NAME _____

(1) (*5 pts.*) For each of the following, give the value of the desired variables.

(a) (*2 pts.*) What are the values of x and y after all of the following code executes?

```
int x = 3;
int y = 7;

if ( x >= ( y / 2 ) )
{
    y = x;
    x = y;
}
else if ( y != x )
{
    x = y;
    y = x;
}
```

(b) (*3 pts.*) What are the values of x, y, and z after all of the following code executes?

```
int x = 5;
int y = 10;
double z = 5.0;

if ( x <= z )
{
    y = y / 2;
    if ( y > z )
    {
        z = z / 2;
    }
    else
    {
        z = z * 2;
    }
}
else
{
    z = x;
    x = y;
    y = (int) z;
}
```

(2) (10 pts.) For each of the following, suppose we have two integer values:

```
int a = (int)( Math.random() * 10 + 1 );
int b = (int)( Math.random() * 10 + 1 );
```

(a) Fill in the following conditional so that output is generated if and only if integer `a` is less than 3, but `b` is not.

```
if (                                                    )
{
    System.out.println( "a is less than 3, but b isn't." );
}
```

(b) Fill in the following conditional so that output is generated if and only if either integer `a` or integer `b` is greater than 7.

```
if (                                                    )
{
    System.out.println( "either a or b is greater than 7." );
}
```

(c) Fill in the following conditional so that the output is generated if and only if integer `a` is within 2 of integer `b` (e.g., if `b == 2`, then `a` would be within 2 if $0 \leq a \leq 4$).

```
if (                                                    )
{
    System.out.println( "a is within 2 of b." );
}
```

(d) Fill in the following conditional so that the output is generated if and only if integer `a` is greater than integer `b`, and `b` is greater than 3.

```
if (                                                    )
{
    System.out.println( "a is greater than b, and b is greater than 3." );
}
```

(e) Write code that uses **nested conditional** statements (i.e., two `if`-statements, one inside the other) to produce exactly the same result as the code in part (d).