DATE: NAME: CLASS:

GENERAL

Metric Conversions

BLM G-28

Goal • Develop your understanding of the metric system.

What to Do

- Read about the metric system and how to do metric conversions.
- Answer the questions that follow.

The Metric System

- The metric system is based on multiples of 10. Each type of measurement (for example length or mass) has a base unit (for example metres or grams). Larger and smaller units are named by adding a prefix to the base unit.
- For example, the prefix is *kilo-* means multiplied by 1000, so one kilometre is 1000 metres. The prefix *milli-* means divided by 1000, so one millimetre is one thousandth of a metre.
- The table shows the most commonly used metric prefixes.

Prefix	Symbol	Relationship to the Base Unit
giga-	G	$10^9 = 1\ 000\ 000\ 000$
mega-	M	$10^6 = 1\ 000\ 000$
kilo-	k	$10^3 = 1000$
hecto-	h	$10^2 = 100$
deca-	da	$10^1 = 10$
		$10^0 = 1$
deci-	d	$10^{-1} = 0.1$
centi-	c	$10^{-2} = 0.01$
milli-	m	$10^{-3} = 0.001$
micro-	µ	$10^{-6} = 0.000\ 001$
nano-	n	$10^{-9} = 0.000\ 000\ 001$

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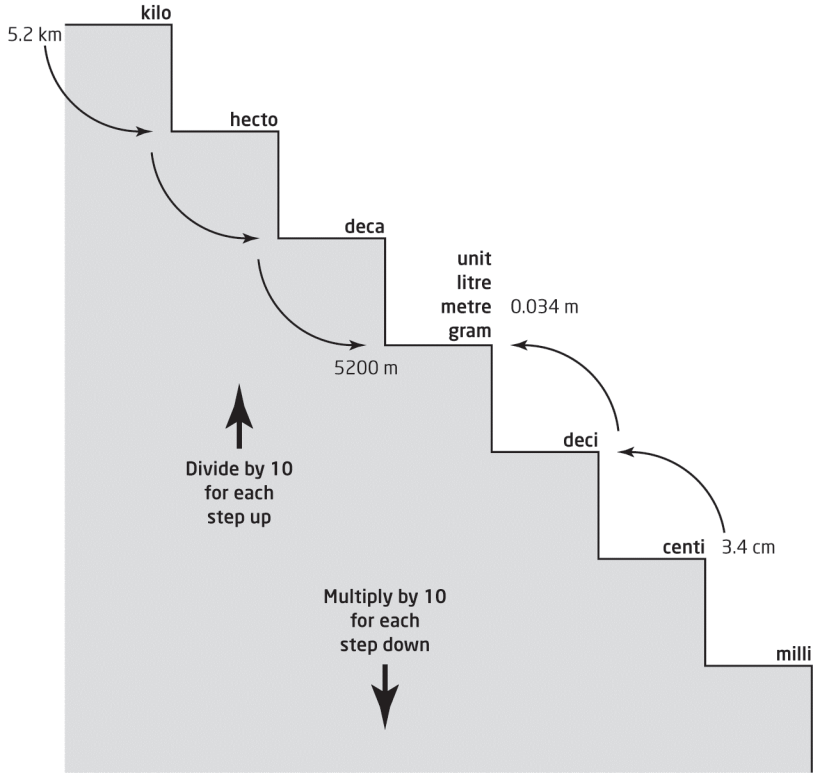
Metric Conversions

Converting Metric Units Using Metric Stairs

- You can use metric stairs to covert metric units. To use the stairs, simply start at the level of the original measurement (litre, metre, gram) and move the number up or down the stairs to the unit to which you are converting. Each "jump" up the stairs is the same as dividing by 10. This means you move the decimal place in the measurement one place to the left.
- Look at the example. To convert 3.4 cm to metres, make two jumps up the stairs (you are dividing by 100 (10×10)). This is the same as moving the decimal two places to the left, which would make 3.4 cm = 0.034 m.
- To convert 5.2 km to metres, make three jumps down the stairs, the same as multiplying by 1000 ($10 \times 10 \times 10$). This is also the same as moving the decimal three places to the right, which would make 5.2 km = 5200 m.



Hint: To remember in which direction to move the decimal, look at the stairs. When you come *down* the stairs (multiply), you are going to the right, so move the decimal to the right. When you go *up* the stairs (divide), you are going to the left, so move the decimal to the left.

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Metric Conversions

Questions

Length

Example 1

Convert 37 m to centimetres.

Solution

Look at the stairs on the previous page. To convert metres to centimetres, jump down two stairs or multiply by 10×10.

$37 \text{ m} = 37 \times 10 \times 10$

$= 3700 \text{ cm}$

Example 2

Convert 18 km to metres.

Solution

Look at the stairs on the previous page. To convert kilometres to metres, jump down three stairs or multiply by $10 \times 10 \times 10$.

$18 \text{ km} = 18 \times 10 \times 10 \times 10$

$= 18\,000 \text{ m}$

Convert each length to the given measurement.

1. 85 cm = _____ m

2. 0.85 km = _____ m

3. 8.5 cm = _____ mm

4. 85 000 dm = _____ m

5. 0.85 dam = _____ m

6. 2.77 m = _____ dam

7. 0.277 cm = _____ dm

8. 27.7 dam = _____ hm

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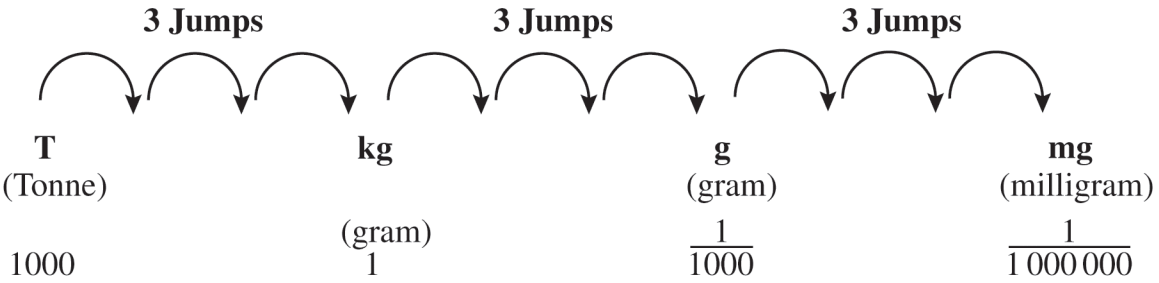
Metric Conversions

Mass



Use the table above or metric stairs to convert each mass to the given units.

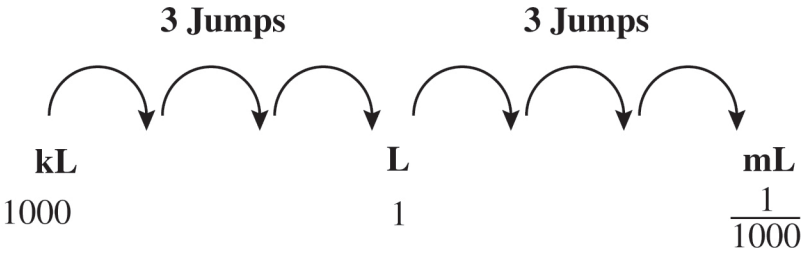
9. 8.3 kg = _____ g

10. 830 mg = _____ g

11. 2.77 hg = _____ g

12. 2700 mg = _____ dg

Capacity



Use the table above or metric stairs to convert each volume to the given unit.

13. 830 ml = _____ L

14. 083 L = _____ mL

15. 8.3 L = _____ mL

16. 83 000 mL = _____ L

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