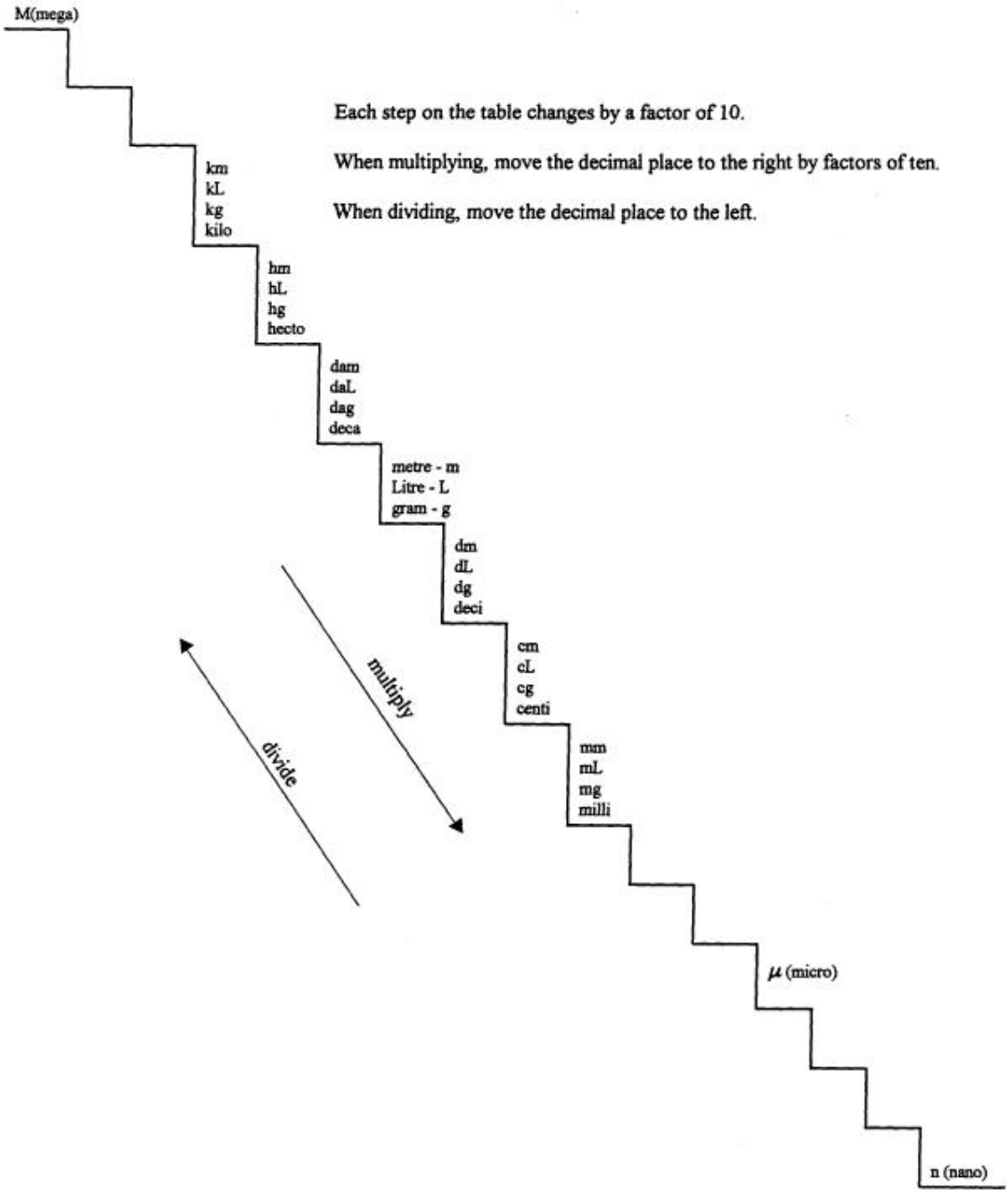
BOW VALLEY COLLEGE

LEARNING RESOURCE SERVICES

Metric Conversion



Each step on the table changes by a factor of 10.

When multiplying, move the decimal place to the right by factors of ten.

When dividing, move the decimal place to the left.

Example 1: 628 mg = _____ g

(a) find *milli* on your chart

(b) we want to go to *grams*

(c) we need to move 3 steps up the chart

(d) remember each step is a factor of 10
10 X 10 X 10 = 1 000

(e) Since we are moving up the chart, we divide which means we move the decimal place 3 places to the left.

(f) 628

(g) 628 mg = 0.628 g

Example 2: 0.879 kL = _____ L

(a) find *kilo* on your chart

(b) we want to go to *litre*

(c) we need to move 3 steps down the chart

(d) remember each step is a factor of 10
l0 X 10 X 10 = 1 000

(e) Since we are moving down the chart, we multiply which means we move the decimal place 3 places to the right.

(f) 0.879

(g) 0.879 kL = 879 L

Example 3: 721 cm = _____ km

(a) find *centi* on your chart

(b) we want to go to *km*

(c) we need to move *5* steps up the chart

(d) each step is a factor of 10
l0 X 10 X 10 X 10 X 10 = 100 000

(e) since we are moving up the chart we divide which means we move the decimal place 5 places to the left

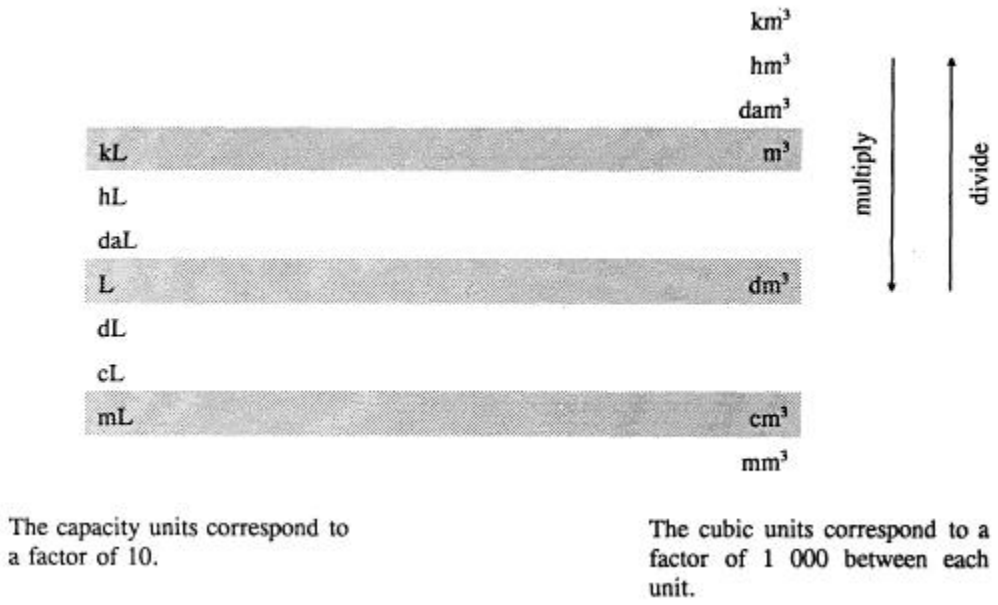
(f) 

(g) 721 cm = 0.00721 km

Exercises

1.	127 mL =	L	16.	7.8 hm =	m
2.	10.1 L =	mL	17.	8.75 mg =	dg
3.	0.15 L =	mL	18.	950 hm =	km
4.	8 mL =	L	19.	0.08 dag =	hg
5.	2.89 kg =	g	20.	250 hg =	g
6.	12.6 g =	mg	21.	1.8 cg =	mg
7.	0.5 kg =	mg	22.	2.8 hg =	dg
8.	12.5 cg =	g	23.	l9l dm =	mm
9.	0.15 kg =	cg	24.	89 hm =	dm
10.	260 mg =	cg	25.	250 mg =	μ g
11.	2.5 mm =	cm	26.	528 Mm =	km
12.	3.8 m =	mm	27.	8 500 μL =	L
13.	29 m =	cm	28.	0.8750 mm =	nm
14.	1 500 mm =	m	29.	1.8×10^6 L =	ML
15.	15 m =	km	30.	1.500 μm =	nm

Capacity Units ⇔ Cubic Units



The units shaded from capacity units to cubic units are the same value.

$1\ kL = 1\ m^3$

$1\ L = 1 dm^3$

$1\ mL = 1\ cm^3$

When using this chart the student may find it easier to move up or down the capacity units and move across to the cubic units where they are equal or vice versa.

Exercises

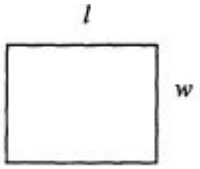
1.	436 mL =	L	16.	51.8 dm^3 =	dL
2.	52 kL =	L	17.	21.3 cm^3 =	L
3.	528 L =	cL	18.	5.3 cL =	cm^3
4.	865 mL =	cL	19.	2143 kL =	dam^3
5.	0.01234 kL =	mL	20.	43 daL =	cm^3
6.	3490 mL =	cm^3	21.	350 000 mm^3 =	kL
7.	250 m^3 =	kL	22.	15 dL =	dm^3
8.	495 kL =	m^3	23.	0.000628 km^3 =	kL
9.	7.21 L =	dm^3	24.	0.16 dm^3 =	cL
10.	64 dam^3 =	m^3	25.	7.2 hL =	m^3
11.	8 000 cm^3 =	mm^3	26.	163 mL =	dm^3

12.	5.91 m^3 =	dm^3	27.	0.008254 L =	mm^3
13.	0.0246 hm^3 =	m^3	28.	528 m^3 =	daL
14.	2 146 mm^3 =	dm^3	29.	0.0495 hm^3 =	hL
15.	21.3 m^3 =	dam^3	30.	0.00865 dam^3 =	mL

Geometric Calculations Using Metric

Be sure all dimensions are in the same metric units when doing geometric calculations. Use 3.14 for π

Example 1



If a rectangle is 0.90 m by 50 cm find

(a) the perimeter in meters
(b) the area in m^2

Solution:

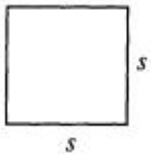
(a) change 50 cm to m = 0.50 m
P = 21+ 2w
P = 2 (0.90 m) + 2 (0.50 m)

P = 2.8 m

(b) A = lw
A = (0.90 m)(0.50 m)

A = 0.45 m^2

Example 2



A square has a surface area of 196 cm^2.

$A = s^2$

Find the length of each side in cm and mm.

Solution:

$A = s^2$
$196\ cm^2 = s^2$
$s = \sqrt{196\ cm^2}$

s = 14 cm

$s = 14 \text{ cm} \times \frac{10 \text{ mm}}{1 \text{ cm}}$

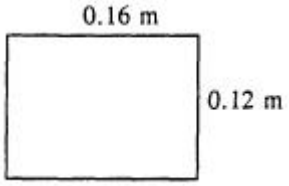
s = 140 mm

Exercises

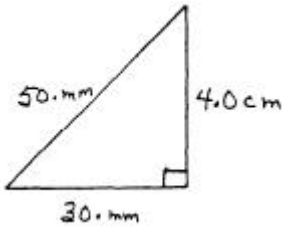
1. 

$C = 2\pi r$
$A = \pi r^2$

Find the circumference and the area of the circle.

2. 

Find the area of the rectangle in cm^2.

3. 

Find the perimeter of the triangle in cm.

4. 

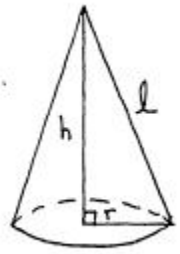
$A = 4\pi r^2$
$V = \frac{4}{3}\pi r^3$

A basketball has a diameter of 30 cm. Find
(a) the surface area
(b) the volume.

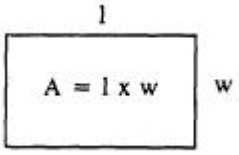
5. $A = \pi r^2 + \pi r l$
$V = 1/3\ \pi r^2 h$

A cone has the following dimensions:
h = 0.60 m
l = 0.65 m
r = 25 cm

Find the volume in cm^3.
Find the surface area in m^2.

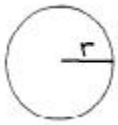


6. The area of a field is 2.0 km^2. If the length of the field is 2.0 km, what is the width?

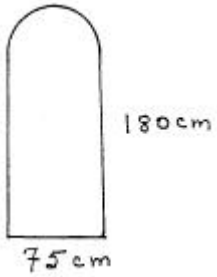


7. If the area of the circle is 0.090746 m^2, what is the radius in cm?

What is the diameter in mm?

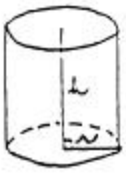


8. A contractor needs to know the amount of glass needed to build a window with this shape. Find the area in m^2.



9. $V = \pi r^2 h$

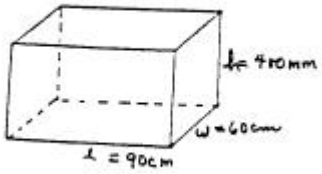
A manufacturer must make a metal can with a capacity of 1.0 L. If the workers at the factory know the height of the can must be 24 cm, what minimum amount must the radius be?



10. A fish tank measures 90 cm by 60 cm by 400 mm high.
(a) What is the volume of the tank in cm^3. (V = lwh)

(b) What is the capacity of the tank in liters?

(c) To keep the fish from jumping out of the tank it can only be filled to a point 100 mm from the top. What will be the capacity of the tank now?



Answer Key available in Learner Support Services, Bow Valley College.

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