Craigieburn Secondary College

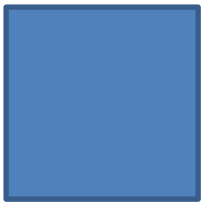
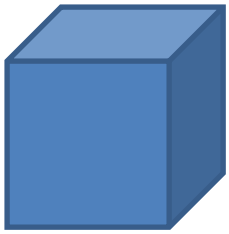
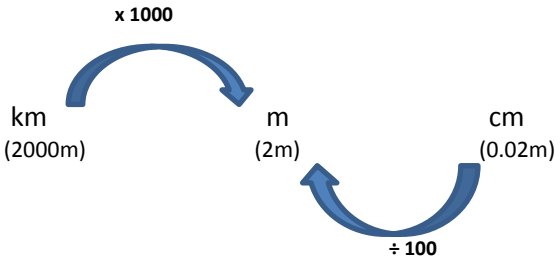
Best Practice – BP#1 – Measurement

AusVELS 9.5 Students are able to explore the effect of a change in scale of linear dimensions on area and volume of regular shapes and objects.

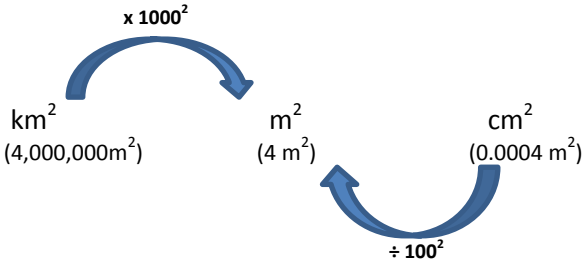
Q: Calculate the area of the square with the following side length:

a) 2 cm
b) 2 m
c) 2 km

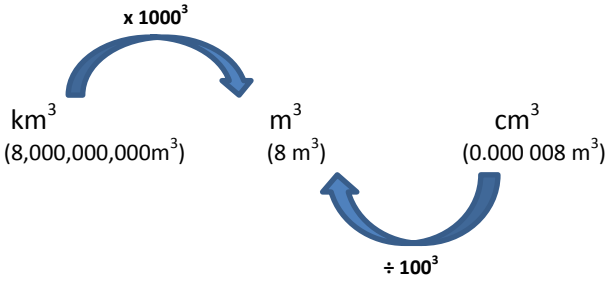
Express your answers in m^2.
Calculate the volume of the cubes with the same side lengths; express your answer in m^3.
What effect of the change in scale do you realise?

Step 1	To calculate the area of squares in m^2, first convert the side length in m. ➢ 1m = 100cm; to convert cm to m, you will divide the number by 100 ➢ 1km = 1000m; to convert km to m, you will multiply the number by 1000	a) 2 cm = 2 / 100 m = 0.02 m b) 2 m c) 2 km = 2 x 1000 m = 2000 m
Step 2	Calculate the area of squares by using the formula A = l x l 	a) A = 0.02 x 0.02 = 0.0004 m^2 b) A = 2 x 2 = 4 m^2 c) A = 2000 x 2000 = 4,000,000 m^2
Step 4	Calculate the volume of cubes by using the formula V = l x l x l 	a) V = 0.02 x 0.02 x 0.02 = 0.000 008 m^3 b) V = 2 x 2 x 2= 8 m^3 c) V = 2000 x 2000 x 2000 = 8,000,000,000 m^3
Step 5	To state the effect of the change in scale, you will observe the difference between the answers in the 3 categories (length, area, and volume), and notice the conversion factor.	**Length:** 

Area:


x 1000²
km²
(4,000,000m²)
m²
(4 m²)
cm²
(0.0004 m²)
÷ 100²

Volume:


x 1000³
km³
(8,000,000,000m³)
m³
(8 m³)
cm³
(0.000 008 m³)
÷ 100³