Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

AP Computer Science

While and Do / While Loops

1. For each of the following while loops, state how many times the loop will execute its body. Remember that “zero”, “infinity”, and “unknown” are valid answers.

Also, what is the output of the code in each case?

(Do at least 3 of the 5 problems.)

1. int x = 1;

while (x < 100)

{

System.out.print(x + “ “);

x += 10;

}

Number of times 10

Output 1 11 21 31 41 51 61 71 81 91

1. int max = 10;

while (max < 10)

{

System.out.println(“count down: “ + max);

max--;

}

Number of times 0

Output \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. int x = 250;

while (x % 3 != 0)

{

System.out.println(x);

}

Number of times infinity

Output

250

250

250

Until run out of memory

1. String word = “a”;

while (word.length() < 10)

{

word = “b” + word + “b”;

System.out.println(word);

}

Number of times \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Output:

bab

bbabb

bbbabbb

bbbbabbbb

bbbbbabbbbb

1. int x = 100;

while (x > 0)

{

System.out.println(x / 10);

x = x / 2;

}

Number of times 7

Output:

10

5

2

1

0

0

0

1. Convert each of the following for loops into an equivalent while loop:

(Do at least 2 of the 3 problems.)

* 1. for (int n = 1; n<= max; n++)

{

System.out.println(n);

}

int n = 1;

while(n <= max) {

System.out.println(n);

n++;

}

* 1. int total = 25;

for (int number = 1; number <= (total / 2); number++)

{

total = total – number;

System.out.println(total + “ “ + number);

}

* 1. int total = 25;

int number = 1;

for (number <= (total / 2))

{

total = total – number;

System.out.println(total + “ “ + number);

number++;

}

* 1. int number = 4;

for (int count = 1; count <= number; count++)

{

System.out.println(number);

number = number / 2;

}

int count = 1

int number = 4;

while ( count <= number)

{

System.out.println(number);

number = number / 2;

count++;

}

1. Consider the following method:

public static void mystery(int x)

{

int y = 0;

while (x % 2 == 0)

{

y++;

x = x / 2;

}

System.out.println(x + “ “ + y);

}

For each of the following calls, indicate the output that the preceding method produces:

(Do at least 2 of the 4 problems.)

mystery(19); 19 0

mystery(42); 21 1

mystery(40); \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

mystery(64); \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. For each of the do / while loops that follow, state the number of times that the loop will execute its body. Remember that “zero”, “infinity”, and “unknown” are valid answers. Also, what is the output of the code in each case?

(Do at least 2 of 4 problems.)

* 1. int x = 1;

do

{

System.out.print(x + “ “ );

x = x + 10;

} while (x < 100);

Number of times 10

Output 1 11 21 31 41 51 61 71 81 91

* 1. int max = 10;

do

{

System.out.println(“count down: “ + max);

max--;

} while (max < 10);

Number of times infinity

Output count down: 10

count down: 9

until memory runs out

* 1. int x = 250;

do

{

System.out.println(x);

} while (x % 3 != 0);

Number of times \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Output \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* 1. String str = “/\\”;

do

{

str += str;

} while (str.length() < 10);

System.out.println(str);

Number of times \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Output \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Write an interactive program that prompts for a desired sum, then repeatedly rolls two six-sided dice until their sum is the desired sum. Here is the expected dialogue with the user:

Desired dice sum: 9

4 and 3 = 7

3 and 5 = 8

5 and 6 = 11

5 and 6 = 11

1 and 5 = 6

6 and 3 = 9

Finish the following code file and paste your revised code below:

import java.util.\*;

public class TestDiceRoll {

public static void main(String[] args) {

Scanner console = new Scanner(System.in);

System.out.print("Desired dice sum: ");

int sum = console.nextInt();

do {

int firstSum = Math.random()\*6 + 1;

int secondSum = Math.random()\*6 + 1;

System.out.println(firstSum + “ and “ + secondSum + “ = “ +   
 firstSum + secondSum);

} while (firstSum+secondSum != sum);

}

}