

Name: _____

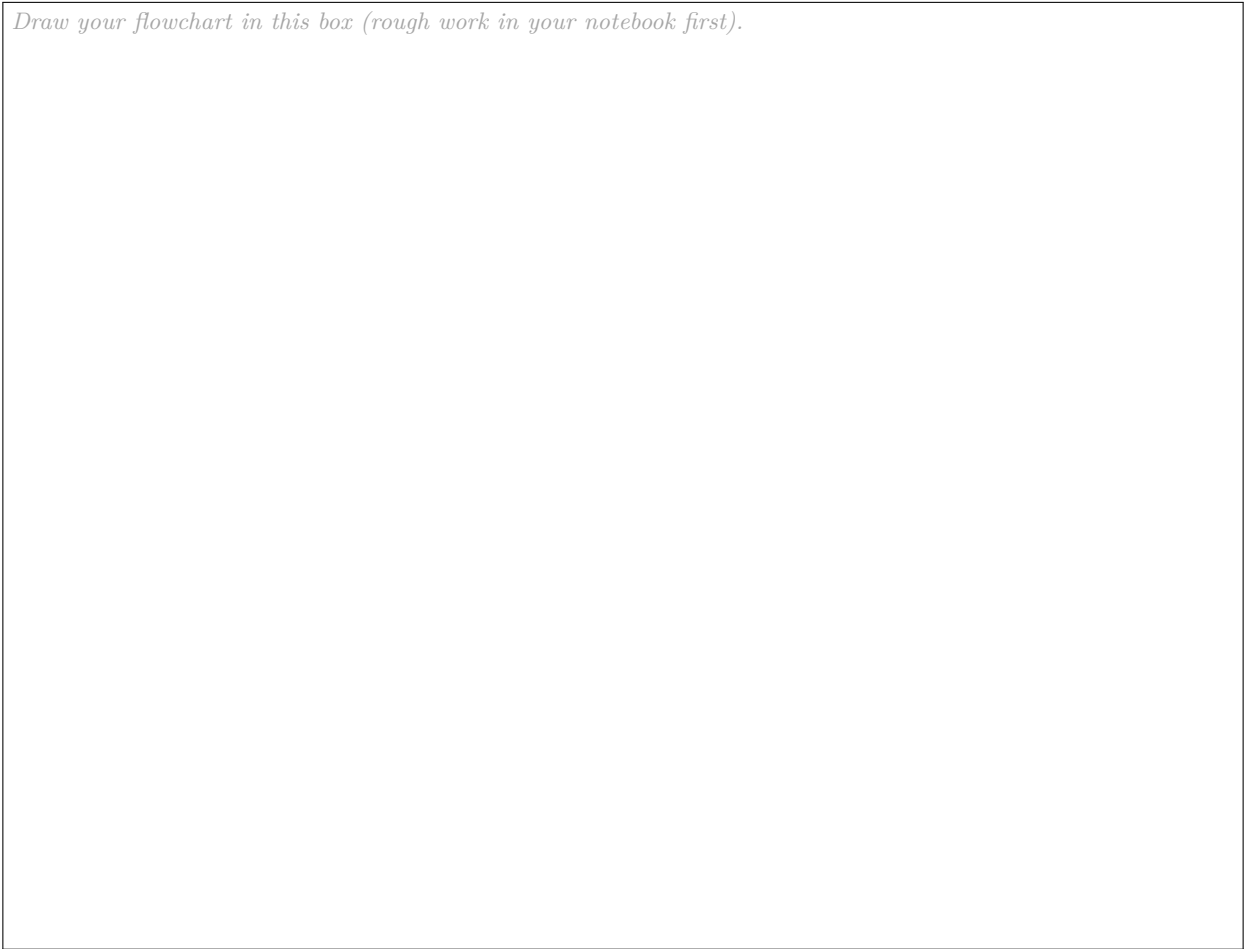
Date: _____

Problem 1.

Ask the user for the length and width of a rectangle, then print its area and its perimeter.

Draw a flowchart for this algorithm:

Draw your flowchart in this box (rough work in your notebook first).



Problem 2.

Ask the user for a number of seconds and print how many whole minutes it is, and how many seconds are left over.

(i) Before drawing anything, work out by hand what the program should print for each input below. (Once you have drawn your flowchart, trace it on these same inputs and check that it agrees with your answers here.)

input <i>total</i>	output
200	
95	
60	

(ii) Now draw a flowchart for the algorithm.

Draw your flowchart in this box (rough work in your notebook first).

Problem 3.

Ask the user for a number and print “Even” if it is even, and “Odd” if it is not.

(i) Before drawing anything, work out by hand what the program should print for each input below. (Once you have drawn your flowchart, trace it on these same inputs and check that it agrees with your answers here.)

input n	output
7	
10	
0	

(ii) Now draw a flowchart for the algorithm.

Draw your flowchart in this box (rough work in your notebook first).

Problem 4.

Ask the user for a student's marks. Print "Pass" if the marks are 50 or more, and "Fail" otherwise.

(i) Before drawing anything, work out by hand what the program should print for each input below. (Once you have drawn your flowchart, trace it on these same inputs and check that it agrees with your answers here.)

input <i>marks</i>	output
72	
50	
38	

(ii) Now draw a flowchart for the algorithm.

Draw your flowchart in this box (rough work in your notebook first).

Problem 5.

Ask the user for two numbers and print the larger of the two.

(i) Before drawing anything, work out by hand what the program should print for each input below. (Once you have drawn your flowchart, trace it on these same inputs and check that it agrees with your answers here.)

input a	input b	output
8	3	
4	9	
6	6	

(ii) Now draw a flowchart for the algorithm.

Draw your flowchart in this box (rough work in your notebook first).

Problem 6.

Ask the user for the price of an item and how much cash they have. If the cash is enough, print “You can buy it” and the change they would get back. Otherwise, print “Not enough money”.

(i) Before drawing anything, work out by hand what the program should print for each input below. (Once you have drawn your flowchart, trace it on these same inputs and check that it agrees with your answers here.)

input <i>price</i>	input <i>cash</i>	output
50	80	
50	50	
50	20	

(ii) Now draw a flowchart for the algorithm.

Draw your flowchart in this box (rough work in your notebook first).



Problem 7.

Ask the user for a number. Print “Divisible” if it divides exactly by 3 or by 5, and “Not divisible” otherwise.

(i) Before drawing anything, work out by hand what the program should print for each input below. (Once you have drawn your flowchart, trace it on these same inputs and check that it agrees with your answers here.)

input n	output
9	
20	
7	

(ii) Now draw a flowchart for the algorithm.

Draw your flowchart in this box (rough work in your notebook first).

Problem 8.

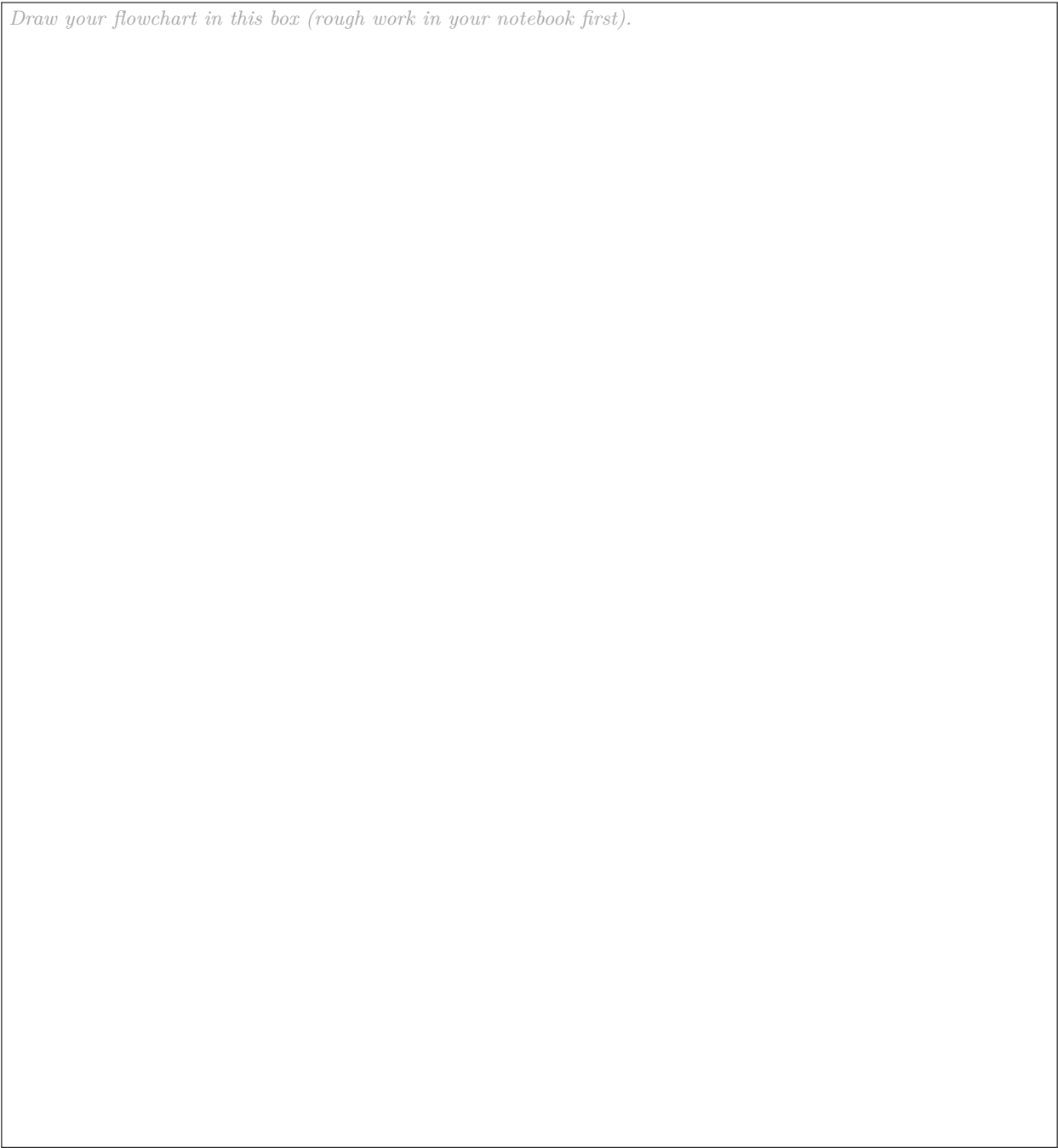
Ask the user for a student's marks and print a letter grade: "A" for 80 or more, "B" for 50 to 79, and "C" for below 50.

(i) Before drawing anything, work out by hand what the program should print for each input below. (Once you have drawn your flowchart, trace it on these same inputs and check that it agrees with your answers here.)

input <i>marks</i>	output
91	
64	
42	

(ii) Now draw a flowchart for the algorithm.

Draw your flowchart in this box (rough work in your notebook first).



Problem 9.

Ask the user for three numbers and print the largest of the three.

(i) Before drawing anything, work out by hand what the program should print for each input below. (Once you have drawn your flowchart, trace it on these same inputs and check that it agrees with your answers here.)

input a	input b	input c	output
4	9	2	
7	1	5	
3	3	8	

(ii) Now draw a flowchart for the algorithm.

Draw your flowchart in this box (rough work in your notebook first).



Problem 10.

A shopkeeper enters the cost price and the selling price of an item. Print “Profit” and the profit if it sold for more than it cost; print “Loss” and the loss if it sold for less; and print “No profit, no loss” if the two prices are equal.

(i) Before drawing anything, work out by hand what the program should print for each input below. (Once you have drawn your flowchart, trace it on these same inputs and check that it agrees with your answers here.)

input <i>cp</i>	input <i>sp</i>	output
100	130	
100	80	
100	100	

(ii) Now draw a flowchart for the algorithm.

Draw your flowchart in this box (rough work in your notebook first).



Problem 11.

Ask the user for a number n and print every number from 1 up to n .

(i) Before drawing anything, work out by hand what the program should print for each input below. (Once you have drawn your flowchart, trace it on these same inputs and check that it agrees with your answers here.)

input n	output
5	
1	
3	

(ii) Now draw a flowchart for the algorithm.

Draw your flowchart in this box (rough work in your notebook first).

Problem 12.

Ask the user for a number n and print its multiplication table, from $n \times 1$ up to $n \times 10$.

(i) Before drawing anything, work out by hand what the program should print for each input below. (Once you have drawn your flowchart, trace it on these same inputs and check that it agrees with your answers here.)

input n	output
7	
3	

(ii) Now draw a flowchart for the algorithm.

Draw your flowchart in this box (rough work in your notebook first).

Problem 13.

Ask the user for a number n and print the total $1 + 2 + 3 + \dots + n$.

(i) Before drawing anything, work out by hand what the program should print for each input below. (Once you have drawn your flowchart, trace it on these same inputs and check that it agrees with your answers here.)

input n	output
4	
1	
6	

(ii) Now draw a flowchart for the algorithm.

Draw your flowchart in this box (rough work in your notebook first).



Problem 14.

Ask the user for a whole number n and print how many digits it has.

(i) Before drawing anything, work out by hand what the program should print for each input below. (Once you have drawn your flowchart, trace it on these same inputs and check that it agrees with your answers here.)

input n	output
4072	
538	
9	

(ii) Now draw a flowchart for the algorithm.

Draw your flowchart in this box (rough work in your notebook first).

Problem 15.

Ask the user for a number n and print only the even numbers from 1 up to n .

(i) Before drawing anything, work out by hand what the program should print for each input below. (Once you have drawn your flowchart, trace it on these same inputs and check that it agrees with your answers here.)

input n	output
8	
5	
1	

(ii) Now draw a flowchart for the algorithm.

Draw your flowchart in this box (rough work in your notebook first).

