

Painted Cube

Imagine a large $3 \times 3 \times 3$ cube made out of unit cubes. The large cube falls into a bucket of paint, so that the faces of the large cube are painted blue. Now suppose you broke the cube into unit cubes. How many unit cubes would be painted on:

- a) Three faces?
- b) Two faces?
- c) One face?
- d) No faces?

What if it's a $15 \times 15 \times 15$ cube? How do you know, without counting?