4+2*3,  30, 60);
5)    text("17 % 4=" + 17 % 4, 30, 90);
6)    text("18 % 4=" + 18 % 4, 30,120);
7)    text("19 % 4=" + 19 % 4, 30,150);
```

8) Which line of the program in question #7 can be changed and what would it be changed to so that the displayed text is drawn in a shade of burnt orange (a dark orange)? Note: A paint shop might label "burnt orange" many different shades of orange by different manufacturers. Any JavaScript statement you provide that will draw the text in any approximate burnt orange color will receive full credit.

9) The JavaScript / Processing.js code below runs without errors and draws an image on a 200x200 pixel HTML canvas. Sketch a reasonable approximation of what is in the screen capture of the canvas below.

```
1) background(220, 220, 255); //red, green, blue
2) stroke(0,0,0);
3) var i = 0;
4) while (i<=200)
5) {
6)    line(100, 100, i, 0);    //x1,y1,x2,y2
7)    line(100, 100, i, 200); //x1,y1,x2,y2
8)    i += 10;
9) }
```

10) The JavaScript / Processing.js code below runs without errors and draws an image on a 200x200 pixel HTML canvas. Sketch a reasonable approximation of what is in the screen capture of the canvas below.

```
10) background(220, 220, 255); //red, green, blue
11) stroke(0,0,0);
12) var i = 20;
13) while (i<=180)
14) {
15)    line(i,    i, i,    i+10); //x1,y1,x2,y2
16)    line(i-10, i, i+10, i);    //x1,y1,x2,y2
17)    i += 20;
18) }
```