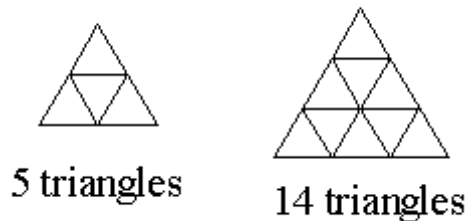


## INVESTIGATION # 8

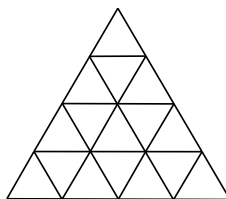
### How Many Polygons?

The diagrams shown here contain many triangles of differing sizes as shown.



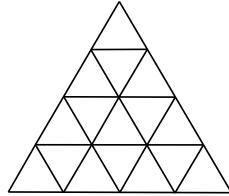
Your first task is to investigate the number of triangles in each of these shapes and in larger shapes.

Your second task is to investigate the number of rhombi in each of these shapes and larger shapes.



ASSESSMENT TASK

## How Many Polygons?



The shape shown above is considered to be a diagram with 4 rows.

1. How many rhombi exist in diagrams with the following number of rows:

(a) 1 row: \_\_\_\_\_ (b) 2 rows: \_\_\_\_\_

(c) 3 rows: **Nine** (d) 4 rows: \_\_\_\_\_

(e) 5 rows: \_\_\_\_\_ (f) 6 rows: \_\_\_\_\_

[3 marks each]

2. In a diagram with 4 rows how many of the rhombi have a side length of:

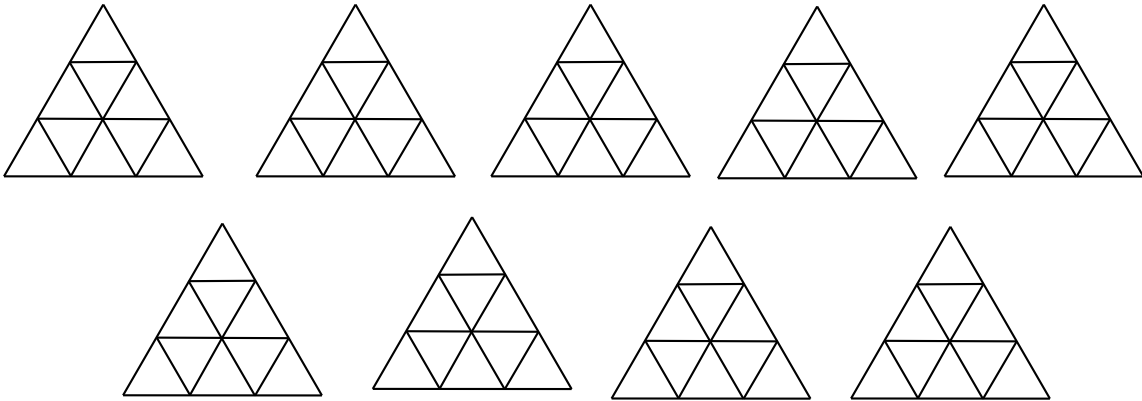
(a) 1 unit? \_\_\_\_\_

(b) 2 units? \_\_\_\_\_

(c) 3 units? \_\_\_\_\_

[2 marks each]

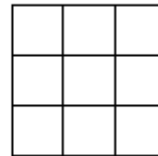
3. Shade each of the 9 different rhombi in a 3 row diagram on the diagrams below (one on each).



[1 mark each]

Look at the square grid here with 3 rows:

There are 14 squares in this grid.



4. How many squares would there be in a grid which has 4 rows?

[3 marks]

5. How many squares would there be in a chessboard which is square and has 8 rows?

[3 marks]

6. How many squares would there be in a grid which has  $n$  rows?

[4 marks]

TOTAL MARKS = 40