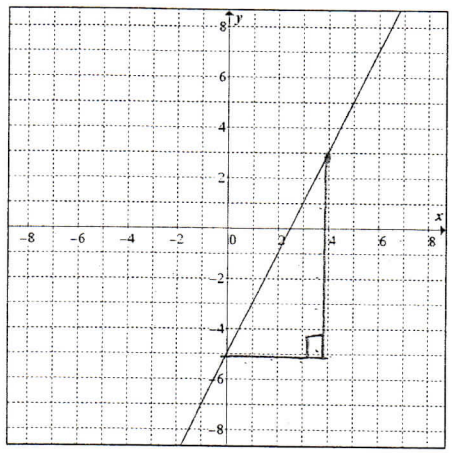
Mathematics 9

pg. 66

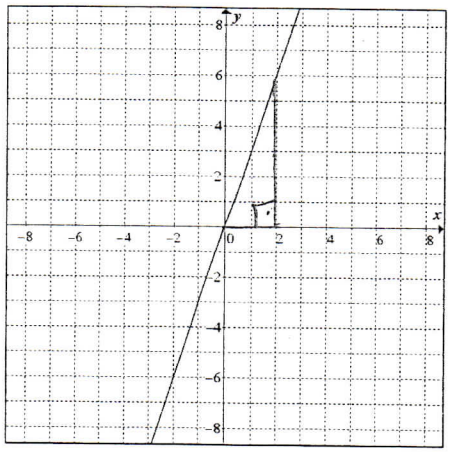
# First Differences

Date:



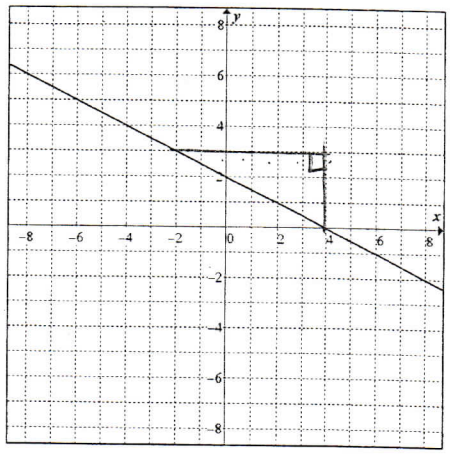
**#1** slope = 2

| x | y | first differences |
|---|---|---|
| 0 | -5 | 2 |
| 1 | -3 | 2 |
| 2 | -1 | 2 |
| 3 | 1 | 2 |
| 4 | 3 | |



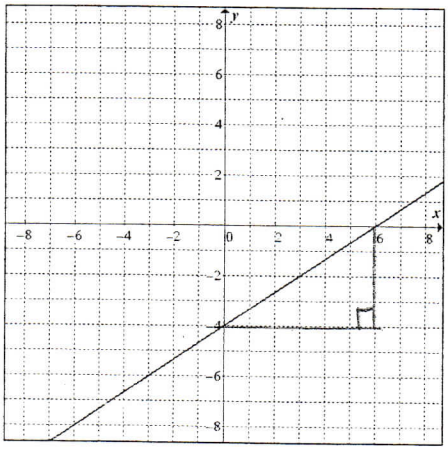
**#2** slope = 3

| x | y | first differences |
|---|---|---|
| -2 | -6 | 3 |
| -1 | -3 | 3 |
| 0 | 0 | 3 |
| 1 | 3 | 3 |
| 2 | 6 | |



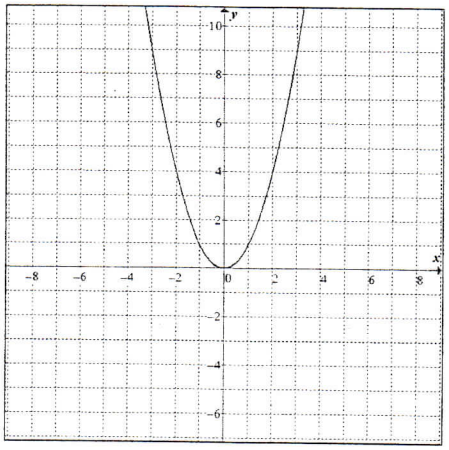
**#3** slope = $-\frac{1}{2}$

| x | y | first differences |
|---|---|---|
| 2 | 1 | -.5 |
| 3 | .5 | -.5 |
| 4 | 0 | -.5 |
| 5 | -.5 | -.5 |
| 6 | -1 | |



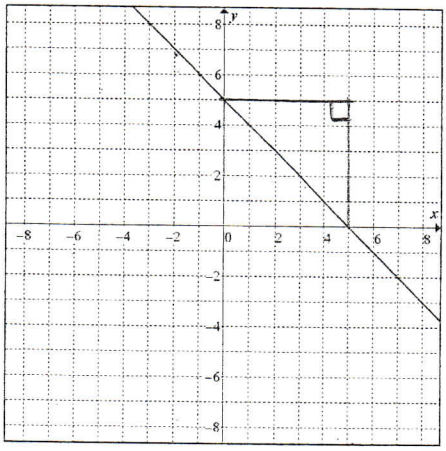
**#4** slope = $\frac{3}{3}$

| x | y | first differences |
|---|---|---|
| -6 | -8 | 2 |
| -3 | -6 | 2 |
| 0 | -4 | 2 |
| 3 | -2 | 2 |
| 6 | 0 | |



**#5**

| x | y | first differences |
|---|---|---|
| -1 | 1 | -1 |
| 0 | 0 | 1 |
| 1 | 1 | 3 |
| 2 | 4 | 5 |
| 3 | 9 | |



**#6** slope = -1

| x | y | first differences |
|---|---|---|
| -2 | +7 | -2 |
| 0 | 5 | -3 |
| 3 | 2 | -1 |
| 4 | 1 | -4 |
| 8 | -3 | |

*Conclusions:* All first differences are the same in a table of values ONLY IF:

① x-values are evenly spaced AND ② relation is linear

First differences are equal to the slope only if ①, ② AND ③ values are the same