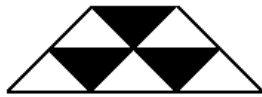# Black and white triangle patterns

This task is about continuing a spatial pattern and writing a rule.

Mani made these shapes with some black and white triangles.

| **Shape 1** | **Shape 2** | **Shape 3** |

This table shows the numbers of each colour of triangle Mani used when he made the first five shapes.

Shape number (*n*)	1	2	3	4	5
i) Number of **black** triangles (*b*)	1	3	5	7	9
ii) Number of **white** triangles (*w*)	3	5	7	9	11
iii) **Total** number of triangles (*t*)	4	8	12	16	20

a) Mani made bigger and bigger shapes.

   To make shape 10, how many triangles did he use that were coloured

   i)   black? ▢

   ii) white? ▢

b) Complete this rule relating the total number of triangles (*t*) with the shape number (*n*).

   t = ▢

c) Complete this rule relating the number of white triangles (*w*) with the shape number (*n*)

   w = ▢

d) Complete this rule relating the number of black triangles (*b*) with the shape number (*n*)

   b = ▢

e) Which shape number would have 35 black triangles?

   ▢