Quick Questions:
A. What is the largest integer int in java?
   2,147,483,647 or 2 to the power (32 - 1)

B. How many years approximately are needed to double an initial amount at a rate of 24 percent.
   \[ yr = \frac{72}{24} = 3 \]

C. Write a line of code to pull out the month of the given date given as an int.
   \[
   \text{int } iDate = 20011104;
   \text{int } iMonth = (iDate\%1000) / 100;
   \]

D. Write a line of code to pull out the month of the given date given as a String.
   \[
   \text{String } sDate = \"2001104\";
   \text{String } sMonth = sDate.substring (3,5);
   \]

E. What is the result of the following line of code:
   \[
   \text{weeks } = 200 \div 24*7;
   \text{weeks is 1 if it is declared int}
   \]
Secs Conversion:
Convert a given number of seconds into the corresponding number of days, hours, minutes and seconds, by first writing a data flow diagram beginning with a divide by 3600 (3600 seconds are in an hour).
Write this as part of a program in Java;

```
N      D
iDivide
Q      R

10^6   60*60

N      D
iDivide
Q      R

277    2800
hours  secs

N      D
iDivide
Q      R

24
N      D
iDivide
Q      R

60

11     13
days   hours

N      D
iDivide
Q      R

46     40
mins   secs

hours = secs / (60*60); //note
secs  = secs % (60*60); //parens

days  = hours / 24; //note order
hours = hours % 24; //with below

mins  = secs / 60; //can swap w
secs  = secs % 60; //above two
```
Millionaire Series

The prize for a popular show grows as follows:
100, 200, 300, 500, 1000, 2000, 4000, 8000,

16000, 32000, 64000 125000, 250000, 500000, 1000000

Write code to indicate what the next amount is, when input one of the given amounts (the next amount is usually double the previous one).
/ Does Millionaire growth
int amount, next;

System.out.println ("Enter amount");
amount = JJS.inputInt();
System.out.println (amount); //echo

if (amount == 200) {
    next = 300;
} else{
    if (amount == 300) {
        next = 500;
    } else{
        if (amount == 64000) {
            next = 125000;
        } else{
            next = 2 * amount;
        } // end if 64000
    } // end if 300
} // end if 200

System.out.println ("Next is ");
System.out.println (next);
// Does count 3 dice sums of 7
// Gives probability of 7 occurring
// See the next one for another way

int a,b,c; // dice rolls
int sum3; // sum of 3 rolls
int many = 1000000; // number of tries

int count = 0;

for (int i = 0; i < many; i++) {
    a = (int)(6.0*Math.random()) + 1;
    b = (int)(6.0*Math.random()) + 1;
    c = (int)(6.0*Math.random()) + 1;
    sum3 = a + b + c;

    if (sum3 == 7){
        count ++;
    }
} //end if

} //end for

double prob7 = (double)count / (double)many;

System.out.println ("Prob of 7 is " + prob7);

// Output is "Prob of 7 is 0.069392
// Does count 3 dice sums of 7
// Gives probability of 7 occurring
// See the previous one for another way

// int a,b,c; // dice rolls
int sum3; // sum of 3 rolls
int many; // different rolls
int count; // rolls that sum to 7

many = 6*6*6;
count = 0;

for (int a = 1; a <= 6; a++) {
    for (int b = 1; b <= 6; b++) {
        for (int c = 1; c <= 6; c++) {
            sum3 = a + b + c;

            if (sum3 == 7) {
                System.out.println(" " + a + b + c);
                count ++;
            } //end if
        } //end for
    } //end for
} //end for

double prob7 = (double)count / (double)many;
System.out.println("Prob of 7 is " + prob7);