Measurement: Converting Units

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Metric Measures

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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

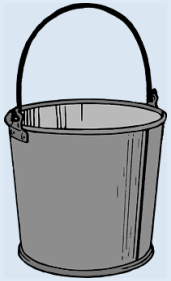
Look at the unit of measures.

Weight	Length	Volume
tonnes	km	litres
kg	cm	ml
g	mm	

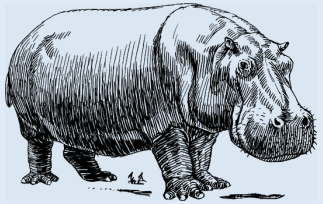
Activity 2 Metric Measures

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

litres	tonnes	cm	kg	ml	mm	g	km

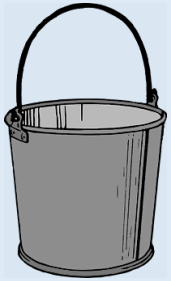


- The weight of a mouse
- The volume of water in a bucket
- The length of a book
- The weight of a child
- The weight of a hippo
- The length of a park

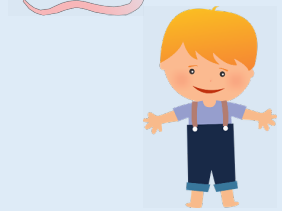


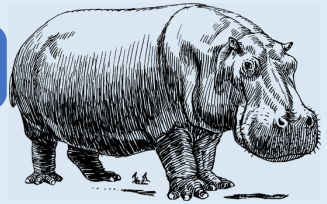
Activity 2 Metric Measures

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



- The weight of a mouse — g
- The volume of water in a bucket — litres
- The length of a book — cm
- The weight of a child — kg
- The weight of a hippo — tonnes
- The length of a park — 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 ½ m

How much could a tea cup hold?

1000 cm 600 litres 200 ml ½ 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 ½ m

How much could a tea cup hold?

1000 cm 600 litres **200 ml** ½ litre

Discuss

Metric Measures

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

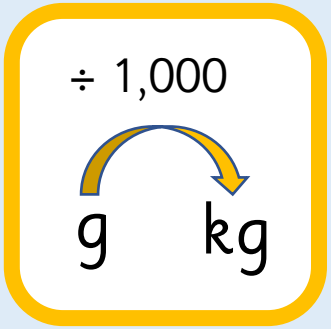
Example 1 Convert Metric Measures

Convert grams to kilograms.

3,000 g	=	___ 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 g	=	3 kg

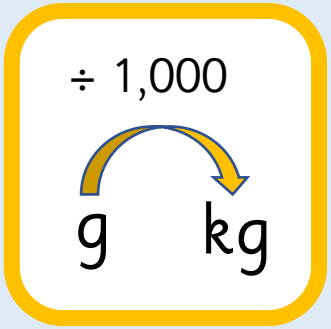
Example 2 Convert Metric Measures

Convert grams to kilograms.

1,500 g	=	___ 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 g	=	1.5 kg

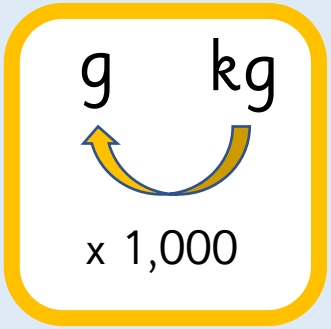
Example 4 Convert Metric Measures

Convert kilograms to grams.

2.05 kg	=	___ 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 x 1,000 = 2,050



2.05 kg	=	2,050 g

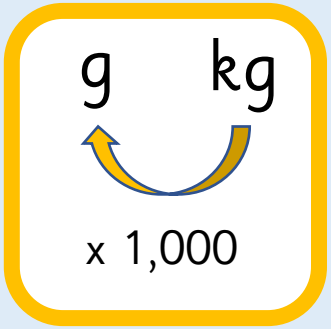
Example 3 Convert Metric Measures

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.

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

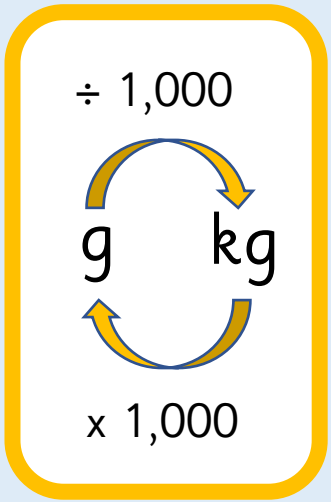


20 kg	=	20,000 g

Activity 1 Convert Metric Measures

Complete the table.

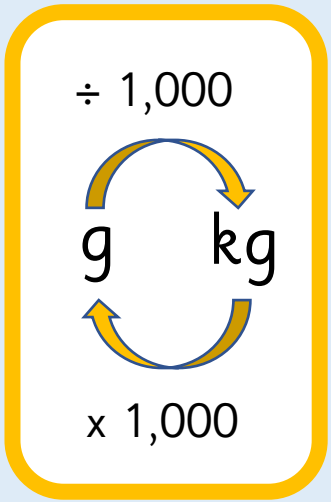
Grams	Kilograms
2,500	
	4.05
2,005	
4,020	
	2.15
6,700	



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



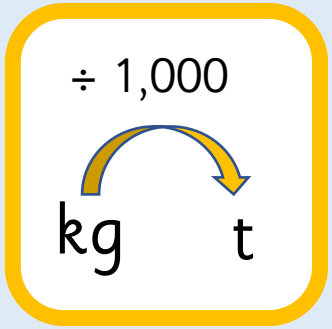
Example 5 Convert Metric Measures

Convert kilograms to tonnes.

7,000 kg	=	___ 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 ÷ 1,000 = 7



7,000 kg	=	7 tonnes

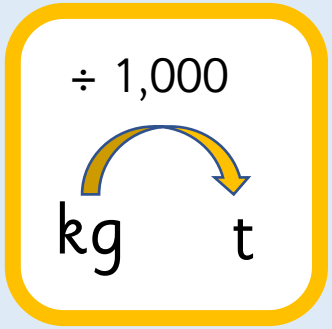
Example 6 Convert Metric Measures

Convert kilograms to tonnes.

1,356 kg	=	___ tonnes

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

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



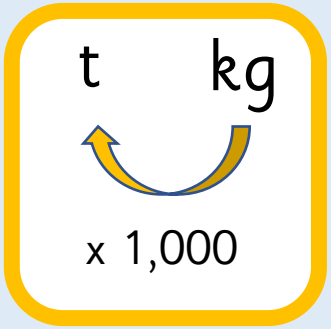
1,356 kg	=	1.356 tonnes

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.



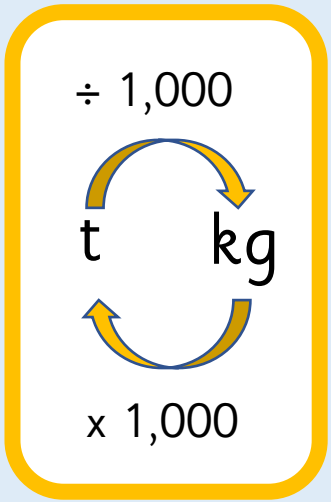
4.56 x 1,000 = 4,560

4.56 tonnes	=	4,560 kg

Activity 2 Convert Metric Measures

Complete the table.

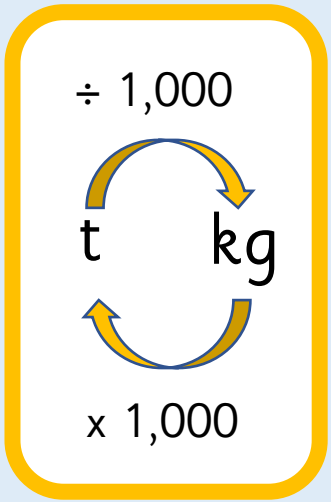
Kilograms	Tonnes
6,000	
	4.009
1,705	
435	
	0.741
126	



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



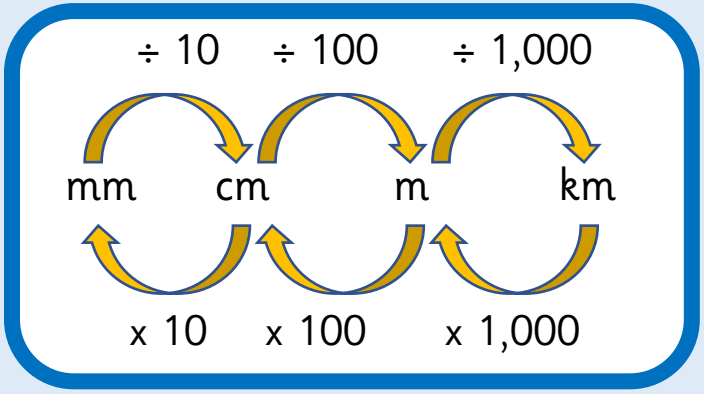
Learning 2 Convert Metric Measures

Remember these facts:

10 mm	=	1 cm
100 cm	=	1 m
1,000 m	=	1 km

Activity 3 Convert Metric Measures

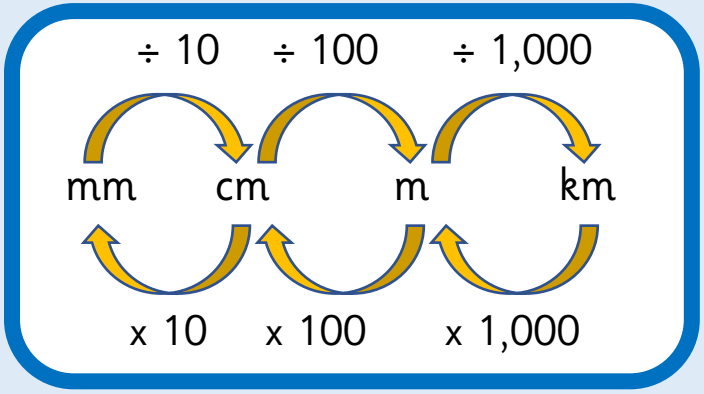
Complete the table.



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

Discuss

Convert Metric Measures

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?

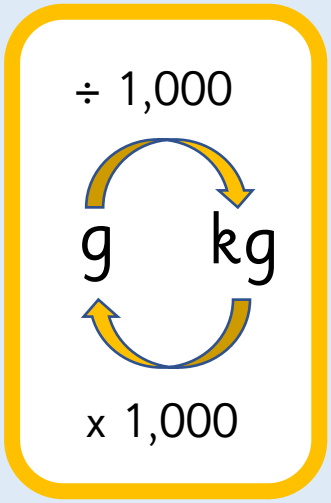
1 litre	=	1,000 ml
$4\frac{1}{2}$ litres	=	4,500 ml

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.

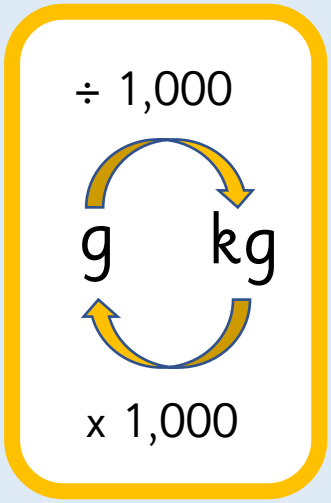


1 vase = 614 g

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.

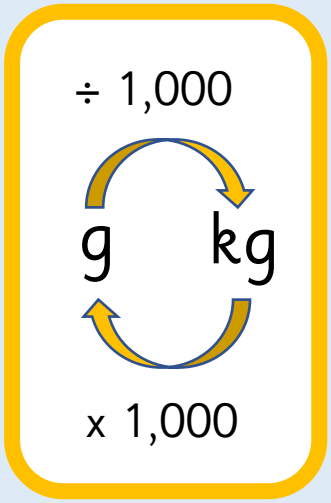


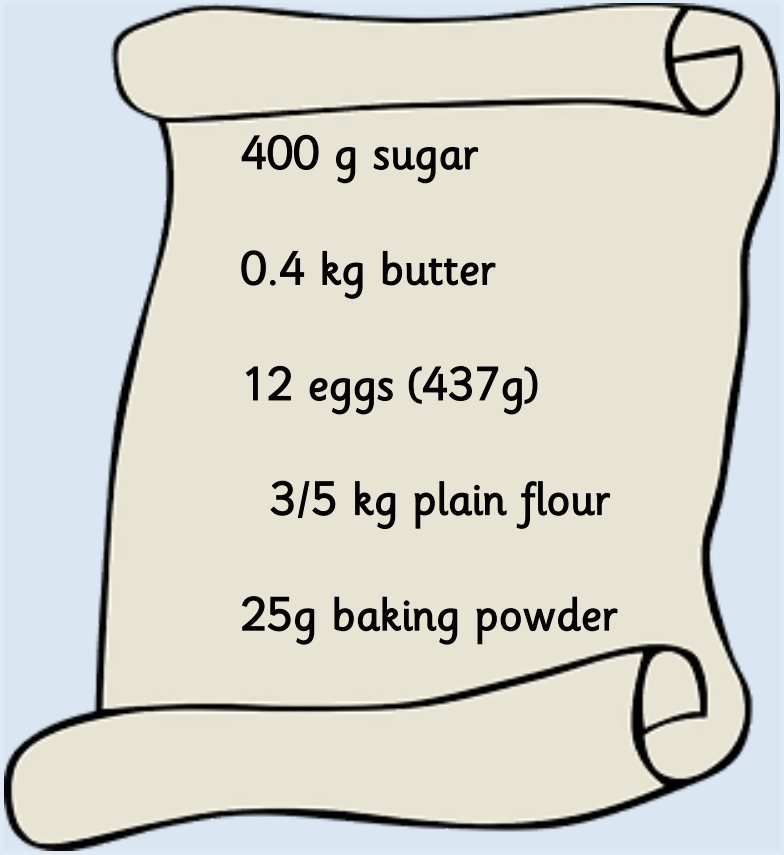
1 vase = 614 g

23 vase = 14.122 kg

Activity 3 Calculate with Metric Measures

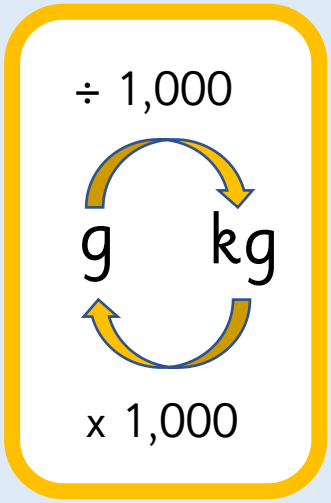
Look at the recipe below.
What is the total weight of the ingredients?
Write your answer in grams and kilograms.

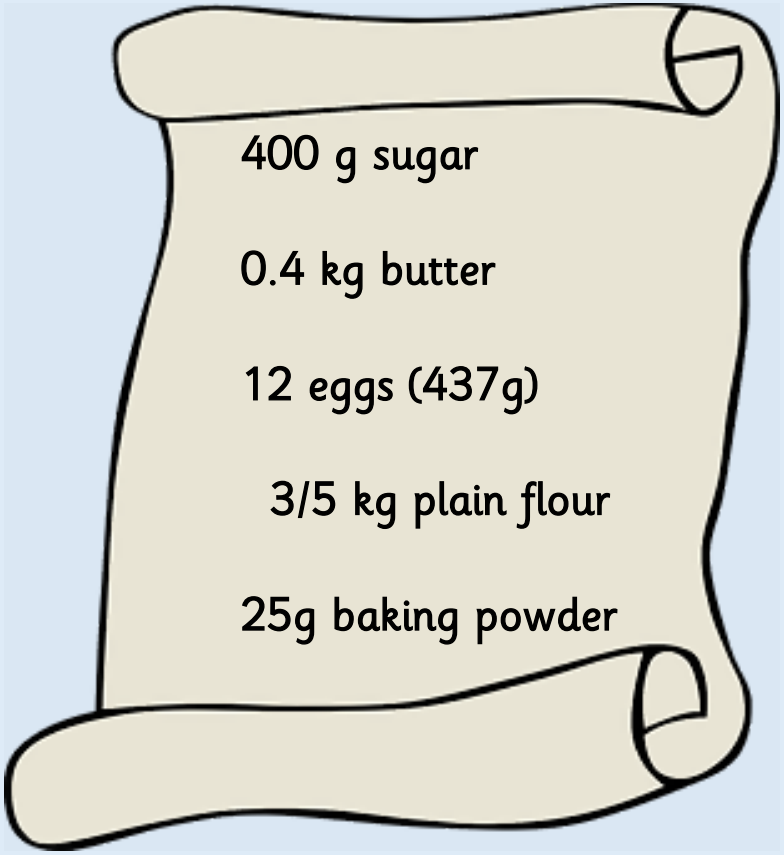




Activity 3 Calculate with Metric Measures

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

Discuss

Calculate with Metric Measures

What operation are you going to use and why?

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

How may ____ are there in a ____?

How can we convert between ____ and ____ ?

Miles and Kilometres

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Activity 1 Miles and Kilometres

Use this information to work out the following:

8 km	≈ approximately	5 miles

How many km are there in 10 miles?

How many miles are there in 64 km?

Sophie ran 13 ½ miles. Kimberly ran 20 km.
Who ran the furthest?

Activity 1 Miles and Kilometres

Use this information to work out the following:

8 km	≈ 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 ½ 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	≈ approximately	8 km

20 miles	≈	___ km	800 km	≈	___ miles
30 miles	≈	___ km	32 km	≈	___ miles
$10\frac{1}{2}$ miles	≈	___ km	20 km	≈	___ miles

Activity 2 Miles and Kilometres

Use this information to work out the following:

5 miles	≈ approximately	8 km

20 miles	≈	32 km	800 km	≈	500 miles
30 miles	≈	48 km	32 km	≈	20 miles
$10\frac{1}{2}$ miles	≈	16.8 km	20 km	≈	$12\frac{1}{2}$ miles

Activity 3 Miles and Kilometres

If 10 miles is approximately 16 km, therefore:

1 miles	≈ approximately	___ km

2 miles	≈	___ km
6 miles	≈	___ km
0.5 miles	≈	___ km

Activity 3 Miles and Kilometres

If 10 miles is approximately 16 km, therefore:

1 miles	≈ approximately	1.6 km

2 miles	≈	3.2 km
6 miles	≈	9.6 km
0.5 miles	≈	0.8 km

Discuss

Miles and Kilometres

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

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Activity 1 Imperial Measures

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

2.5 cm ≈ approximately 1 inch

25 cm	≈	___ inches	7 inches	≈	___ cm
250 cm	≈	___ inches	100 inches	≈	___ cm
125 cm	≈	___ inches	13 inches	≈	___ cm

Activity 1 Imperial Measures

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

2.5 cm ≈ approximately 1 inch

25 cm	≈	10 inches	7 inches	≈	17.5 cm
250 cm	≈	100 inches	100 inches	≈	250 cm
125 cm	≈	50 inches	13 inches	≈	32.5 cm

Activity 2 Imperial Measures

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

1 foot ≈ approximately 12 inches

7 ft	≈	___ inches	48 inches	≈	___ feet
100 ft	≈	___ inches	18 inches	≈	___ feet
6.5 ft	≈	___ inches	1,200 inches	≈	___ feet

Activity 2 Imperial Measures

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

1 foot	≈ approximately	12 inches

7 ft	≈	84 inches	48 inches	≈	4 feet
100 ft	≈	1,200 inches	18 inches	≈	1.5 feet
6.5 ft	≈	78 inches	1,200 inches	≈	100 feet

Activity 3 Imperial Measures

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

1 pound (lb)	≈ approximately	16 ounces

5 lbs	≈	___ ounces	144 ounces	≈	___ lbs
1000 lbs	≈	___ ounces	160 ounces	≈	___ lbs
18.5 lbs	≈	___ ounces	168 ounces	≈	___ lbs

Activity 3 Imperial Measures

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

1 pound (lb)	≈ approximately	16 ounces

5 lbs	≈	80 ounces	144 ounces	≈	9 lbs
1000 lbs	≈	16,000 ounces	160 ounces	≈	10 lbs
18.5 lbs	≈	296 ounces	168 ounces	≈	10.5 lbs

Activity 4 Imperial Measures

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

1 stone	≈ approximately	14 pounds (lbs)

4.5 stones	≈	___ lbs	42 lbs	≈	___ stones
$1\frac{1}{4}$ stones	≈	___ lbs	7 lbs	≈	___ stones
15 stones	≈	___ lbs	280 lbs	≈	___ stones

Activity 4 Imperial Measures

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

1 stone	≈ approximately	14 pounds (lbs)

4.5 stones	≈	63 lbs	42 lbs	≈	3 stones
$1\frac{1}{4}$ stones	≈	17.5 lbs	7 lbs	≈	0.5 stones
15 stones	≈	210 lbs	280 lbs	≈	20 stones

Activity 5 Imperial Measures

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

1 gallon ≈ approximately 8 pints

10 gallons	≈	___ pints	64 pints	≈	___ gallons
15.5 gallons	≈	___ pints	2 pints	≈	___ gallons
1,000 gallons	≈	___ pints	12 pints	≈	___ gallons

Activity 5 Imperial Measures

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

1 gallon	≈ approximately	8 pints

10 gallons	≈	80 pints	64 pints	≈	8 gallons
15.5 gallons	≈	124 pints	2 pints	≈	$\frac{1}{4}$ gallons
1,000 gallons	≈	8,000 pints	12 pints	≈	1.5 gallons

Discuss

Imperial Measures

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?