

Measurement: Converting Units

Master The Curriculum

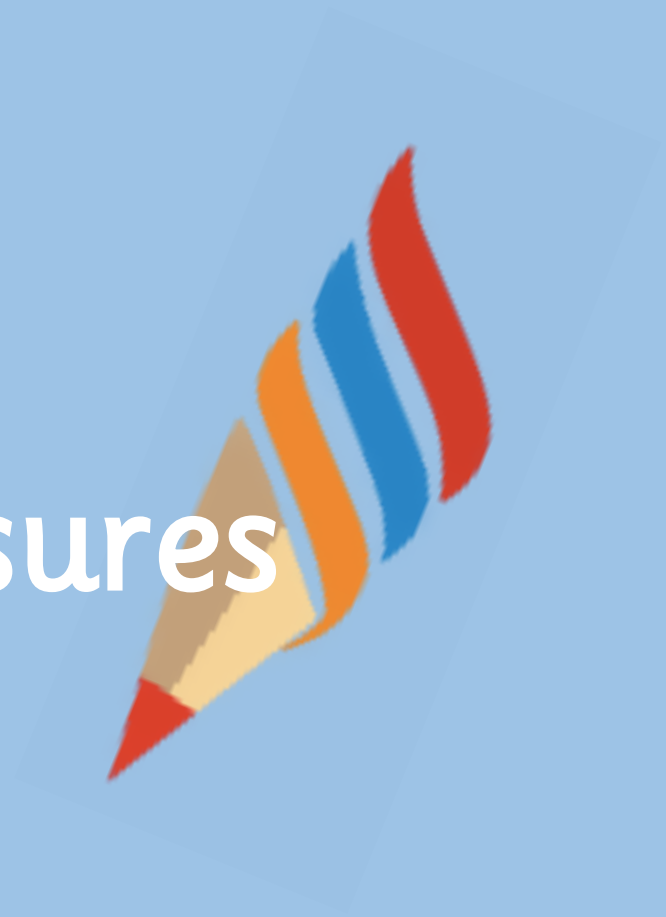


6

Fluency Teaching Slides

Metric Measures

6



Fluency Teaching Slides

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Activity 1

Metric Measures

Look at the unit of measures.

tonnes

kg

km

litres

cm

mm

ml

g

?

What are they used to measure?

Activity 1

Metric Measures

Look at the unit of measures.

Weight

tonnes

kg

g

Length

km

cm

mm

Volume

litres

ml

Activity 2

Metric Measures

Choose the unit of measure that is the most appropriate to measure the items below.

litres

tonnes

cm

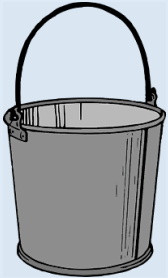
kg

ml

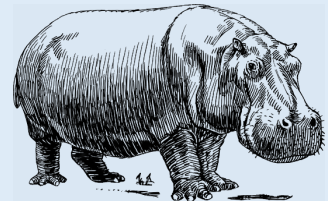
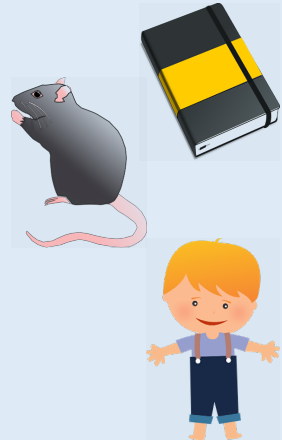
mm

g

km



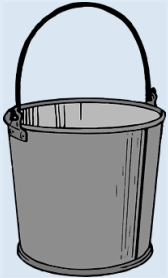
- The weight of a mouse
- The volume of water in a bucket
- The length of a book
- The weight of a child
- The weight of a hippo
- The length of a park



Activity 2

Metric Measures

Choose the unit of measure that is the most appropriate to measure the items below.



- The weight of a mouse
- The volume of water in a bucket
- The length of a book
- The weight of a child
- The weight of a hippo
- The length of a park

g

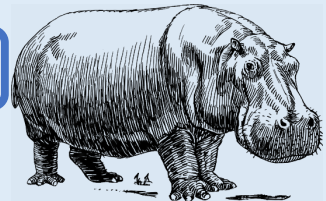
litres

cm

kg

tonnes

km



Activity 3

Metric Measures

Estimate the measurements of the following:



How much would a large fish tank hold?

100 ml 100 litres 150kg 1 litre



How much would this teaspoon hold?

500 ml 5 ml 5 litres 0.5 ml



What could the height of this trolley be?

200 ml 1 m 100 metres $\frac{1}{2}$ m



How much could a tea cup hold?

1000 cm 600 litres 200 ml $\frac{1}{2}$ litre

Activity 3

Metric Measures

Estimate the measurements of the following:



How much would a large fish tank hold?

100 ml **100 litres** 150kg 1 litre



How much would this teaspoon hold?

500 ml **5 ml** 5 litres 0.5 ml



What could the height of this trolley be?

200 ml **1 m** 100 metres $\frac{1}{2}$ m



How much could a tea cup hold?

1000 cm 600 litres **200 ml** $\frac{1}{2}$ litre

Which unit measure length? Mass Capacity?

When would you use km instead of m? When would you use mm instead of cm?

Which is the most appropriate unit to use to measure the object? Explain your answer.

Why do you think _____ is not an appropriate estimate?



Convert Metric Measures

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Learning 1

Convert Metric Measures

Remember these facts:

1 kg

=

1,000 g

1,000 kg

=

1 tonne

Example 1

Convert Metric Measures

Convert grams to kilograms.

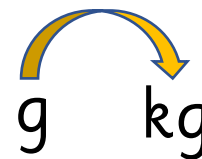
$$3,000 \text{ g} = \text{--- kg}$$

There are 1,000 g in a kg, so we need to divide 3,000 by 1,000 to convert this into kg.

$$3,000 \div 1,000 = 3$$

$$3,000 \text{ g} = 3 \text{ kg}$$

$\div 1,000$



Example 2

Convert Metric Measures

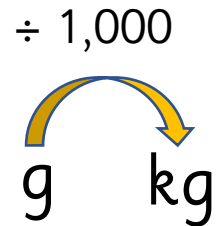
Convert grams to kilograms.

$$1,500 \text{ g} = \text{--- kg}$$

There are 1,000 g in a kg, so we need to divide 1,500 by 1,000 to convert this into kg.

$$1,500 \div 1,000 = 1.5$$

$$1,500 \text{ g} = 1.5 \text{ kg}$$



Example 4

Convert Metric Measures

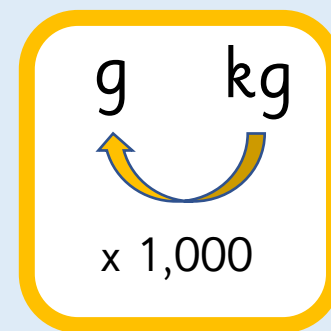
Convert kilograms to grams.

$$2.05 \text{ kg} = \text{ — } \text{g}$$

There are 1,000 g in a kg, so we need to multiply 2.05 by 1,000 to convert this into g.

$$2.05 \times 1,000 = 2,050$$

$$2.05 \text{ kg} = 2,050 \text{ g}$$



Example 3

Convert Metric Measures

Convert kilograms to grams.

20 kg

=

— g

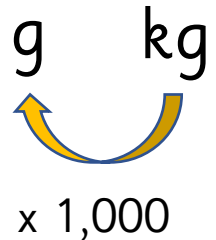
There are 1,000 g in a kg, so we need to multiply 20 by 1,000 to convert this into g.

$$20 \times 1,000 = 20,000$$

20 kg

=

20,000 g

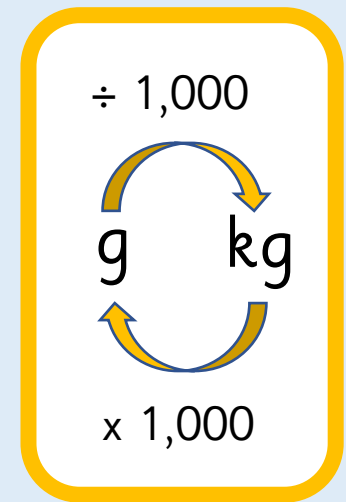


Activity 1

Convert Metric Measures

Complete the table.

Grams	Kilograms
2,500	
	4.05
2,005	
4,020	
	2.15
6,700	

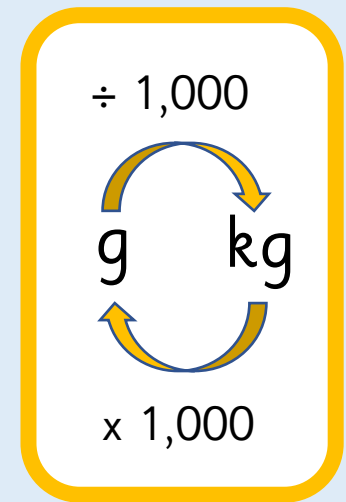


Activity 1

Convert Metric Measures

Complete the table.

Grams	Kilograms
2,500	2.5
4,050	4.05
2,005	2.005
4,020	4.02
2,150	2.15
6,700	6.7



Example 5

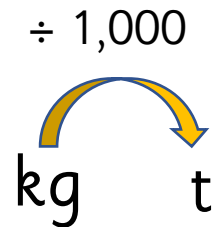
Convert Metric Measures

Convert kilograms to tonnes.

$$7,000 \text{ kg} = \text{___ tonnes}$$

There are 1,000 kg in a tonne, so we need to divide 7,000 by 1,000 to convert this into kg.

$$7,000 \div 1,000 = 7$$



$$7,000 \text{ kg} = 7 \text{ tonnes}$$

Example 6

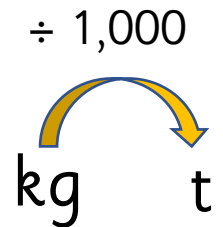
Convert Metric Measures

Convert kilograms to tonnes.

$$1,356 \text{ kg} = \text{___ tonnes}$$

There are 1,000 kg in a tonne, so we need to divide 1,356 by 1,000 to convert this into kg.

$$1,356 \div 1,000 = 1.356$$



$$1,356 \text{ kg} = 1.356 \text{ tonnes}$$

Example 7

Convert Metric Measures

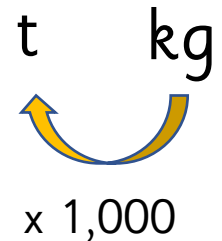
Convert tonnes to kilograms.

4.56 tonnes = ____ kg

There are 1,000 kg in a tonne, so we need to multiply 4.56 by 1,000 to convert this into kg.

$$4.56 \times 1,000 = 4,560$$

4.56 tonnes = 4,560 kg

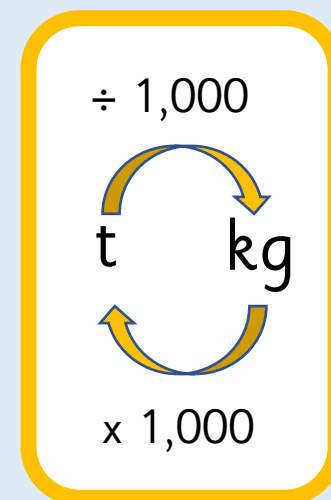


Activity 2

Convert Metric Measures

Complete the table.

Kilograms	Tonnes
6,000	
	4.009
1,705	
435	
	0.741
126	

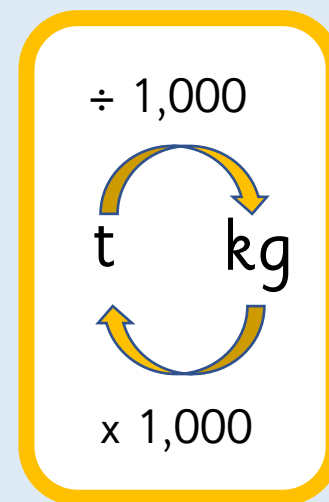


Activity 2

Convert Metric Measures

Complete the table.

Kilograms	Tonnes
6,000	6
4,009	4.009
1,705	1.705
435	0.435
741	0.741
126	0.126



Learning 2

Convert Metric Measures

Remember these facts:

10 mm

=

1 cm

100 cm

=

1 m

1,000 m

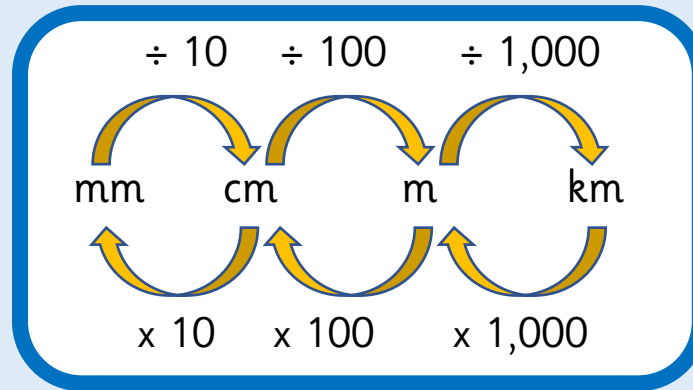
=

1 km

Activity 3

Convert Metric Measures

Complete the table.

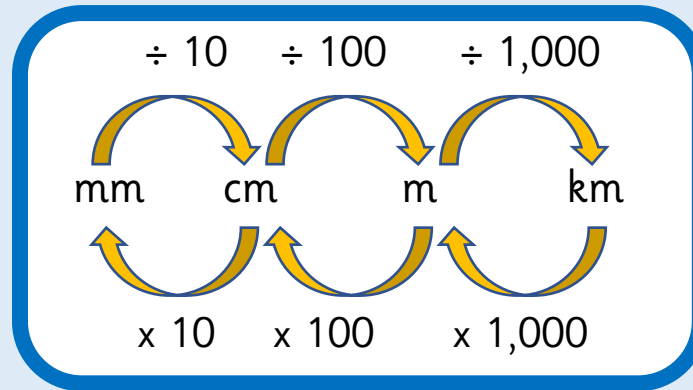


mm	cm	m	km
87,000			
	2,867		
		19.5	
			6.75

Activity 3

Convert Metric Measures

Complete the table.



mm	cm	m	km
87,000	8,700	87	0.087
28,670	2,867	28.67	0.02867
19,500	1,950	19.5	0.0195
6,750,000	675,000	6,750	6.75

How could you work out what each mark is worth on the scales?

What do you think would be the most efficient method for converting the units of time?

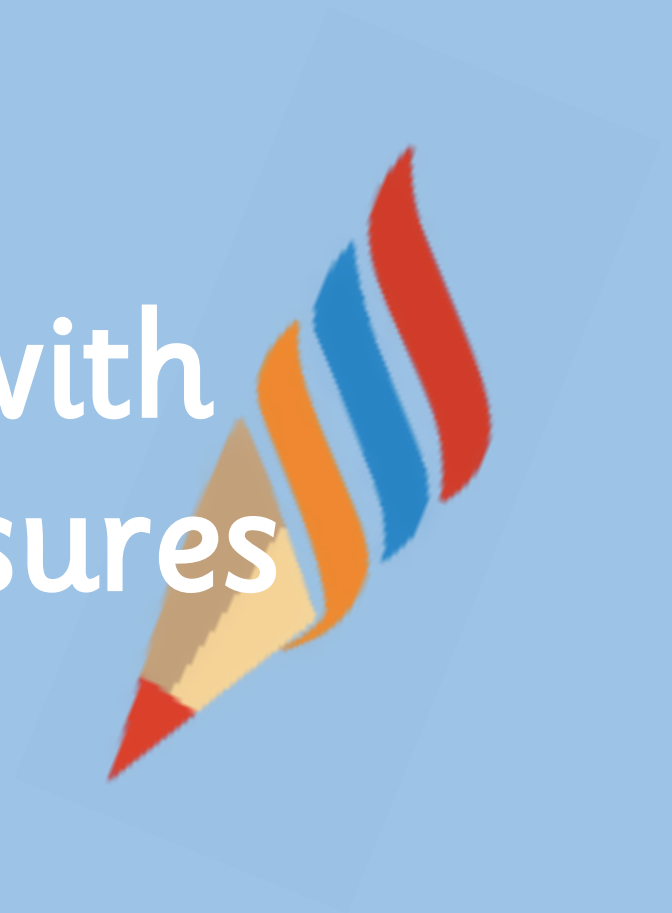
What's the same and what's different between 1.5 km and 1.500 km? Are the zeroes needed? Why or why not?

What do you notice about the amounts in the table? Can you spot a pattern?

What's the same and what's different about km and kg?

Calculate with Metric Measures

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Activity 1

Calculate with Metric Measures

A bottle of suntan lotion holds 50 ml.
How many bottles can be filled using 3 litres of suntan lotion?



1 litre

=

1,000 ml

3 litres

=

3,000 ml

1 bottle = 50 ml



bottles = 3,000 ml

Activity 1

Calculate with Metric Measures

A bottle of suntan lotion holds 50 ml.
How many bottles can be filled using 3 litres of suntan lotion?



1 litre

=

1,000 ml

3 litres

=

3,000 ml

1 bottle = 50 ml

60

bottles = 3,000 ml

Activity 2

Calculate with Metric Measures

Another bottle of suntan lotion holds 500 ml.

How many bottles can be filled using $4\frac{1}{2}$ litres of suntan lotion?



1 litre

=

1,000 ml

$4\frac{1}{2}$ litres

=

4,500 ml

1 bottle = 500 ml



bottles = 4,500 ml

Activity 2

Calculate with Metric Measures

Another bottle of suntan lotion holds 500 ml.

How many bottles can be filled using $4\frac{1}{2}$ litres of suntan lotion?



1 litre

=

1,000 ml

$4\frac{1}{2}$ litres

=

4,500 ml

1 bottle = 500 ml

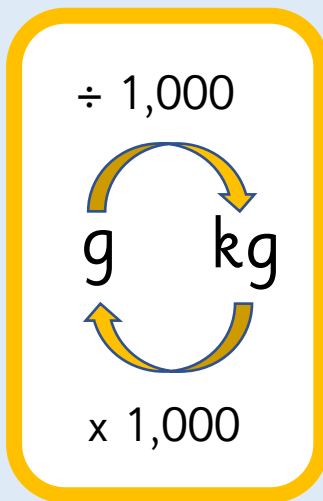
9

bottles = 4,500 ml

Activity 3

Calculate with Metric Measures

A vase weighs 614 g.
How much would 23 vases weigh?
Write the answer in kg.



1 vase = 614 g

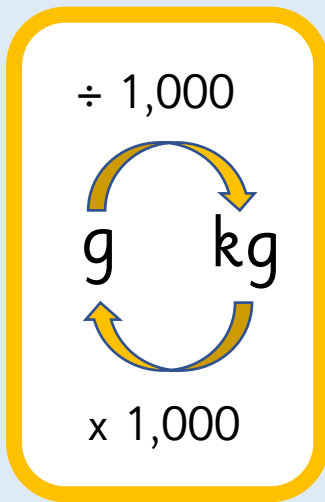
23 vase = kg



Activity 3

Calculate with Metric Measures

A vase weighs 614 g.
How much would 23 vases weigh?
Write the answer in kg.



$$1 \text{ vase} = 614 \text{ g}$$

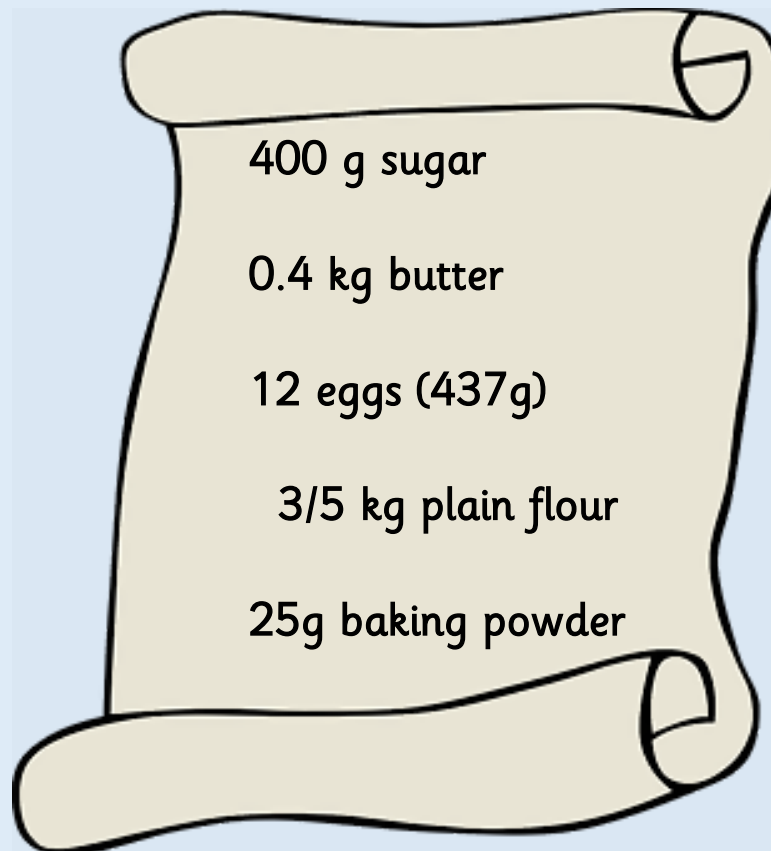
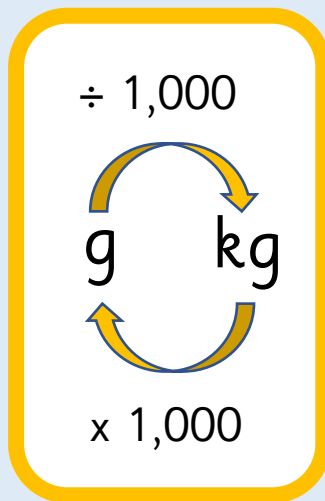
$$23 \text{ vase} = 14.122 \text{ kg}$$



Activity 3

Calculate with Metric Measures

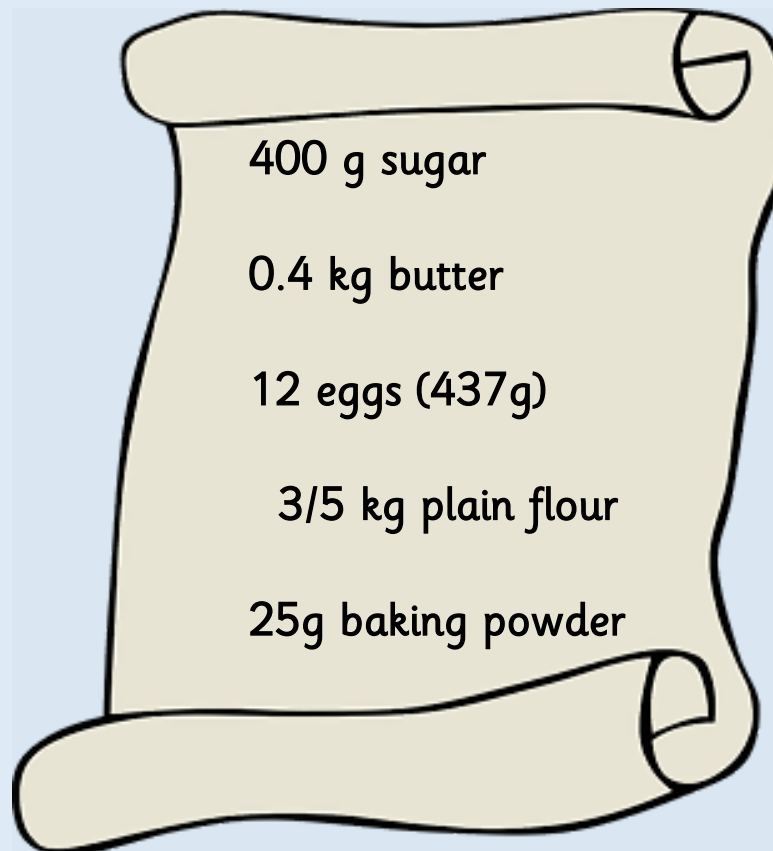
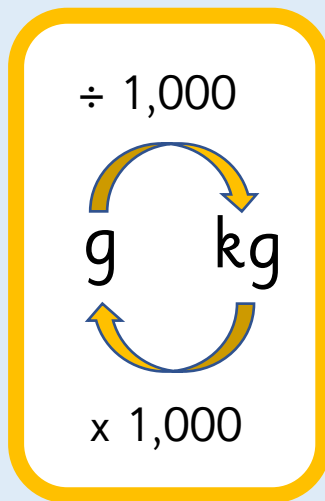
Look at the recipe below.
What is the total weight of the ingredients?
Write your answer in grams and kilograms.



Activity 3

Calculate with Metric Measures

Look at the recipe below.
What is the total weight of the ingredients?
Write your answer in grams and kilograms.



1862
grams

or

1.862
kilograms

What operation are you going to use and why?

How could you use a bar model to help you understand the question?

How many _____ are there in a _____?

How can we convert between _____ and _____?



Miles and Kilometres

6



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Activity 1

Miles and Kilometres

Use this information to work out the following:

8 km

$\approx$
approximately

5 miles

How many km are there in 10 miles?

How many miles are there in 64 km?

Sophie ran $13 \frac{1}{2}$ miles. Kimberly ran 20 km.
Who ran the furthest?

Activity 1

Miles and Kilometres

Use this information to work out the following:

8 km

$\approx$
approximately

5 miles

How many km are there in 10 miles? 16 km

How many miles are there in 64 km? 40 miles

Sophie ran $13 \frac{1}{2}$ miles. Kimberly ran 20 km.
Who ran the furthest? Sophie ran furthest.

Activity 2

Miles and Kilometres

Use this information to work out the following:

5 miles

$\approx$
approximately

8 km

20 miles

$\approx$

___ km

800 km

$\approx$

___ miles

30 miles

$\approx$

___ km

32 km

$\approx$

___ miles

$10\frac{1}{2}$ miles

$\approx$

___ km

20 km

$\approx$

___ miles

Activity 2

Miles and Kilometres

Use this information to work out the following:

5 miles

$\approx$
approximately

8 km

20 miles

$\approx$

32 km

800 km

$\approx$

500 miles

30 miles

$\approx$

48 km

32 km

$\approx$

20 miles

$10\frac{1}{2}$ miles

$\approx$

16.8 km

20 km

$\approx$

$12\frac{1}{2}$ miles

Activity 3

Miles and Kilometres

If 10 miles is approximately 16 km, therefore:

1 miles

$\approx$
approximately

___ km

2 miles

$\approx$

___ km

6 miles

$\approx$

___ km

0.5 miles

$\approx$

___ km

Activity 3

Miles and Kilometres

If 10 miles is approximately 16 km, therefore:

1 miles

$\approx$
approximately

1.6 km

2 miles

$\approx$

3.2 km

6 miles

$\approx$

9.6 km

0.5 miles

$\approx$

0.8 km

Give an example of a length you would measure in miles or km.

If we know 5 miles is approximately 8 km, how can we work out 15 miles converted to km?

Can you think of a situation where you may need to convert between miles and kilometres?



Imperial Measures

6



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Activity 1

Imperial Measures

Use this information to work out the following
Inches and Centimetres conversion:

2.5 cm

$\approx$
approximately

1 inch

25 cm

$\approx$

___ inches

250 cm

$\approx$

___ inches

125 cm

$\approx$

___ inches

7 inches

$\approx$

___ cm

100 inches

$\approx$

___ cm

13 inches

$\approx$

___ cm

Activity 1

Imperial Measures

Use this information to work out the following
Inches and Centimetres conversion:

2.5 cm

$\approx$
approximately

1 inch

25 cm

$\approx$

10 inches

250 cm

$\approx$

100 inches

125 cm

$\approx$

50 inches

7 inches

$\approx$

17.5 cm

100 inches

$\approx$

250 cm

13 inches

$\approx$

32.5 cm

Activity 2

Imperial Measures

Use this information to work out the following Feet and Inches conversion:

1 foot

$\approx$
approximately

12 inches

7 ft

$\approx$

___ inches

100 ft

$\approx$

___ inches

6.5 ft

$\approx$

___ inches

48 inches

$\approx$

___ feet

18 inches

$\approx$

___ feet

1,200 inches

$\approx$

___ feet

Activity 2

Imperial Measures

Use this information to work out the following Feet and Inches conversion:

1 foot

$\approx$
approximately

12 inches

7 ft

$\approx$

84 inches

100 ft

$\approx$

1,200 inches

6.5 ft

$\approx$

78 inches

48 inches

$\approx$

4 feet

18 inches

$\approx$

1.5 feet

1,200 inches

$\approx$

100 feet

Activity 3

Imperial Measures

Use this information to work out the following
Pounds and Ounces conversion:

1 pound (lb)

$\approx$
approximately

16 ounces

5 lbs

$\approx$

___ ounces

1000 lbs

$\approx$

___ ounces

18.5 lbs

$\approx$

___ ounces

144 ounces

$\approx$

___ lbs

160 ounces

$\approx$

___ lbs

168 ounces

$\approx$

___ lbs

Activity 3

Imperial Measures

Use this information to work out the following
Pounds and Ounces conversion:

1 pound (lb)

$\approx$
approximately

16 ounces

5 lbs

$\approx$

80 ounces

1000 lbs

$\approx$

16,000 ounces

18.5 lbs

$\approx$

296 ounces

144 ounces

$\approx$

9 lbs

160 ounces

$\approx$

10 lbs

168 ounces

$\approx$

10.5 lbs

Activity 4

Imperial Measures

Use this information to work out the following
Stones and Pounds conversion:

1 stone

$\approx$
approximately

14 pounds (lbs)

4.5 stones

$\approx$

___ lbs

42 lbs

$\approx$

___ stones

$1\frac{1}{4}$ stones

$\approx$

___ lbs

7 lbs

$\approx$

___ stones

15 stones

$\approx$

___ lbs

280 lbs

$\approx$

___ stones

Activity 4

Imperial Measures

Use this information to work out the following
Stones and Pounds conversion:

1 stone

$\approx$
approximately

14 pounds (lbs)

4.5 stones

$\approx$

63 lbs

42 lbs

$\approx$

3 stones

$1\frac{1}{4}$ stones

$\approx$

17.5 lbs

7 lbs

$\approx$

0.5 stones

15 stones

$\approx$

210 lbs

280 lbs

$\approx$

20 stones

Activity 5

Imperial Measures

Use this information to work out the following
Gallon and Pint conversion:

1 gallon

$\approx$
approximately

8 pints

10 gallons

$\approx$

___ pints

15.5 gallons

$\approx$

___ pints

1,000 gallons

$\approx$

___ pints

64 pints

$\approx$

___ gallons

2 pints

$\approx$

___ gallons

12 pints

$\approx$

___ gallons

Activity 5

Imperial Measures

Use this information to work out the following
Gallon and Pint conversion:

1 gallon

$\approx$
approximately

8 pints

10 gallons

$\approx$

80 pints

15.5 gallons

$\approx$

124 pints

1,000 gallons

$\approx$

8,000 pints

64 pints

$\approx$

8 gallons

2 pints

$\approx$

$\frac{1}{4}$ gallons

12 pints

$\approx$

1.5 gallons

Put these in order of size: 1 cm, 1 mm, 1 inch, 1 foot, 1 metre. How do you know?

When do we use imperial measures instead of metric measures?

Why are metric measures easier to convert than imperial measures?

