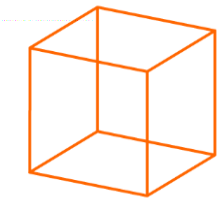
Grade 8 Mathematics Worksheet

Area, volume and cube

Questions:

1. a)



The cube above has a side length of *x* units per side. The total surface area will be $6x^2$ and the volume is x^3. If the lengths of the sides are doubled,

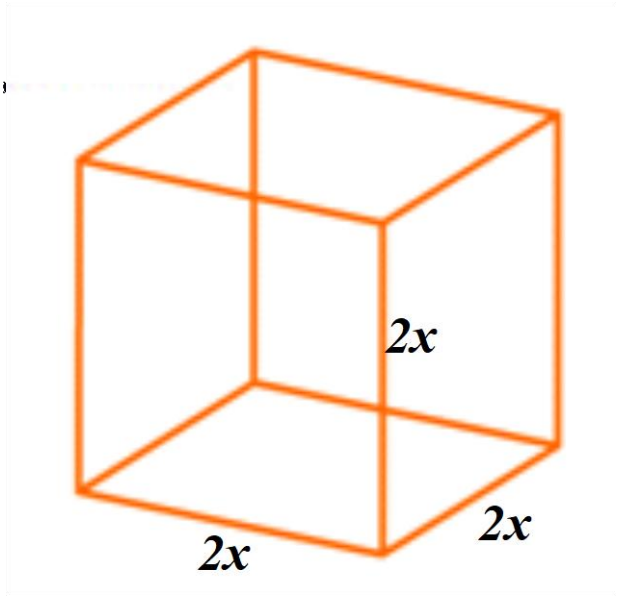
a) What will the total surface area then be in terms of *x*?

b) What will the volume of the cube be?

Grade 8 Mathematics Worksheet

Solution

1. a)



The sides of the cube have doubled, so it will now be 2*x* per side. So the surface area will then become:
$A = 6(2x)^2 = 6(4x^2) = 24x^2$ units. That means that the area increased by a factor of 4.

b) The sides of the cube have doubled, so it will now be 2*x* per side. So the volume will then become:
$V = (2x)^3 = 8x^3$ units. This tells us that the volume increased by a factor of 8.

Where to indicate the change when we enlarge the items are important to emphasise. Even though the sides are doubling in length, the effect is not a double in the size of the area.