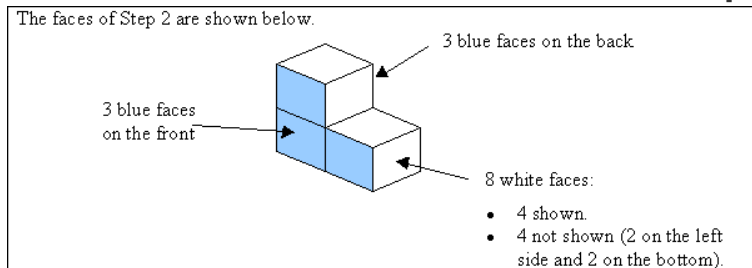
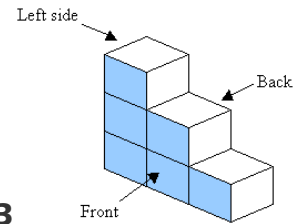
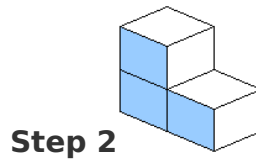


Building patterns II

This task is about continuing a 3-D spatial pattern.



Here are the first three models of a sequence of steps.

Each model has the faces on the front and back painted blue and all the other faces painted white.

- Use cubes to build the next 2 models in the sequence, i.e., Step 4 and Step 5.
- Use the models to complete the table for Steps 4 and 5 only in the table below. The first three steps have been done for you.

| Step number (n) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------------------------------|---|---|----|---|---|---|---|
| Number of white (other) faces (w) | 4 | 8 | 12 | | | | |
| Number of blue (side) faces (b) | 2 | 6 | 12 | | | | |

Check with your teacher if your models and table are correctly completed for Steps 4 and 5 before continuing with parts c) to e).

- Without using the cubes, complete the table above for Steps 6 and 7.
- In Step 10 how many faces would be white? _____
 - Explain in words how to work out the number of white faces in Step 20.

iii) Complete this equation for the number of white faces (w) in Step number n .

$$w = \underline{\hspace{2cm}}$$

- How many blue faces would there be in Step 10? _____
 - Complete this equation for the number of blue faces (b) in Step number n .

$$b = \underline{\hspace{2cm}}$$