Numeracy – use of a calculator

Knowing when it's appropriate to use a calculator

What do I need to be able to do?

- Be familiar with the number buttons
- Be familiar with the position of basic function keys = + - × ÷ decimal point
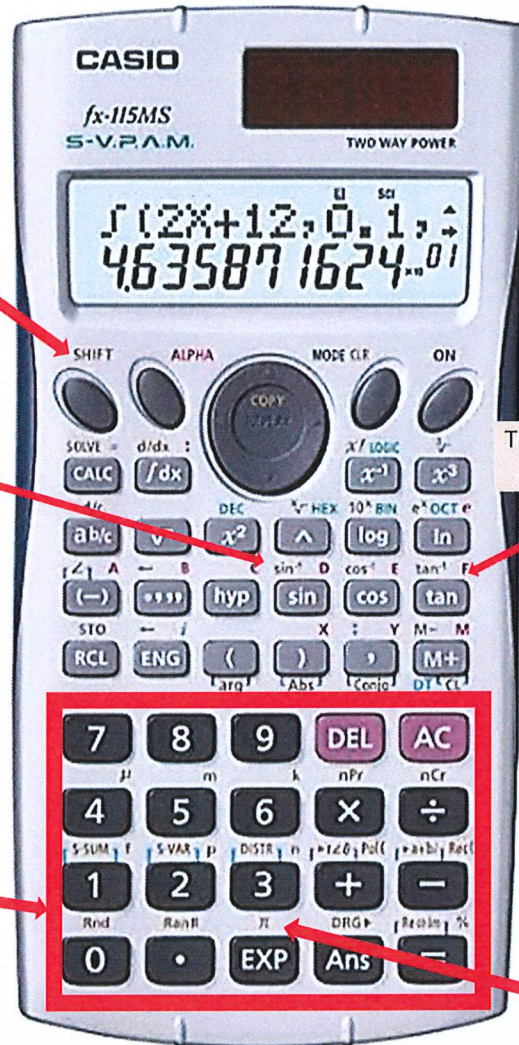- Understand order of operations

Keywords

Calculator: A scientific calculator to work out complex functions

Shift key: Gives access to extra function keys

π button: Uses an accurate value of pi for circle calculations

Calculator

SHIFT key

SHIFT key functions are above the standard buttons

These functions will be needed and taught in the maths syllabus

Basic function keys

π button

When using a calculator is appropriate

Complex functions

$$\tan 37$$

or to work out

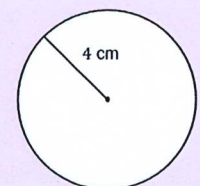$$\frac{\sqrt{20.4}}{6.2 \times 0.48}$$

I the figures on your calculator display.
wer as a decimal.

4.5166 35916

2.976

Using many decimal places

1.51 76868

... or sometimes to make a getting to an answer, quicker

$$5.2^3 + \sqrt{5655.04}$$

Complex calculations

4 cm

$$A = \pi r^2$$
$$= \pi \times 4^2$$
$$= 50.27 \text{ cm}^2$$

$$C = \pi d$$
$$= \pi \times 8$$
$$= 25.13 \text{ cm}$$

Calculations with π

Numeracy – number problems

Use appropriate operations to solve them

What do I need to be able to do?

- To know maths operations $+ - \times \div \sqrt{}$
- Be aware of alternate vocabulary and phrases for these operations
- Use estimating skills to check the answer

Keywords

Alternative vocabulary for mathematical operations

Maths operations and their alternatives words

addition
- add
- more
- plus
- make
- sum
- total
- altogether

multiplication
- lots of
- times
- multiply
- groups of
- product
- multiplied by
- multiple of
- repeated addition
- array

subtraction
- subtract
- minus
- leave
- less
- take away
- difference between

division
- divide
- divided by
- divided into
- share
- share equally
- equal groups of

equals
- makes
- total
- same as
- equivalent
- balances

Alternative vocabulary

Problem Solving

equation	equal to	symbol
total	answer	equals
compare	plus	check
same as	total	solve
equals	count	operation
unequal	correct	incorrect
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

Phrases for maths operations

Subtraction Questions

How many are left/ left over?

How many are gone?

How many fewer is _____ than _____?

How much less is _____?

How many less?

How many less to make _____?

How many fewer is _____ than _____?

Addition Questions

How many more are there?

How many extra?

What is _____ add _____?

How many are there altogether?

How many are there in total?

Strategies in calculations

Solving Maths Problems

How can I solve a maths problem?

I can use a number line.

I can use my fingers.

I can use mental maths.

I can make a number sentence.

I can draw a picture.

I can use a tally chart.

I can count in my head.

I can count on.

I can count back.

I can count in groups.

I can count using number patterns.

Problem Solving Strategies

Draw a picture or diagram

Find a pattern.

Guess, check and revise

Use concrete objects

Make a table

Use a number sentence

Work backwards

Use logical reasoning

Read the problem twice

Count and label

Use your fingers

Checking answers

Use ESTIMATING to make sure that your answer is appropriate

Numeracy – reasoning your answer

What do I need to be able to do?

- READ the question CAREFULLY
- Make sure that the answer you have given, is the information required
- Use vocabulary from the question
- Use mathematical terms appropriate to that question

Keywords

Compare: Use information from at least 2 parts of the question
'this is………. Whereas…….'

Calculate: Work out

Describe: Write a sentence to explain the parts in the question

Explain: Write a sentence or mathematical statement to show how you got to the answer

Justify: Show working with an explanation

Explain your problem solving

Use mathematical keywords

equation	equal to	symbol
total	answer	equals
compare	plus	check
same as	total	solve
equals	count	operation
unequal	correct	incorrect
symbol	sign	plus
sum	add	difference
subtract	take away	product
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Look at what you have used in your calculations

What information do I already know?

Formulae and facts

What information could I find out?

Maths information in the question

Which maths techniques look like they might be useful?

Methods and strategies

Problem Maths question

Would a diagram help?

Methods and strategies

What am I trying to find or do?

Information in the question

Numeracy – checking answers

What do I need to be able to do?

- Estimate your answer
- Know units of measurements and associated graduations
- Place value to check estimating

Keywords

Estimate: A relationship between 2 numbers that give a known value
Inverse: Use opposite of the calculation to go back to the starting point
Fact Families: Calculations with their inverse to check answers

Prior Knowledge

Estimate

Give an estimate to this question $24.8 + 76.5$

28.7 is nearly 30   76.5 is nearly 80 $30 + 80 = 110$

Appropriate Answer

1) Add 3.5m and 4m

Answer **7.5m**   NOT   750cm

Use the same unit as the question when given

2) Share £2 between 7 people

200 pence ÷ 7 = 28.57142857 pence

A small part of a penny would not be appropriate. Round to the nearest whole unit

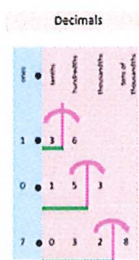Answer **28p**

In this example, 28p can be found, but not 29p

> Everything you've learned from before
> *'Keep practising'*

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

Inverse calculations using Fact Families

3). $48 + 25 = 73$ 73 – ☐ = ☐
                        73 – ☐ = ☐

5). $64 – 26 = 38$ 38 + ☐ = ☐
                        26 + ☐ = ☐

$8 \times 4 = 32$ 32 ÷ ☐ = ☐
                      32 ÷ ☐ = ☐

$18 \div 2 = 9$ 9 × ☐ = ☐
                    2 × ☐ = ☐

> I think of a number.
> I double it.
> Then I add 37 to it.
> The answer is 71.
> What is my number?

Appropriate units of measurement

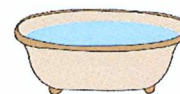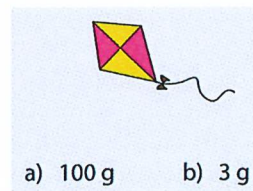Know the relative scales of units of measurement to check answers
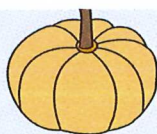
a) 1 m   b) 10 cm

○ 1 L   ○ 7 L   ○ 700 mL

○ 200 mL   ○ 2 L   ○ 20 mL

a) 10 mm   b) 10 cm

a) 5 cm   b) 5 m

a) 100 g   b) 3 g

a) 30 cm   b) 30 m

a) 3kg   b) 100 g

a) 250 g   b) 1.5 kg