Released April 2018

Year 5

Small Steps Guidance and Examples

Block 4 – Converting Units

White Rose Maths

Year 5 – Yearly Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number – Place Value			Number – Addition and Subtraction		Statistics		Number – Multiplication and Division		Perimeter and Area		Consolidation
Spring	Number – Multiplication and Division			Number – Fractions						Number – Decimals & Percentages		Consolidation
Summer	Number – Decimals				Geometry- Properties of Shapes			Geometry- Position and Direction	Measurement- Converting Units		Measures Volume	Consolidation

Overview

Small Steps

- Kilograms and kilometres
- Milligrams and millilitres
- Metric units
- Imperial units
- Converting units of time
- Timetables

NC Objectives

Convert between different units of metric measure [for example, km and m; cm and m; cm and mm; g and kg; l and ml]

Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.

Solve problems involving converting between units of time.

Kilograms and Kilometres

Notes and Guidance

Children focus on the use of kilo in units of length and mass. They understand that kilo means thousand. They convert from metres to kilometres, grams to kilograms and vice versa.

Children draw on their fraction knowledge to convert from fractions to decimals. They deepen their understanding by comparing measurements in different units.

Mathematical Talk

Can you complete the stem sentences?

To convert kilometres to metres, _____ by _____.

To convert metres to kilometres, _____ by _____.

To convert grams to kilograms, _____ by _____.

To convert kilograms to grams, _____ by _____.

What does kilo mean?

Varied Fluency

1 Complete the conversions.

1,000 metres = 1 kilometre

2,000 m = _____ km

20,000 g = _____ kg

200 m = _____ km

2,200 g = _____ kg

1,000 grams = 1 kilogram

_____ m = 5 km

_____ g = 15 kg

500 g = _____ kg

_____ m = 1.5 km

2 Complete the missing information

$\frac{1}{10}$ kilogram = _____ grams

$\frac{3}{10}$ km = _____ metres

7 kg + $\frac{1}{4}$ kg = _____ g

12 km + _____ km = 12,500 m

3 Compare the measurements using <, > or =

5 kg ◯ 4,500 g

12 kg ◯ 12,000 g

3.7 km ◯ 370 m

37,000 m ◯ 3.7 km

Kilograms and Kilometres

Reasoning and Problem Solving

Laura buys 3,500 grams of potatoes and 1,500 grams of carrots.

She pays with a £5 note.
How much change does she get?

Laura receives

8 p change.

Tiegan is converting measurements.
She says:

'I have divided by 1,000 to convert the measurements.'

Which conversions could Tiegan have completed?

- 3 km → 3,000 m
- 3,000 m → 3 km
- 5,500 g → 5.5 kg
- 2.8 kg → 2,800 g

Tiegan could have converted 3,000 metres to 3 kilometres or 5,500 grams to 5.5 kilograms.

Milligrams and Millilitres

Notes and Guidance

Children focus on the use of milli in units of length and mass. They understand that milli means $\frac{1}{1{,}000}$. They convert from metres to millimetres, litres to millilitres and vice versa.

Children draw on their fraction knowledge to convert from fractions to decimals. They deepen their understanding by comparing measurements in different units.

Mathematical Talk

Can you complete the stem sentences?

To convert millimetres to metres, _____ by _____.

To convert metres to millimetres, _____ by _____.

To convert millilitres to litres , _____ by _____.

To convert litres to millilitres, _____ by _____.

What does milli mean?

Varied Fluency

1 Complete the conversions.

1,000 mm = 1 m

5,000 mm = _____ m

50,000 mm = _____ m

500 mm = _____ m

5,500 mm = _____ m

1,000 ml = 1 l

_____ ml = 3 l

_____ ml = 30 l

300 ml = _____ l

_____ ml = 0.3 l

2 Complete the missing information

$\frac{1}{1{,}000}$ m = _____ mm $\frac{1}{100}$ m = _____ mm $\frac{1}{10}$ m = _____ mm

3 l + $\frac{1}{4}$ l = _____ ml 2 l + _____ ml = 2,500 ml

3 Compare the measurements using < , > or =

2 l ◯ 1,500 ml 60 l ◯ 6,000 ml

2.8 m ◯ 280 mm 3,700 m ◯ 3.7 mm

Kilograms and Kilometres

Reasoning and Problem Solving

Cola is sold in bottles and cans.

Yasmin buys 5 cans and 3 bottles.
She sells the cola in 100 ml glasses.
She sells all the cola.
How many glasses does she sell?

Yasmin charges 50p per glass.
How much profit does she make?

Yasmin sells 54 glasses.

Yasmin makes £19.83 profit.

Ribbon is sold in 200 mm pieces.
Georgie buys 4 metres of ribbon.
How many pieces does she buy?

Ribbon costs 26 p per piece.
There are 2 special offers on the ribbon.

Five pieces for the price of four.	1 metre of ribbon for only £1

Which is the best offer?
Explain your answer.

Georgie buys 20 pieces of ribbon.

1 metre of ribbon for £1 is the best offer because buying five pieces (1 metre) for the price of four would cost £1.04

Metric Units

Notes and Guidance

Children convert between different units of length. They recap converting between millimetres and metres, and metres and kilometres as well as converting between millimetres and centimetres, and centimetres and metres.

Children see that they need to divide by different multiples of 10 to convert between the different measurements.

Mathematical Talk

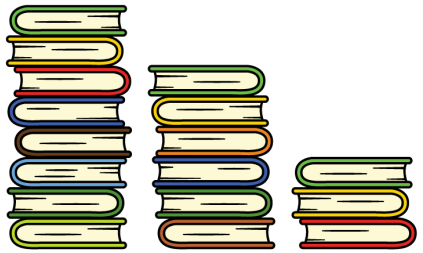
What do we multiply by to convert centimetres to millimetres?
What do we divide by to convert millimetres to centimetres?

What do we multiply by to convert metres to centimetres?
What do we divide by to convert centimetres to metres?

Which unit of measure would be best to measure: the height of a door frame, the length of a room, the width of a book?

Varied Fluency

1 Measure the height of the piles of books in centimetres.



Find the difference between the tallest and shortest pile of books in millimetres.

2 Line A is 5 centimetres long.
Line B is 54 millimetres longer than line A.
Draw line A and line B.

3 Here are the heights of 4 people.

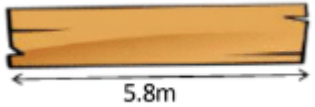
Jim	Tess	Lui	Paul
194 cm	175 cm	180 cm	205 cm

Write the heights in metres.
Can you write the heights in millimetres?

Metric Units

Reasoning and Problem Solving

A plank of wood is 5.8 metres long.



Two lengths are cut from the wood.

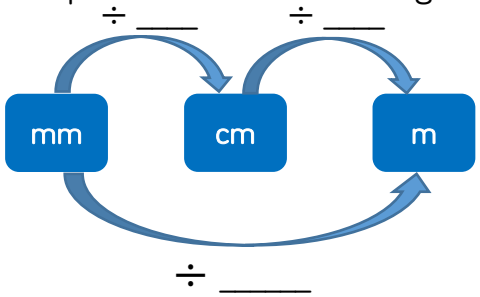
175 cm

$3\frac{4}{5}$ m

How much of the wood is left?

There is 25 cm left.

Complete the conversion diagram.



Can you make a diagram to show the inverse of multiplying?

÷ 10 ÷ 100

÷ 1,000

A 10 pence coin is 2 mm thick.

Daniel makes a pile of 10 pence coins worth £1.30

What is the height of the pile of coins in centimetres?

The pile of coins is 2.6 centimetres tall.

Kim says;

'One metre is 100 times bigger than one centimetre. One centimetre is 10 times bigger than one millimetre. So, one metre is 110 times bigger than one millimetre,'

Is Kim correct?

Explain your answer.

Kim is incorrect. She has added the number of times bigger together rather than multiplying.

One metre is 1,000 times bigger than one millimetre.

Imperial Units

Notes and Guidance

Children are introduced to imperial units of measure for the first time. They understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.

Children discuss when common imperial units are still used in everyday life.

Mathematical Talk

What do we still use inches to measure?
What do we still use pounds to measure?
What do we still use pints to measure?
Why do you think we still use these imperial measures?

What does approximate mean?

Varied Fluency

1

One inch is approximately 2.54 centimetres
1 inch ≈ 2.54 cm

Use this information to complete the table.

Imperial	Metric
10 inches	
	50.8 cm
	5 m 8 cm
400 inches	

2

1 kilogram is approximately 2.2 pounds
1 kg ≈ 2.2 lbs

Use this information to complete the conversions.

2 kg ≈ ____ lbs 5 kg ≈ ____ lbs
____ kg ≈ 22 lbs 55 kg ≈ ____ lbs

3

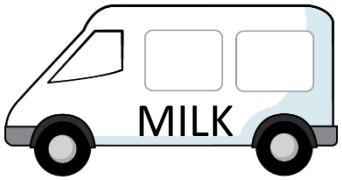
There are 568 millilitres in a pint.
How many millilitres are there in:

- 10 pints
- 5 pints
- 0.5 pints
- 2.5 pints

Imperial Units

Reasoning and Problem Solving

A milkman delivers milk, 4 times a week. On each delivery day, he delivers three pints of milk to the doctors' surgery
How many millilitres of milk does the surgery have delivered each week?



12 pints is approximately 6,816 millilitres.

Kate and Saira weigh 185 lbs.
Saira and Lucy weigh 186 lbs.
Kate and Lucy weigh 201 lbs.

How much do Kate, Saira and Lucy weigh altogether?

Convert your answer into kilograms.

185 + 186 + 201 = 572 lbs

572 ÷ 2 = 286

286 lbs ≈ 133 kg

Jeni has two children, Owen and Caitlin.

- Owen weighed 8.8 lbs when he was born.
- Caitlin weighed 3.5 kg when she was born.

Who was heavier, Owen or Caitlin?
Explain your answer.

Children convert both measures to the same unit.

Owen weighed 4 kg and Caitlin weighed 3.5 kg so Owen was heavier.

Converting Units of Time

Notes and Guidance

Children convert between different units of time e.g. years to months, weeks to days, days to hours, hours to minutes, minutes to seconds and vice versa.

They convert units of time where there is a remainder left e.g. 25 days = 3 weeks and 4 days.

Mathematical Talk

How many months / weeks / days are there in a year?
How many hours / minutes / seconds are there in a day?

Can I write 21 days in weeks? Can I write 25 days in weeks? Why/why not?

What times tables support converting units of time?

Varied Fluency

1 Complete the conversions.

1 year = ____ months ____ years = 24 months

____ years = 60 months 2.5 years = ____ months

3 years 2 months = ____ months

____ years ____ months = 75 months

2 Complete the table.

Days	Weeks/ Weeks and Days
42 days	
	5 weeks and 5 days
	10 weeks and 5 days
100 days	

3 **1 hour = 60 minutes 1 minute = 60 seconds**

Use this information to complete the conversions.

75 minutes = 1 ____ and 15

240 ____ = 4 minutes

3 ____ and 24 ____ = 204

Is there more than one way to complete the last one?

Converting Units of Time

Reasoning and Problem Solving

Lucy's birthday is in March.
Jason's birthday is in April.
Lucy is 96 hours older than Jason.
What dates could Lucy's and Jason's birthdays be?

Lucy: 28th March, 29th March, 30th March, 31st March

Jason: 1st April, 2nd April, 3rd April, 4th April

Children choose dates 4 days apart.

Three children are running a race.

- Tim finishes the race in 3 minutes 5 seconds.
- Lila finishes the race in 192 seconds.
- Pip finishes the race in 2 minutes and 82 seconds.

Who finishes the race first?

Tim: 3 min 5 s

Lila: 3 min 12 s

Pip: 3 min 22 s

Tim finishes the race first.

Timetables

Notes and Guidance

Children use timetables to retrieve information. They convert between different units of time in order to solve problems using the timetables.

Children create their own timetables based on start and end times.

Mathematical Talk

When do we use timetables in every day life?

How do we know where the important information is on the timetable?

Varied Fluency

1 Use the timetable to answer the questions.

Bus Timetable					
Halifax Bus Station	06:05	06:35	07:10	07:43	08:15
Shelf Roundabout	06:15	06:45		07:59	08:31
Shelf Village Hall	06:16	06:46	07:35	08:00	08:32
Woodside	06:21	06:50	07:28		
Odsal	06:26	06:55	07:33	08:15	08:45
Bradford Interchange	06:40	07:10	07:48	08:30	09:00

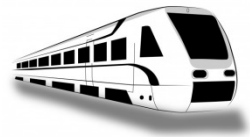
- On the 06:35 bus, how long does it take to get from Shelf Roundabout to Bradford Interchange?
- Can you travel to Woodside on the 07:43 bus?
- If you needed to travel from Halifax Bus Station to Odsal and had to arrive by 08:20, which would be the best bus to catch? Explain your answer.

2 There are five TV programmes on between 17:00 and 23:00. The News starts at 6pm and lasts for 45 minutes. Mindless is on for 1 hour and ends at 18:00. Junk Collectors is on for 75 minutes and starts straight after the news. Catch up is on for 300 seconds and starts at 20:00. The Thirsty Games is on for 175 minutes and ends at 23:00. Make a timetable for the evening TV.

Timetables

Reasoning and Problem Solving

Three trains travel from Halifax to Leeds on the same morning.



The Express leaves Halifax 10 minutes after the All Stations train, but arrives at Leeds 10 minutes before it. The All Stations train takes 50 minutes to reach Leeds and arrives at 10:30. The Goods train leaves 20 minutes before the All Stations train and arrives at Leeds 20 minutes after the Express.

What time does each train leave Halifax and what time does each train arrive at Leeds Station?

All Stations train leaves Halifax at 9:40 and arrives in Leeds at 10:30

Express train leaves Halifax at 9:50 and arrives in Leeds at 10:20

Goods train leaves Halifax at 9:20 and arrives in Leeds at 10:40

Make a timetable of your school day.

Calculate how many hours each week you spend on each subject.
Can you convert this into minutes?
Can you convert this into seconds?

If this is an average week, how many hours a year do you spend on each subject? Can you convert the time into days?

Answers will vary depending on the school day