

Numeracy - units of measuring

Suitable units and their graduations

What do I need to be able to do?

- Know between the types of measure
- Know the different graduations and relative size
- Know of real-life examples

Keywords

- Volume:** The space inside a 3D object
Capacity: The amount that something can contain
Length: Distance between 2 points
Weight: Mass or weight of an object, heavy or light

Units of measure

Measurement conversions

Capacity

1 litre = 1000 millilitres
 1 centilitre = 10 millilitres

l
cl
ml

Measurement conversions

Length

1 kilometre = 1000 metres
 1 metre = 100 centimetres
 1 centimetre = 10 millimetres

km
m
cm
mm

Measurement conversions

Weight

1 tonne = 1000 kilograms
 1 kilogram = 1000 grams
 1 gram = 1000 milligrams

t
kg
g
mg

Measurement conversions

Currency

1 pound = 100 pence

£
p

Measurement conversions

Time

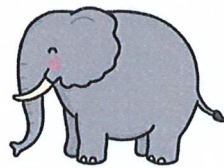
1 day = 24 hours
 1 hour = 60 minutes
 1 minute = 60 seconds

h
min
s

Suitable units of measure

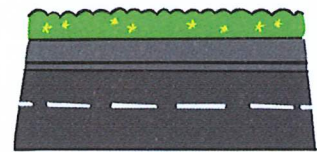
Choosing a suitable unit for a real-life object

Height of an elephant



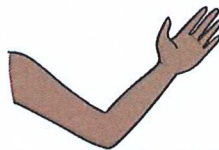
m cm mm

Length of a road



m km cm

Length of an arm



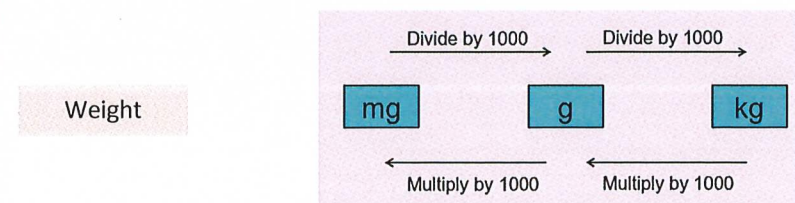
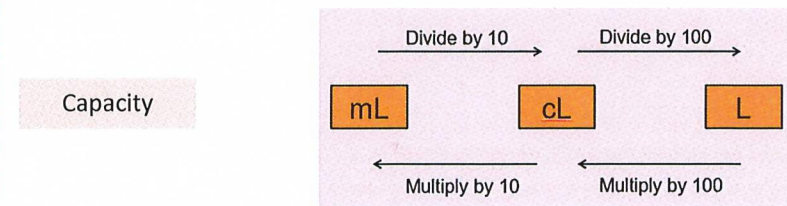
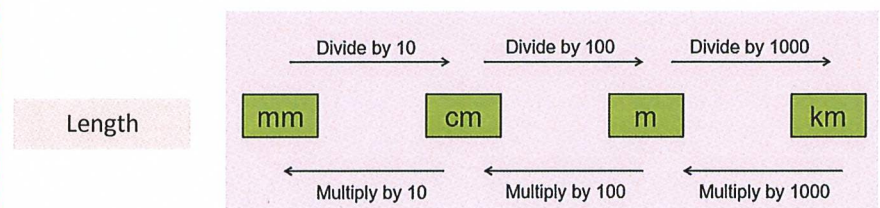
mm cm m

Weight of a car



g kg tonne

Converting between different graduations of measure



Numeracy – estimates of measure Make sensible estimates

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Units of measure

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km
m
cm
mm

Measurement conversions

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1 litre = 1000 millilitres
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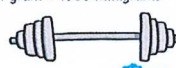


l
cl
ml

Measurement conversions

Weight



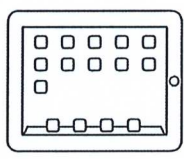

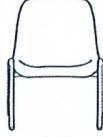
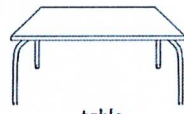



1 tonne = 1000 kilograms
 1 kilogram = 1000 grams
 1 gram = 1000 milligrams



t
kg
g
mg

Estimates of units of measure

Compare an item to something that you know

-  feather
-  glue stick
-  tablet
-  laptop
-  chair
-  table
-  car
-  ute
-  plane

Measure real-life items to use as a comparison

Compare an item to something that you know

Height of a house
6m

Height of a door
107cm

Height of school table
75cm



Numeracy - interpretation of graphs

Read from charts and graphs

What do I need to be able to do?

- Read the scale of the numbers on the axes
- Look to see if there is a pattern to the line on the graph

Keywords

Graph: A diagram joining points plotted against values on axes

Diagram: A pictorial representation of information

Chart: Graphical representation of information and data

Data: Information usually as collated numbers that are shown on a diagram or chart

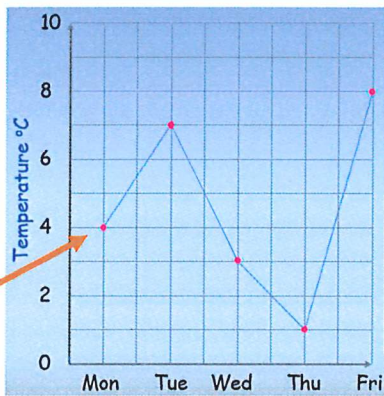
Table: An array of boxes where information is organised in a straightforward format

Axis: Lines to the side of the diagram to give a measure to the data represented. **Axes** – plural

Trend: A general overview of the progress across the graph

Parts of a graph

Vertical axis



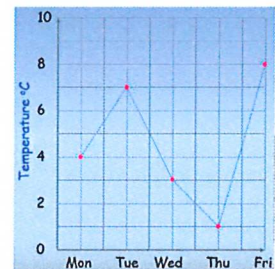
Point plotted

Monday, 4°

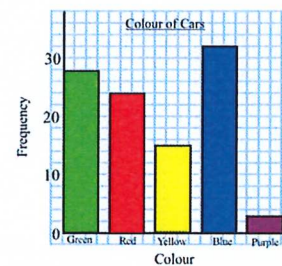
Horizontal axis

Types of data representation

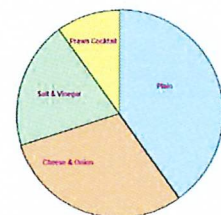
Line graph



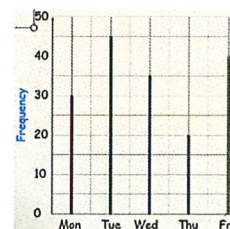
Bar Chart



Pie Chart



Line chart



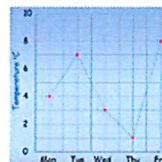
Table

	France	Holland	Elsewhere	Total
June	6	18	5	29
July	10	19	2	31
August	15	15	10	40
Total	31	52	17	100

Strategies in calculations

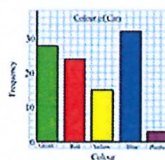
Describe the trend of what the line is doing as the days progress

Line graph



Data from the chart can be read to compare

Bar Chart



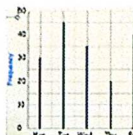
Values can be taken from the chart and used in calculations

Pie Chart



An overview can be described from a Pie chart

Line chart



A line chart can be used in the same way as a Bar chart

Table

	France	Holland	Elsewhere	Total
June	6	18	5	29
July	10	19	2	31
August	15	15	10	40
Total	31	52	17	100

The data in a Table is in a format where totals are shown and information can be easily extracted

Numeracy - application and reason

Skills can be applied across the curriculum

What do I need to be able to do?

- Be well practised in all skills in Maths
- Learn basic skills like number bonds, fact families and multiplication tables
- Utilise these facts and skills in more complex tasks
- Practice the use of a calculator

Keywords

Fact Families: Calculations with their inverse to check answers

Number bond: A relationship between 2 numbers that give a known value

Multiplication tables: The answers to each value below and including 10, multiplied by each value below and including 10. Usually set into a grid

Facts

Digits: There are TEN digits. The number 10, has two digits, 1 and 0.
 0 zero 1 one 2 two 3 three 4 four 5 five 6 six 7 seven 8 eight 9 nine

Place Value

TH	H	T	U
100	10	1	0

Categories are whole numbers. They are before the decimal point. **Decimal numbers are after the decimal point.**

24.78 Twenty four, point seven eight
 Two tens, four ones, seven tenths, and eight hundredths
Seventy eight, then zero point seven eight, not zero point seventy eight

Place Value

10000	1000	100	10	1	0.1	0.01
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A value that is less than a whole one
 $\frac{1}{2}$ half of a whole
 A fraction can be written as a decimal number
 0.5 is also a half or 5 tenths, using place value

Positive and Negative Values (Integers)

Temperature below zero, that's -4
 Moving backward, backwards, get smaller
 Moving forward, forwards, get bigger

Number bonds
 These all add to 10

1 + 9 = 10	2 + 8 = 10	3 + 7 = 10	4 + 6 = 10	5 + 5 = 10
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Inverse Operations
 Addition (+) and Subtraction (-)
 Multiplication (x) and Division (÷)

Fact Families For every three of addition, number bonding, subtraction can extend knowledge to include more facts

1 + 9 = 10	9 + 1 = 10	10 - 9 = 1	10 - 1 = 9
2 + 8 = 10	8 + 2 = 10	10 - 8 = 2	10 - 2 = 8
3 + 7 = 10	7 + 3 = 10	10 - 7 = 3	10 - 3 = 7
4 + 6 = 10	6 + 4 = 10	10 - 6 = 4	10 - 4 = 6
5 + 5 = 10	5 + 5 = 10	10 - 5 = 5	10 - 5 = 5

Double and half!
 Double a number is to multiply by 2 or add
 Double 3, 3 x 2, 3 + 3 = 6

Chunk it!
 Double 10, 10 x 2 = 20
 Double 20, 20 x 2 = 40

Cut in half!
 8 ÷ 2 = 4

Share it!
 8 ÷ 2 = 4

Share Numbers

1 x 1 = 1	2 x 2 = 4	3 x 3 = 9	4 x 4 = 16	5 x 5 = 25	6 x 6 = 36	7 x 7 = 49	8 x 8 = 64	9 x 9 = 81	10 x 10 = 100
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Learn, Oh my!
 Add your partner for answers to learn

Mathematical equipment

Calculator

Complex Functions

$\tan 37$
 ... or sometimes to make a penny to an answer, quicker
 Using many decimal places
 $5.2^3 + \sqrt{5555.04}$
 Complex calculations

The best way to learn maths is to do maths

'Keep practising'

Basic skills

Maths operations and their alternative words

addition plus, add, sum, total, increase, more, together, combined	multiplication times, multiply, product, times table, groups, lots of
subtraction minus, subtract, difference, less, take away, decrease, fewer, less than	division divided by, share, split, equal, same, fair, equal, equally, same amount

equals
 same as, is the same as, is equal to

Alternative vocabulary

equation	equal to	symbol
total	increase	equals
compare	plus	check
same as	total	solve
equals	count	operation
unpacked	correct	amount
symbol	sign	plus
sum	add	difference
subtract	take away	product
times	share	how many
shared between	number sentence	
order	right	wrong
missing number	less than	greater than
halve	double	rule

Problem Solving

Checking answers
 Use ESTIMATING to make sure that your answer is appropriate

Phrases for maths operations

Adding Questions

Develop strategies for success

Exact Value
 Use decimal places ...

or fractions
 $\frac{1}{3} = 0.3333333333 \dots$
 A fraction will give a more accurate value than some decimals.

Approximate Answer
 1) Add 3.5m and 4m
 Answer **7.5m** NOT 750m
 Use the same unit as the question when given

2) Share £2 between 7 people
 $200 \text{ pence} \div 7 = 28.57142857 \text{ pence}$
 A small part of a penny would not be appropriate. Round to the nearest whole unit
 Answer **28p**
 In this example, 28p can be shared, but not 27p

Estimate
 Give an estimate to this question $24.8 + 76.5$
 28.7 is nearly 30 76.5 is nearly 80 $30 + 80 = 110$

Rounding
 Know how to an appropriate cut off point, both with decimals and whole numbers.
 This will give an accurate calculation

Decimals
 Count the number of decimal places. Look at the next digit. If this is 5 or more, round up. Less than 5 round down.

Rounding 1.36 to 1 decimal place becomes 1.4

Rounding 0.153 to 2 decimal places becomes 0.15

Rounding 7.0328 to 3 decimal places becomes 7.033

Whole numbers
 Rounding to the nearest 10, 100, 1000 will help with mental calculations