This quiz is to be taken by yourself with closed books, closed notes, no electronic devices.

Which of the following are class methods? Circle your answers. (+1 if correct; -1 if incorrect. No negative pts.)

- Math.abs(-3);
- soundObj.play();
- FileChooser.pickAFile();
- pictureObj.show();
- turtle1.turnLeft();
- ColorChooser.pickAColor();

What does the following code do? Give a high level answer in plain English words. Assume this method is stored in the file Picture.java

```java
public void fubar()
{
    Pixel[] pixelArray = this.getPixels();

    for (Pixel p : pixelArray)
    {
        p.setRed(255);
        p.setGreen(0);
        p.setBlue(0);
    }
}
```

The following is a for loop. Write the equivalent as a while loop. Be sure to put the comment // Some stuff in the correct location in relation to the other parts of the while loop you write.

```java
for (int i = 0; i < 30; i++)
{
    // Some stuff
}
```

Fill in the blanks below so the code correctly gets the width of a Picture object referenced by a variable named `bar` and stores it in the variable named `foo`. Be sure to fill in the correct type of variable `foo`.

```java
Picture bar = new Picture();

________ foo; // Fill in the type variable foo should be defined as.
foo = ____________________ ; // Fill in the right side of this assignment stmt
// to get the width of the Picture object bar // references.
```

(More on other side – turn over)
Assume there is an array properly defined and a variable named `foo` references this array.

Write the expression to access the last element in this array? ________________________________

Write the expression to access the first element in this array? ________________________________

When is it more appropriate to use a for or while loop and not a foreach loop? Circle the correct letter.

A) When you do not want/need to iterate over the entire array (access particular elements)
B) When you need to use an index into the array for some reason
C) When you want to iterate over the entire array (access every element)
D) When you do not need to use an index into the array for some reason
E) A & B
F) C & D
G) A & C
H) B & D

List the six relational operators in Java that evaluate to a boolean value. Not English words; Java operators.

__________  __________  __________
__________  __________  __________

Which of the following correctly swaps two values `a` and `b`? Write the letter of the correct code here:   ______

A

```
tmp = a
a = b
b = tmp;
```

B

```
tmp = a
b = tmp;
a = b
```

C

```
a = b
tmp = a
b = tmp;
```

D

```
tmp = a
b = a
a = tmp;
```

E

```
tmp = a
b = a
b = tmp;
```

F

```
tmp = b
a = b
b = tmp;
```

Which of the following correctly swaps two values `a` and `b`? Write the letter of the correct code here:   ______

What order are pixels changed given this code in Picture.java (assuming all variables are correctly defined and set)? Write the letter of the correct order here:   ______

```java
int width = ... ; int height = ... ;
Pixel p;
for ( int i = 0; i < width; i++ )
{
    for ( int j = 0; j < height; j++ )
    {
        p = getPixel( i, j );
        p.setColor( Color.Black );
    }
}
```

A) L->R;Top->Down
B) L->R;Bottom->Up
C) Top->Down;L->R
D) Bottom->Up;L->R