**Lesson 2**

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| Topic Goal: Converting Metric Units |

* Convert between metric units commonly used in everyday applications

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| Example(s): |

**Prefixes**

Prefixes let us write down very small or very large numbers quickly and easily.

**Metre (m)** is the base unit for length. The prefixes tell us what to multiply or divide the metres by to get our new unit.

Example – to change metre to kilometre, divide by metres 1000

**Metric Prefixes**

**Kilo –** means thousand

**Centi** – means hundredth

**Milli** – means thousandth

Example – to change metre to centimetre, multiply metres by 100

Example – to change metre to millimetre, multiply metres by 1000

**Conversions**

Converting from a **larger** unit to a **smaller** unit => MULTIPLY

**Kilo**

**Milli**

**Centi**

**Metre**

**X by 10**

**X by 100**

**X by 1000**

Use the conversion chart above:

1. To convert from **kilometre to metre** => multiply by 1000 (move decimal place **3** places to the right)

a) 6 km = \_\_\_\_\_\_\_\_\_ m

**6000 m**

**=**

**0**

**0**

**0**

6

**Metre**

**Kilo**

X 1000

b) 2.3 km = \_\_\_\_\_\_\_\_\_\_\_ m Answer: 2.3 X 1000 = **2300 m**

c) 50 km = \_\_\_\_\_\_\_\_\_\_ m

d) 0.04 km = \_\_\_\_\_\_\_\_\_\_ m

2. To convert from **metre to centimetre** => multiply by 100 (move decimal **2** places to the right)

a) 2 m = \_\_\_\_\_\_\_\_\_\_ cm Answer: 2 x 100 = **200 cm**

b) 4.6 m = \_\_\_\_\_\_\_\_\_ cm Answer: 4.6 x 100 = **460 cm**

c) 31 m = \_\_\_\_\_\_\_\_\_\_ cm

d) 0.93 m = \_\_\_\_\_\_\_\_\_ cm

3. To covert from **centimetre to millimetre** => multiply by 10 (move decimal **1** place to the right)

a) 3 cm = \_\_\_\_\_\_\_\_\_\_ mm Answer: 3 x 10 = **30 cm**

b) 7.3 cm = \_\_\_\_\_\_\_\_\_ mm Answer: 7.3 x 10 = **73 cm**

c) 43 cm = \_\_\_\_\_\_\_\_\_\_ mm

d) 0.1 cm = \_\_\_\_\_\_\_\_\_\_ mm

4. **Be careful** to multiply the correct number for conversions needing two or more steps.

0.54 km 🡪 \_\_\_\_\_\_\_ cm

0.54 X 1000 x 100

= 0.54 X 100 000 cm

= 0 .5 4 0 0 0 **.** cm decimal moves 5 places to the right

= 54 000 cm same distance in smaller units

**Cm**

**M**

**Km**

X 1000

X 100

a) 7 km = \_\_\_\_\_\_\_\_\_\_ mm Answer: 7 x 100 000 = **70 000 mm**

b) 8.2 m = \_\_\_\_\_\_\_\_\_ mm Answer: 8.2 x 1000 = **8200 mm**

c) .43 km = \_\_\_\_\_\_\_\_\_\_ cm

d) 0.1 km = \_\_\_\_\_\_\_\_\_\_ mm

Converting from a **smaller** unit to a **larger** unit => DIVIDE

**Milli**

**Kilo**

**Metre**

**Centi**

÷ **by 1000**

÷ **by 100**

÷ **by 10**

Examples: Use the conversion chart above:

1. To convert from **millimetre to centimetre** => divide by 10 (move decimal 1 place to left)

a) 6 mm = \_\_\_\_\_\_\_\_\_ cm Answer: 6 ÷ 10 = **0.6 m**

**0 .**

6

**=**

**0. 6 cm**

**cm**

**mm**

÷ 10

1000

b) 2.3 mm = \_\_\_\_\_\_\_\_\_ cm Answer: 2.3 ÷ 10 = **0.23 m**

c) 50 mm = \_\_\_\_\_\_\_\_\_\_ cm

d) 0.04 mm = \_\_\_\_\_\_\_\_\_ cm

2. To convert from **centimetre to metre**  => divide by 100 (move decimal 2 places to left)

a) 4 cm = \_\_\_\_\_\_\_\_\_ m Answer: 4 ÷ 100 = **0.04 m**

b) 8.5 cm = \_\_\_\_\_\_\_\_\_ m Answer: 8.5 ÷ 100 = **0.085 m**

c) 50 cm = \_\_\_\_\_\_\_\_\_\_ m

d) 0.04 cm = \_\_\_\_\_\_\_\_\_ m

3. To convert from **metre to kilometre**  => divide by 1000 (move decimal 3 places to left)

a) 2 m = \_\_\_\_\_\_\_\_\_ km Answer: 2 ÷ 1000 = **0.002 km**

b) 43 m = \_\_\_\_\_\_\_\_\_ km Answer: 43 ÷ 1000 = **0.043 km**

c) 8766 m = \_\_\_\_\_\_\_\_\_\_ km

d) 4569978 m = \_\_\_\_\_\_\_\_\_ km

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| Practice Questions: |

1. Convert the length measurements below into the units given.
   1. 20 cm 🡪 \_\_\_\_\_\_\_\_\_\_\_\_ mm
   2. 9 m 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_ cm
   3. 600 cm 🡪\_\_\_\_\_\_\_\_\_\_\_\_ m
   4. 4 km 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_ m
   5. 7000 m 🡪\_\_\_\_\_\_\_\_\_\_\_\_ km
   6. 150 mm 🡪\_\_\_\_\_\_\_\_\_\_\_\_ cm
2. Convert the length measurements below into the units given.
   1. 0.01 m 🡪 \_\_\_\_\_\_\_\_\_\_\_\_ cm
   2. 50 cm 🡪 \_\_\_\_\_\_\_\_\_\_m
   3. 8 mm 🡪\_\_\_\_\_\_\_\_\_\_\_\_ cm
   4. 4 km 🡪 \_\_\_\_\_\_\_\_\_\_\_ m
   5. 0.0045 km 🡪\_\_\_\_\_\_\_\_\_\_\_\_ m
   6. 150 mm 🡪\_\_\_\_\_\_\_\_\_ cm
3. Convert the length measurements below into the units given.
   1. 8000 mm 🡪 \_\_\_\_\_\_\_\_\_m
   2. 4200 cm 🡪 \_\_\_\_\_\_\_\_\_\_km
   3. 7.3 km 🡪\_\_\_\_\_\_\_\_\_\_\_\_ mm
   4. 0.75 m 🡪 \_\_\_\_\_\_\_\_\_\_\_ cm
   5. 0.19 m 🡪\_\_\_\_\_\_\_\_\_\_\_\_ mm
   6. 870 mm 🡪\_\_\_\_\_\_\_\_\_ cm
4. Convert the length measurements below into the units given.
   1. 0.015 km 🡪 \_\_\_\_\_\_\_\_\_ cm
   2. 0.091 m 🡪 \_\_\_\_\_\_\_\_\_mm
   3. 0.00034 km 🡪\_\_\_\_\_\_\_\_\_\_ mm
   4. 431 mm 🡪 \_\_\_\_\_\_\_\_\_km
5. John says that 600 cm is not enough moulding for his baseboards that measure 5642 mm. Is he correct? Explain.

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| Assessment: |

1. Convert the length measurements below into the units given.
   1. 30 cm 🡪 \_\_\_\_\_\_\_\_\_\_\_\_ mm
   2. 8 m 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_ cm
   3. 500 cm 🡪\_\_\_\_\_\_\_\_\_\_\_\_ m
   4. 6 km 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_ m
   5. 9000 m 🡪\_\_\_\_\_\_\_\_\_\_\_\_ km
   6. 110 mm 🡪\_\_\_\_\_\_\_\_\_\_\_\_ cm
2. Convert the length measurements below into the units given.
   1. 0.03 m 🡪 \_\_\_\_\_\_\_\_\_\_\_\_ cm
   2. 20 cm 🡪 \_\_\_\_\_\_\_\_\_\_m
   3. 2 mm 🡪\_\_\_\_\_\_\_\_\_\_\_\_ cm
   4. 7 km 🡪 \_\_\_\_\_\_\_\_\_\_\_ m
   5. 0.0023 km 🡪\_\_\_\_\_\_\_\_\_\_\_\_ m
   6. 104 mm 🡪\_\_\_\_\_\_\_\_\_ cm
3. Convert the length measurements below into the units given.
   1. 9000 mm 🡪 \_\_\_\_\_\_\_\_\_m
   2. 6778 cm 🡪 \_\_\_\_\_\_\_\_\_\_km
   3. 2.1 km 🡪\_\_\_\_\_\_\_\_\_\_\_\_ mm
   4. 0.67 m 🡪 \_\_\_\_\_\_\_\_\_\_\_ cm
   5. 0.11 m 🡪\_\_\_\_\_\_\_\_\_\_\_\_ mm
   6. 675 mm 🡪\_\_\_\_\_\_\_\_\_ cm
4. Convert the length measurements below into the units given.
   1. 0.013 km 🡪 \_\_\_\_\_\_\_\_\_ cm
   2. 0.022 m 🡪 \_\_\_\_\_\_\_\_\_mm
   3. 0.00034 km 🡪\_\_\_\_\_\_\_\_\_\_ mm
   4. 753 mm 🡪 \_\_\_\_\_\_\_\_\_km
5. Jemma is making a pair of pants and needs fabric that is 156 cm long. She goes to the fabric store and buys fabric that is 1.3 m long. Is her fabric long enough? Explain and show all your work.