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 the following code block executes?

```
int x = 5;
int y = 10;

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 the following code block executes?

```
int x = 10;
int y = 21;
double z = 10.0;

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 greater than 5, but `b` is not.

```
if (                                        )
{
    System.out.println( "a is greater than 5, 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 less than 5.

```
if (                                        )
{
    System.out.println( "either a or b is less than 5." );
}
```

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

```
if (                                        )
{
    System.out.println( "a and b are 1 apart." );
}
```

(d) Fill in the following conditional so that the output is generated if and only if integer `a` is greater than both 5 and integer `b`.

```
if (                                        )
{
    System.out.println( "a is greater than both 5 and b." );
}
```

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