

CONVERTING AREA MEASUREMENTS

AN APPLICATION OF MONOMIAL MULTIPLICATION

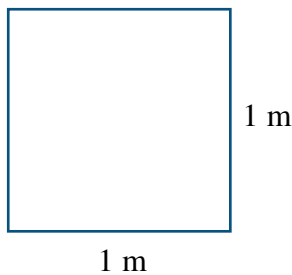
WARM-UP

1 m = <input type="text"/> cm	5 m = <input type="text"/> cm	2.5 m = <input type="text"/> cm	200 cm = <input type="text"/> m
1 m = <input type="text"/> mm	8 m = <input type="text"/> mm	3.75 m = <input type="text"/> mm	25 mm = <input type="text"/> m
1 km = <input type="text"/> m	6 km = <input type="text"/> m	2.8 km = <input type="text"/> m	8000 m = <input type="text"/> km
1 km = <input type="text"/> cm	5 km = <input type="text"/> cm	3.6 km = <input type="text"/> cm	975 m = <input type="text"/> km

INVESTIGATE



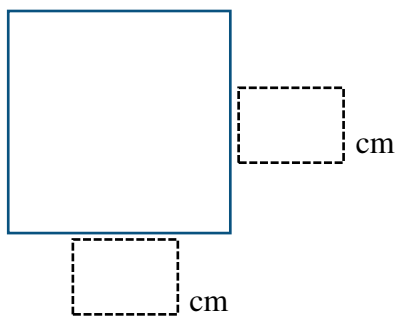
When working with area, how do we convert from m^2 to cm^2 ?
Is it identical to the way we convert from metres to centimetres?



Determine the area (in m^2) of the square shown on the left.

Area = m^2

? What do you think the area of the square will be in cm^2 ? **Hypothesis:** cm^2



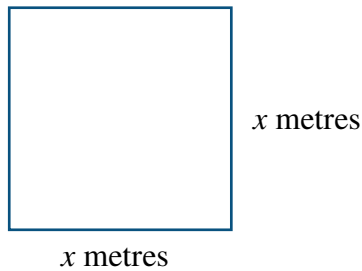
Rewrite the dimensions of the above square using centimetres instead of metres.

Determine the area (in cm^2) of the square on the left.

Area = cm^2

To convert from m^2 to cm^2 , it appears that we can multiply by , which is equivalent to multiplying by twice. Is this result what you expected? Explain.

GENERALIZE

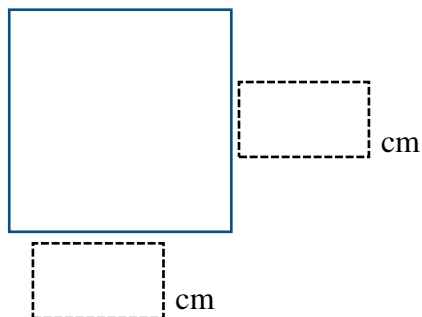


The square on the left has side lengths of x metres. Determine the area of this square (in m^2).

$$\text{Area} = \boxed{} \text{ m}^2$$

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

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



Rewrite the dimensions of the above square using centimetres instead of metres.

Determine the area (in cm^2) of the square on the left.

$$\text{Area} = \boxed{} \text{ cm}^2$$

CONCLUDE

To convert from m^2 to cm^2 , we multiply by $\boxed{}$, which is equivalent to multiplying by $\boxed{}$ twice.

CHECK AND EXTEND YOUR UNDERSTANDING

- Convert each of the following areas from square metres to square centimetres:
a) 2 m^2 b) 28 m^2 c) 3.7 m^2 d) 15.25 m^2 e) 0.375 m^2
- How can we quickly convert from m^2 to mm^2 ?
- How can we quickly convert from cm^2 to m^2 ?
- How can we quickly convert from km^2 to m^2 ?
- How can we quickly convert from m^2 to km^2 ?

ANSWERS

- a) $20\,000 \text{ cm}^2$ b) $280\,000 \text{ cm}^2$ c) $37\,000 \text{ cm}^2$ d) $152\,500 \text{ cm}^2$ e) 3750 cm^2
- Multiply by 1 000 000 (multiply by 1000 twice)
- Divide by 10 000 (divide by 100 twice)
- Multiply by 1 000 000 (multiply by 1000 twice)
- Divide by 1 000 000 (divide by 1000 twice)