

CONVERTING VOLUME MEASUREMENTS

AN APPLICATION OF MONOMIAL MULTIPLICATION

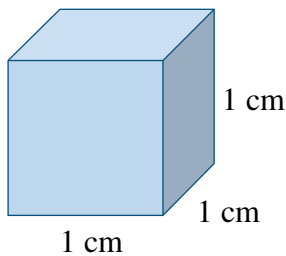
WARM-UP

1 m = <input type="text"/> cm	3 m = <input type="text"/> cm	1.6 m = <input type="text"/> cm	300 cm = <input type="text"/> m
1 m = <input type="text"/> mm	4 m = <input type="text"/> mm	2.95 m = <input type="text"/> mm	45 mm = <input type="text"/> m
1 km = <input type="text"/> m	7 km = <input type="text"/> m	7.4 km = <input type="text"/> m	3000 m = <input type="text"/> km
1 km = <input type="text"/> cm	2 km = <input type="text"/> cm	6.2 km = <input type="text"/> cm	428 m = <input type="text"/> km

INVESTIGATE



When working with volume, how do we convert from cm^3 to mm^3 ?
Is it identical to the way we convert from centimetres to millimetres?

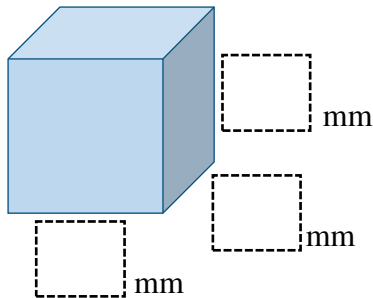


Determine the volume (in cm^3) of the cube shown on the left.

Volume = cm^3



What do you think the volume of the cube will be in mm^3 ? **Hypothesis:** mm^3



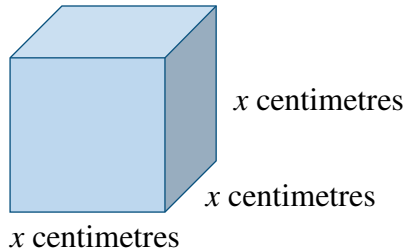
Rewrite the dimensions of the above cube using millimetres instead of centimetres.

Determine the volume (in mm^3) of the cube on the left.

Volume = mm^3

To convert from cm^3 to mm^3 , it appears that we can multiply by , which is equivalent to multiplying by three times. Is this result what you expected? Explain.

GENERALIZE

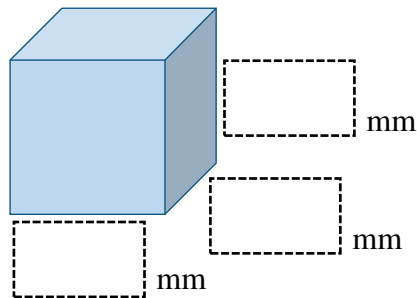


The cube on the left has side lengths of x centimetres. Determine the volume of this cube (in cm^3).

$$\text{Volume} = \boxed{} \text{ cm}^3$$

By what value can we multiply to convert centimetres to millimetres? $\boxed{}$

How can we express x centimetres using millimetres? x centimetres = $\boxed{}$ millimetres



Rewrite the dimensions of the above cube using millimetres instead of centimetres.

Determine the volume (in mm^3) of the cube on the left.

$$\text{Volume} = \boxed{} \text{ mm}^3$$

CONCLUDE

To convert from cm^3 to mm^3 , we multiply by $\boxed{}$, which is equivalent to multiplying by $\boxed{}$ three times.

CHECK AND EXTEND YOUR UNDERSTANDING

- Convert each of the following volumes from cubic centimetres to cubic millimetres:
 - 3 cm^3
 - 14 cm^3
 - 2.5 cm^3
 - 57.48 cm^3
 - 0.1253 cm^3
- How can we quickly convert from m^3 to cm^3 ?
- How can we quickly convert from mm^3 to cm^3 ?
- How can we quickly convert from m^3 to mm^3 ?
- How can we quickly convert from cm^3 to m^3 ?

ANSWERS

- a) 3000 mm^3 b) $14\,000 \text{ mm}^3$ c) 2500 mm^3 d) $57\,480 \text{ mm}^3$ e) 125.3 mm^3
- Multiply by 1 000 000 (multiply by 100 three times)
- Divide by 1000 (divide by 10 three times)
- Multiply by 1 000 000 000 (multiply by 1000 three times)
- Divide by 1 000 000 (divide by 100 three times)