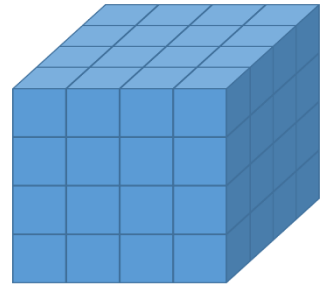


# Painted Cubes

Name:

**A solid cube measuring 4 cm by 4 cm by 4 cm is stacked together using centicubes (*Centicubes are unit cubes that are 1 cm x 1 cm x 1 cm*). Then, the outside of the solid is painted. Finally, the centicubes are separated and counted.**

- a) How many centicubes will have no sides painted?
- b) How many centicubes will have 1 side painted?
- c) How many centicubes will have 2 sides painted?
- d) How many centicubes will have 3 sides painted?
- e) How many centicubes will have 4 sides painted?



**A solid cube measuring 5 cm by 5 cm by 5 cm is stacked together using centicubes. Then, the outside of the solid is painted. Finally, the centicubes are separated and counted.**

- a) How many centicubes will have no sides painted?
- b) How many centicubes will have 1 side painted?
- c) How many centicubes will have 2 sides painted?
- d) How many centicubes will have 3 sides painted?
- e) How many centicubes will have 4 sides painted?

**A solid cube measuring  $n$  cm by  $n$  cm by  $n$  cm is stacked together using centicubes. Then, the outside of the solid is painted. Finally, the centicubes are separated and counted. For the following questions, write expressions with  $n$  where needed.**

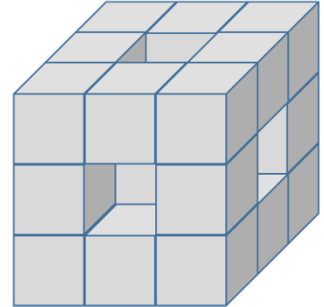
- a) How many centicubes will have no sides painted?
- b) How many centicubes will have 1 side painted?
- c) How many centicubes will have 2 sides painted?
- d) How many centicubes will have 3 sides painted?
- e) How many centicubes will have 4 sides painted?

**A solid cube is stacked together using centicubes. Then, the outside of the solid is painted. Finally, the cubes are separated and counted.**

- a) If 512 cubes have no sides painted, what are the dimensions of the original solid cube?
- b) If 150 cubes have only 1 side painted, what are the dimensions of the original solid cube?
- c) If 84 cubes have 2 sides painted, what are the dimensions of the original solid cube?
- d) If there are twice as many cubes painted on two sides as the number of cubes painted on only 1 side, what are the dimensions of the original solid cube?

**A solid cube measuring 3 cm by 3 cm by 3 cm is stacked together using centicubes. The cubes that are in the center of each face are removed. Then, the outside of the solid is painted. Finally, the centicubes are separated and counted.**

- How many centicubes will have no sides painted?
- How many centicubes will have 1 side painted?
- How many centicubes will have 2 sides painted?
- How many centicubes will have 3 sides painted?
- How many centicubes will have 4 sides painted?
- How many centicubes will have 5 sides painted?
- How many centicubes will have 6 sides painted?



**A solid cube measuring 3 cm by 3 cm by 3 cm is stacked together using centicubes. Three of the centicubes are removed. Then, the outside of the solid is painted. Finally, the centicubes are separated and counted. Here are the totals:**

- 1 cube has no sides painted
- 3 cubes have 1 side painted
- 11 cubes have 2 sides painted
- 7 cubes have 3 sides painted
- 2 cubes have 4 sides painted
- No cubes have 5, or 6 sides painted

**Indicate on the diagram which 3 cubes were removed.**

