PIC 20A

MIDTERM

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1. A. Animal is the superclass; kangaroo and Bunny are subclasses of Animal
2. D. One big superclass can be used instead of many little classes
3. B. False
4. A: True (by convention {, but not syntactically necessary)
5. A. True (though it's bad practice to assume such)
6. A True
7. D `n = y * - (int) 1.0;`
8. Lines with errors: 1, 4, 7, 8, 13, 16, 20, 21

   Corrected code:

```
1   import java.util.Scanner      // import, not include
2   public class Test {
3
4   public static void main(String[] args)    // "static" good practice
5   {
6       int nyear;
7       int years = 0;            // type specifier missing
8
9       System.out.println("Please enter the current year: ");
10      Scanner cin = new Scanner(System.in);
11      nyear = cin.nextInt();
12
13  while (nyear != millenium)
14  {
15      nyear++;
16      years++;                  // semicolon missing
17  }
18
19  System.out.println("Another " +
20          years + " years to the millenium.");   // print years, not nyears
21  // no return statement needed; return 0 gives error
22 }
23
24 }
```

a.

```
import java.util.Random;

public class Test {
    public static void main (String[] args) {

        long seed = System.currentTimeMillis();
        Random generator = new Random(seed);

        int totalRolls = 0;
        final int nTrials = 10000;

        for (int i=0; i != nTrials; i++) {
            int nRolls = 0;
            while (true) {
                int roll1 = generator.nextInt(6) + 1;
                int roll2 = generator.nextInt(6) + 1;
                nRolls++;
                if (roll1 + roll2 == 7)
                    break;
            }
            totalRolls += nRolls;
        }

        double averageRolls = ((double) totalRolls) / nTrials;
        System.out.println(averageRolls);
    }
}
```

10.

```
import java.util.Scanner;

public class Test {
    public static void main (String[] args) {

        Scanner cin = new Scanner (System.in);
        float x;
        while (true) {
            System.out.println ("Please enter a positive floating point number: ");
            x = cin.nextFloat();
            if (x > 0)
                break;
        }
        double f_x = (Math.pow(x,4) - Math.sqrt(Math.cos(x) + (3 * x)/3)) /
                                (Math.pow(x,2) + 1);

        System.out.println(f_x);
    }
}
```