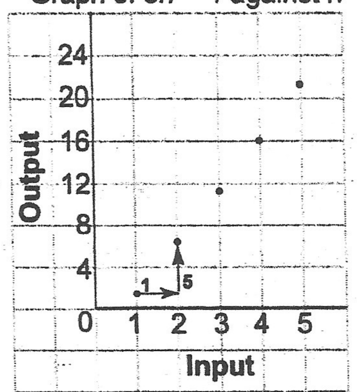
1.6 Graphing Relations

Quick Review

➤ You can use a graph to show a relation.
This table and graph show how $5n - 4$ relates to n.

	Input n	Output $5n - 4$	
	1	1	
+1	2	6	+5
+1	3	11	+5
+1	4	16	+5
+1	5	21	+5

Graph of $5n - 4$ against n



The scale on the *Output* axis is 1 square to 4 units.
The points lie on a straight line, so the relation is linear.
Both the table and the graph show that when the input increases by 1, the output increases by 5.

Practice

1. Complete each table.

a)

Input n	Output $2n + 8$
1	10
2	12
3	14
4	16
5	
6	
7	

b)

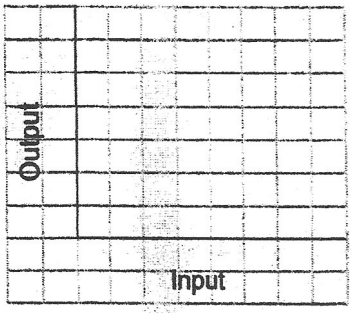
Input n	Output $5n + 1$
1	6
2	11
3	16
4	21
5	
6	
7	

c)

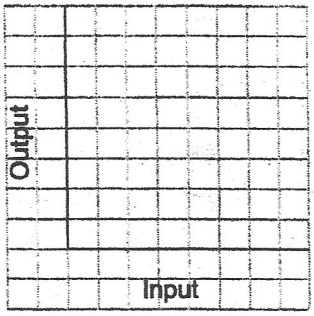
Input n	Output $9 - n$
1	8
2	7
3	6
4	5
5	
6	
7	

2. Choose a suitable scale.
Graph each relation in question 1.

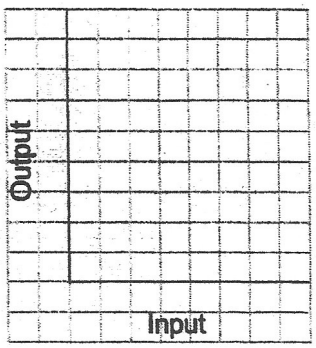
a)



b)



c)



3. Look at the graph at the right.

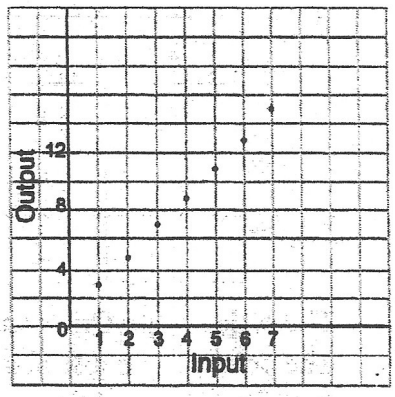
a) What is the output when the input is 1? _____

b) Which input gives an output of 13? _____

c) Extend the graph.

i) What is the output when the input is 8? _____

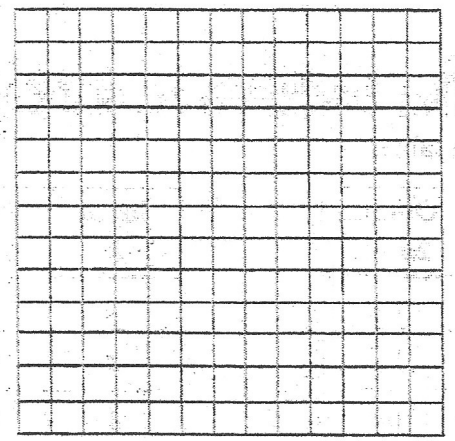
ii) What is the input when the output is 21? _____



4. a) Complete this table.

Input a	Output $5a + 3$
2	
4	
6	
8	
10	

b) Graph the relation in part a.



c) How does the graph illustrate the relation?

_____

_____

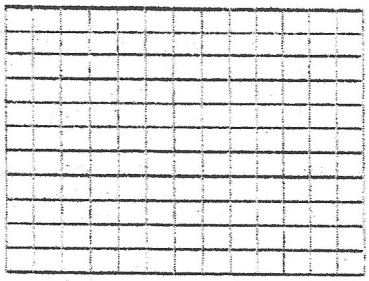
5. The members of the student council wash cars to raise money for charity.
The students charge $3.00 per car.

a) Let c represent the number of cars washed.
Write a relation to show how the money collected, in dollars, is related to the number of cars washed. _____

b) Complete this table to show the relation.

Number of cars	Money collected ($)
10	
20	
30	
40	
50	

c) Graph the data.



d) Describe the graph.

_____

_____

e) Use the relation, the graph, or the table to answer these questions.
Explain your choice.

i) Suppose the students wash 33 cars.
How much money will they collect? _____

I used the: _____

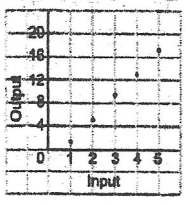
ii) Suppose the students wash 60 cars.
How much money will they collect? _____

I used the: _____

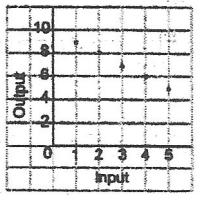
_____

6. Match each graph to its relation.

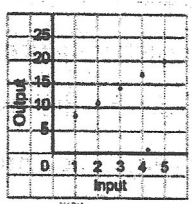
a)



b)



c)



A. $10 - n$ relates to n _____

B. $3n + 5$ relates to n _____

C. $4n - 3$ relates to n _____