



Beacon Media

Supporting worldwide education

Mathematics Years 1-4

Mathematics and people

- The ability to use Maths for problem solving is a remarkable gift from God our creator.
- Maths is a reminder that we are wonderfully made and capable of abstract reasoning and creative invention.



3

tolu

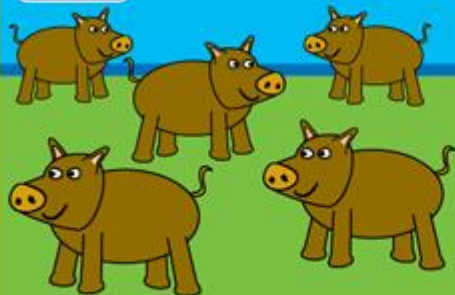


e tolu na dalo
(three taro)

5

lima

e lima na vuaka
(five pigs)



10

tini

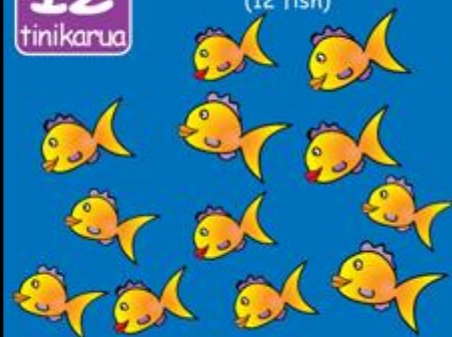
e tini na pusi
(ten cats)



12

tinikarua

e tinikarua na ika
(12 fish)



The use of bottle caps

- Counting
- Add/Subtract
- Making groups (multiplication)
- Greater than/Less than
- Number Ordering



Pre-school and Grade 1

Visual Perception

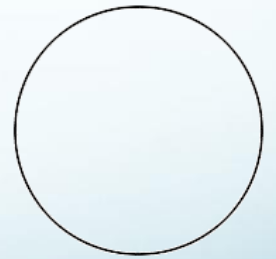
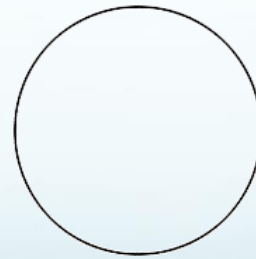
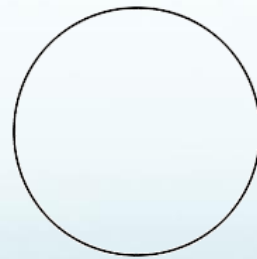
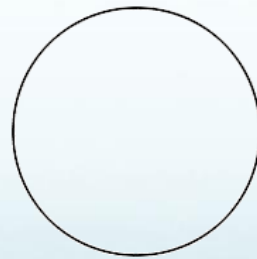
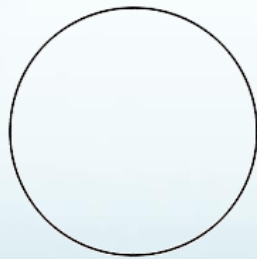
- Completing patterns



Left to right and one-to-one correspondence, e.g.

Put a stem on every flower

put a smile on every face – start from the star



and one-to-one
correspondence



Mathematical language

- Big / little
- Large / small
- Tall / short
- Up / down
- Over / under
- Wide / narrow
- More / less
- Left / right
- More / less

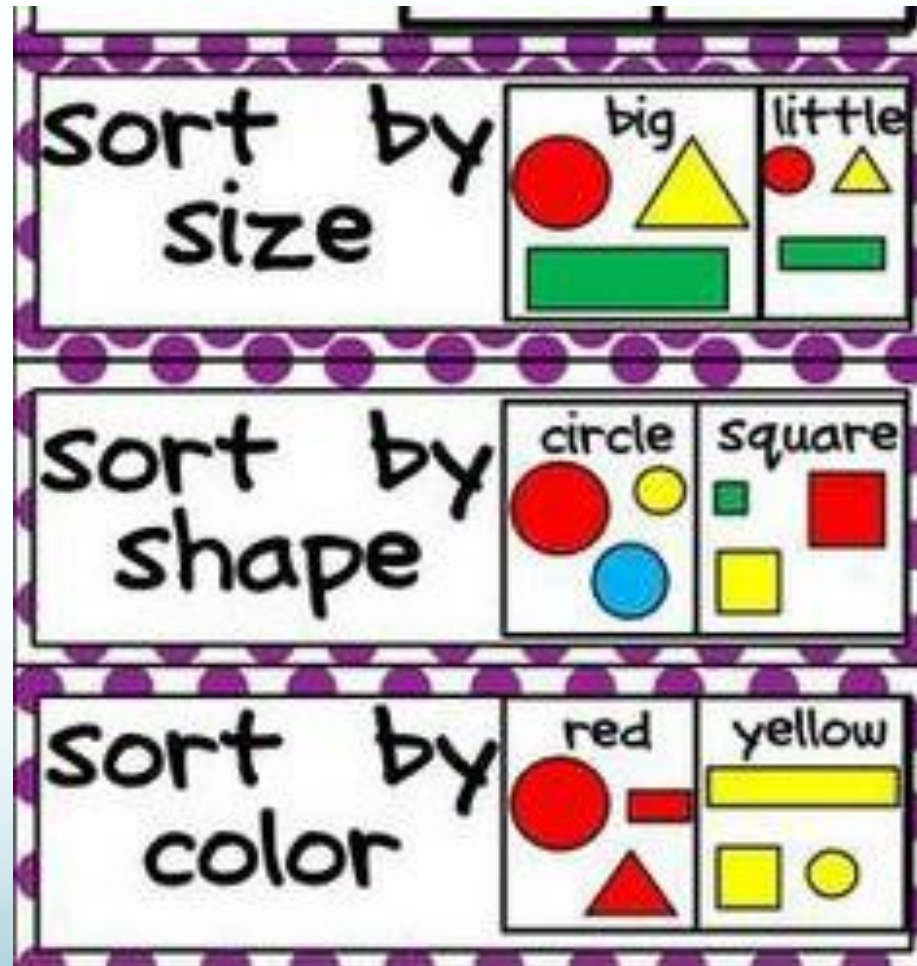
- Beside / between
- Front / back
- Thick / thin
- Wide / narrow
- Before / after
- Above / below
- In / out
- High / low
- Heavy / light
- Full / empty

Activity to reinforce mathematical language

Instructions for a drawing:

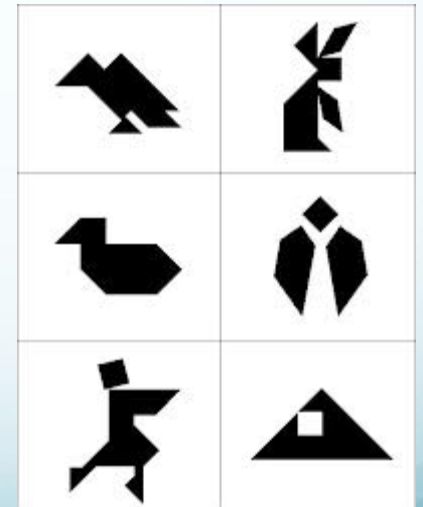
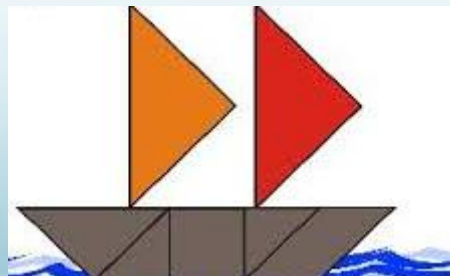
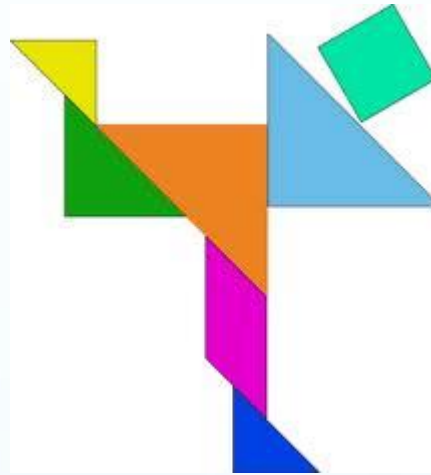
- Draw a tree on the left hand side.
- Draw a small bird at the top of the tree.
- Draw a river at the bottom of the page.
- Draw a man with a long fishing line.
- Draw a big fish on the end of the line.

Sorting activities



Shapes

Tangrams



Counting and numbers to 10

Preschool and Grade 1

- Counting rhymes and finger plays
- Bottle tops – put 7 bottle tops in a line
- Egg cartons for one-to-one correspondence and counting





Examples of written activities 1-10

- Draw 3 trees, 5 dogs, seven cats etc

Ordinal number

- e.g. Colour the 6th hat; 4th flower; 9th fish etc.
- Or physically place objects or people in order.

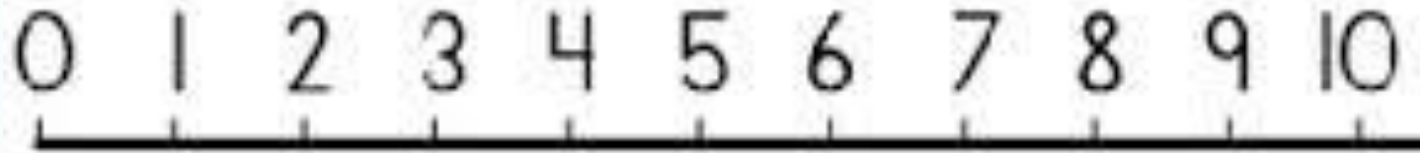




Beginning addition and subtraction

- One more than ...
- One less than ...
- The number after ...
- The number before ...

Number lines



Number lines

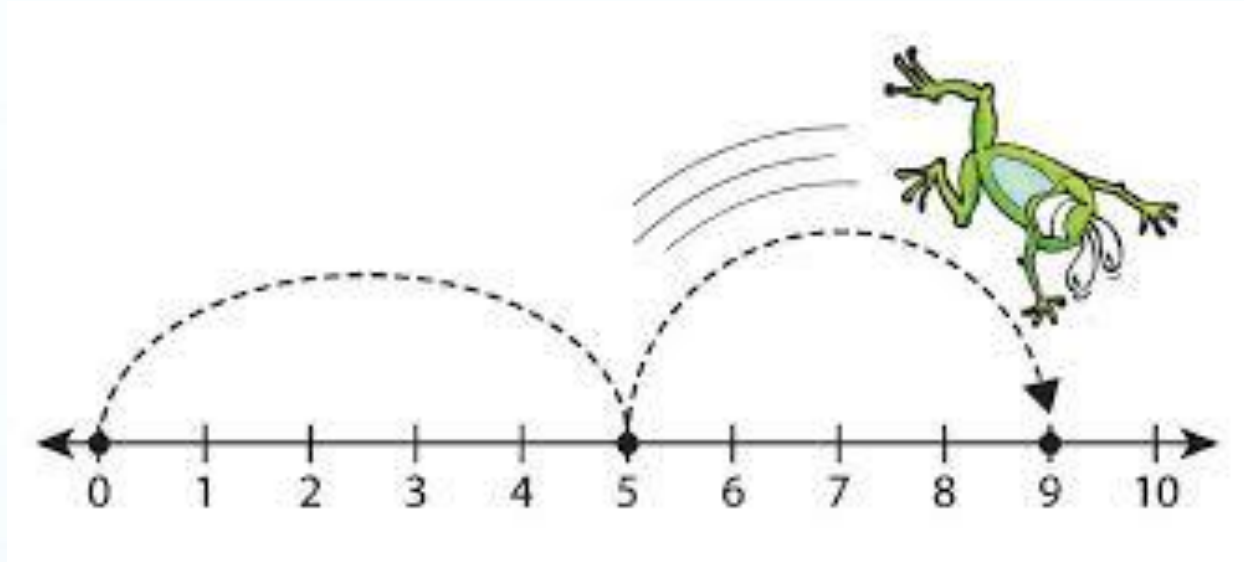
For addition and subtraction

Use a large number line on the floor or ground.
Children do actual hops or jumps.

Teach 'counting on'.

i.e. For addition, your first hop starts on the next number going forwards.

For subtraction, your first hop starts on the next number going backwards.



$$5 + 4 = 9$$

Activity

- Work with a partner.
- Draw a number line.
- Practice some mathematical equations.

All Grades

Mathematical operations

- **Addition**
- **Subtraction**
- **Multiplication**
- **Division**

Mathematical operations

Addition

At first, much oral work

e.g. 2 bottle tops and 3 more. How many altogether

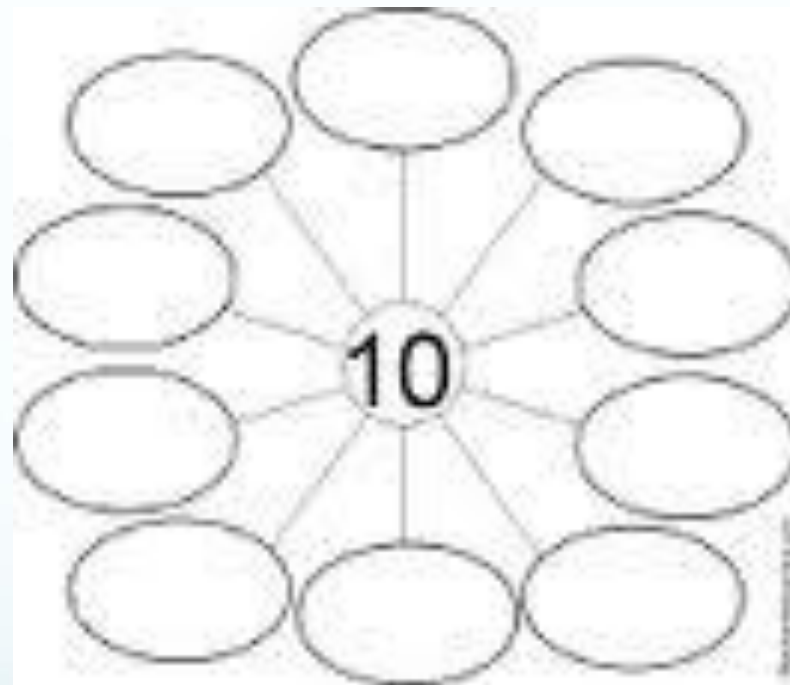
Then introduce “plus” and “equals”

Addition activities

Making 10 Mystery!

$6 + ? = 10$	
$? + 1 = 10$	
$10 = ? + 4$	
$2 + ? = 10$	
$4 + ? = 10$	
$10 = 2 + ?$	

Addition



Addition

+	2	3	4	5
2				
3				
4				
5				

Subtraction

Oral work:

5 counters, take two away, How many left?

Later introduce “minus”.

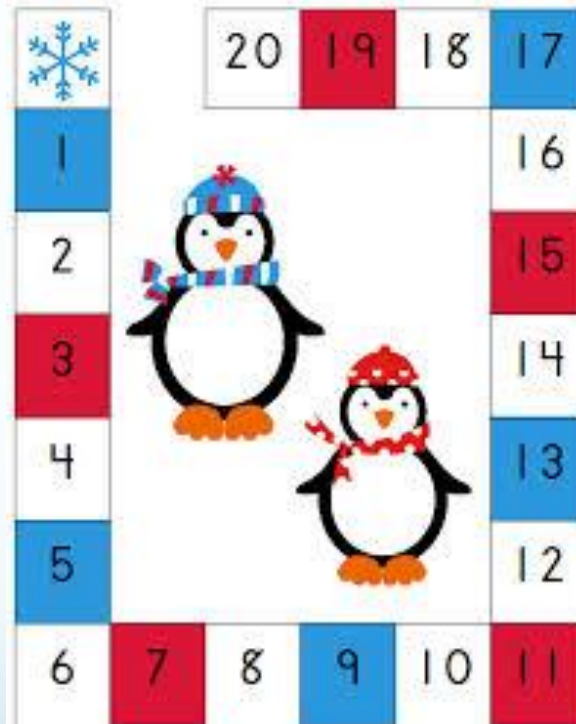
Count backwards on the number line.

Dice Games

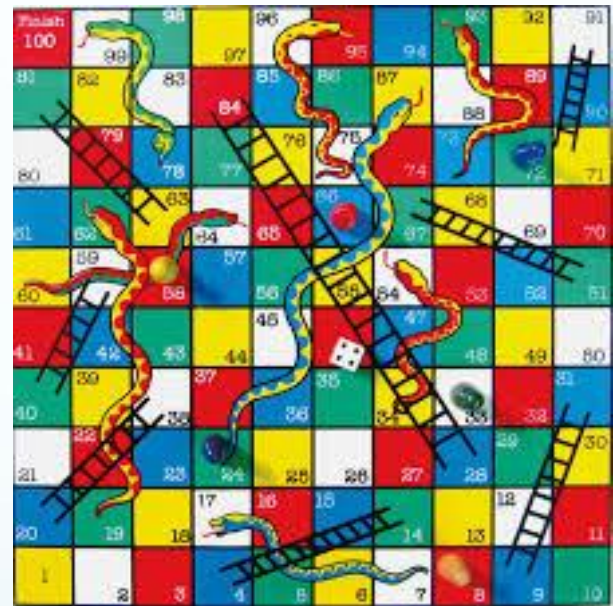
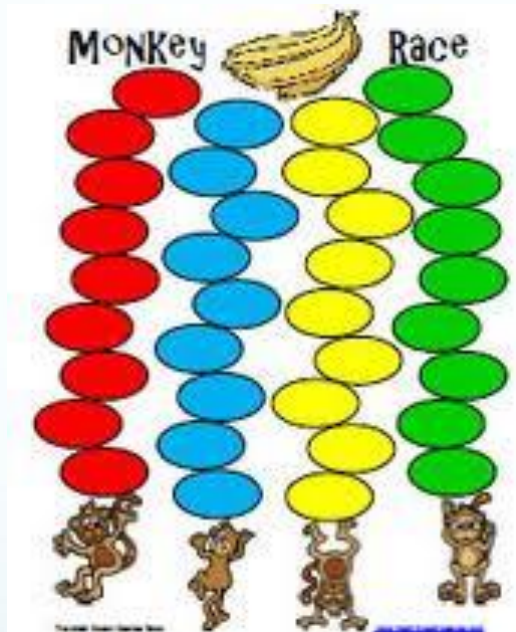
- Addition, subtraction – use 2 die and add or subtract total
- Multiplication – use die to make sets, e.g. 2 sets of 3



Board Games using dice



Board games using dice



Activity

- Play a dice game.

Place Value

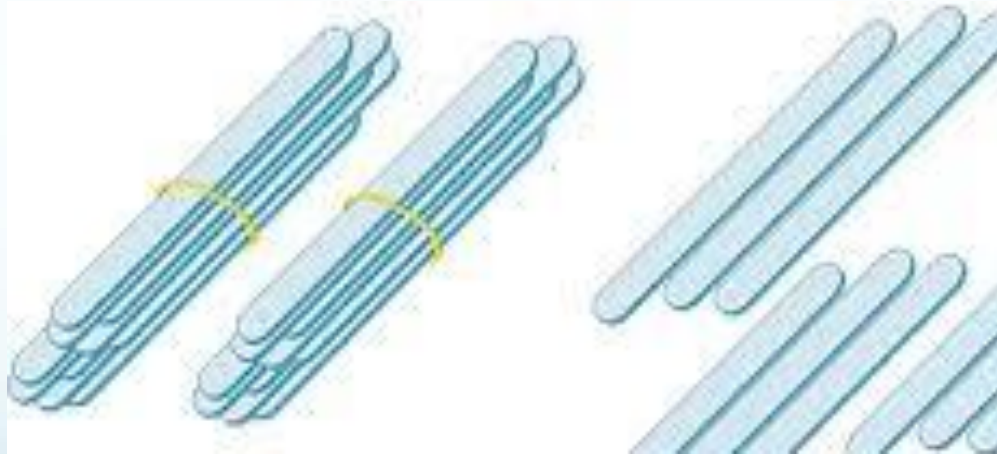
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Odd and even numbers

Even Numbers

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Bundles of sticks for place value



Multi-attribute blocks



Activity

- Use the hundreds, tens, units print-outs to do the following:

$$231 + 45 =$$

$$554 - 32 =$$

Place value chart



Activity

- Work with a partner.
- Draw three columns for Hundreds, Tens, Units
- Practice adding the following using this chart:

$$126 + 243$$

Extended notation

- Helps children understand place value

EXAMPLES:

- $97 = 9 \text{ tens} + 7 \text{ ones (or units)}$
- $364 = 3 \text{ hundreds} + 6 \text{ tens} + 4 \text{ ones}$

Extended notation

EXAMPLE:

$$\begin{aligned}26 + 32 &= 20 + 6 + 30 + 2 \\ &= 20 + 30 + 6 + 2 \\ &= (20 + 30) + (6 + 2) \\ &= 50 + 8 \\ &= 58\end{aligned}$$

Activity

Try this example using extended notation:

$$154 + 642$$

Multiplication

Begin with learning to count by:

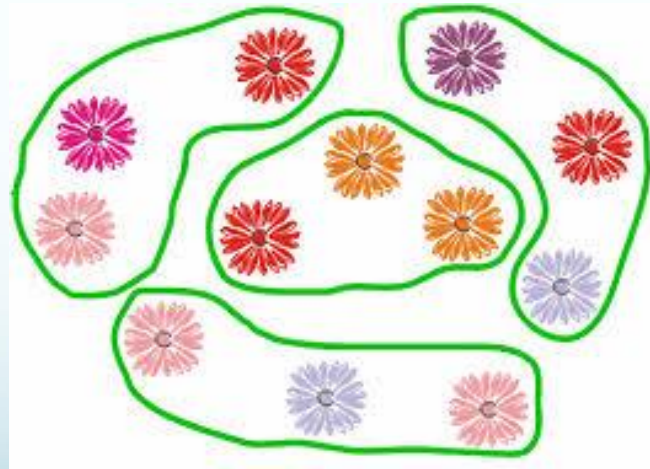
- 2s
- 5s
- 10s
- 100s

Later: 3s and 4s

Multiplication

Children begin understanding multiplication by making groups.

e.g. 2 groups of 4; 3 groups of 3 – How many altogether?



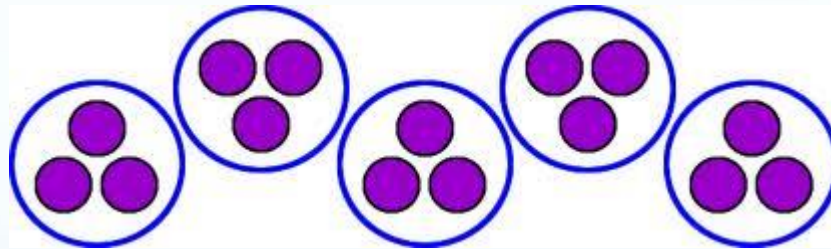
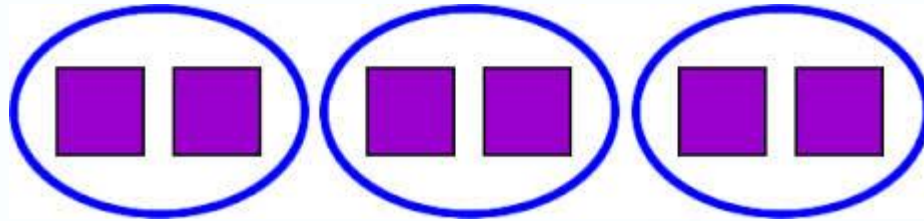
Multiplication

- Use concrete materials to make sets.
- E.g. 3 sets of pencils with 4 in each set.

This is written as **3 sets of 4** and later, **3 x 4**







Activity

Draw sets of buttons as follows:

$$4 \times 3 =$$

$$2 \times 5 =$$

Multiplication with equipment

e.g. 123×3

First set out as:

- 1 hundreds chart
- 2 tens
- 3 units

Now set out 3 of each on the table or floor

Division

Division and multiplication – reverse operations

Use equipment to show:

5 lots of 2 = 10 (multiplication)

Then in reverse:

10, how many 2s = 5 (division)

(Later the “how many” can be substituted for the sign \div)

★★ ★★ ★★ ★★ ★★

Activity

- Draw buttons and circles to show the following:

12 how many 3s?

Applied mathematics

- Time
- Weights and measures
- Distance
- Capacity
- Money

Using money wisely

Two lessons from some wise sayings:

- *“For where your treasure is, there your heart will be also.”* (There are other things in life that are more important than money. Don't make money an idol.)
- *“Don't be lazy. Take a lesson from the ant who gathers food in the summer so that she will have enough for the winter.”* (Work hard and save up your money to provide for the needs of you and your family)







Mathematics around us: Time

- The rotation of the earth
- Tides and the moon
- Sunrise, sunset

We see this in

- Before, After,
- Sequence of Events
- Daily Schedules
- Seasons
- Hours, Minutes and Seconds
- Perfect Spinning of the Planet

Months in a Year
Weeks in a Month
Days in a Week
Hours in a Day
Minutes in a Hour
Seconds in a Minute

Teaching time

- Children start by learning what time they get up, go to school, have lunch, go home, go to bed
- How long is a second? Count how long it takes to do a task, in seconds.
- Make an “egg timer”. How long does it take for the bottle of sand to empty?



Measurement

- Length, width, height, depth
- Measurement can also be applied to moral standards. We measure right against wrong, honesty against dishonesty.



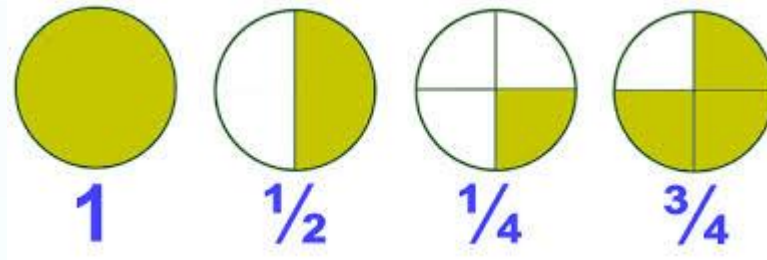
Problem solving

Verbal problems to be solved mathematically

e.g. A man went to the shop and bought 2 litres of milk for \$1 per litre and half a kilo of oranges for \$2 a kilo. How much did he spend?

Fractions

- Whole, halves, quarters



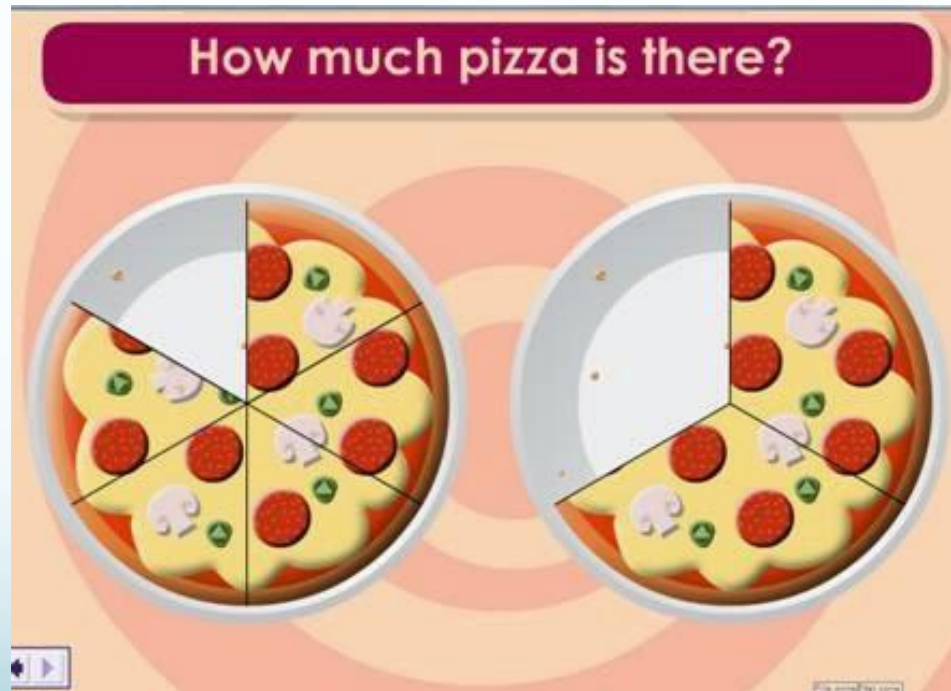
Fractions

- Quarters and eighths













Fractions

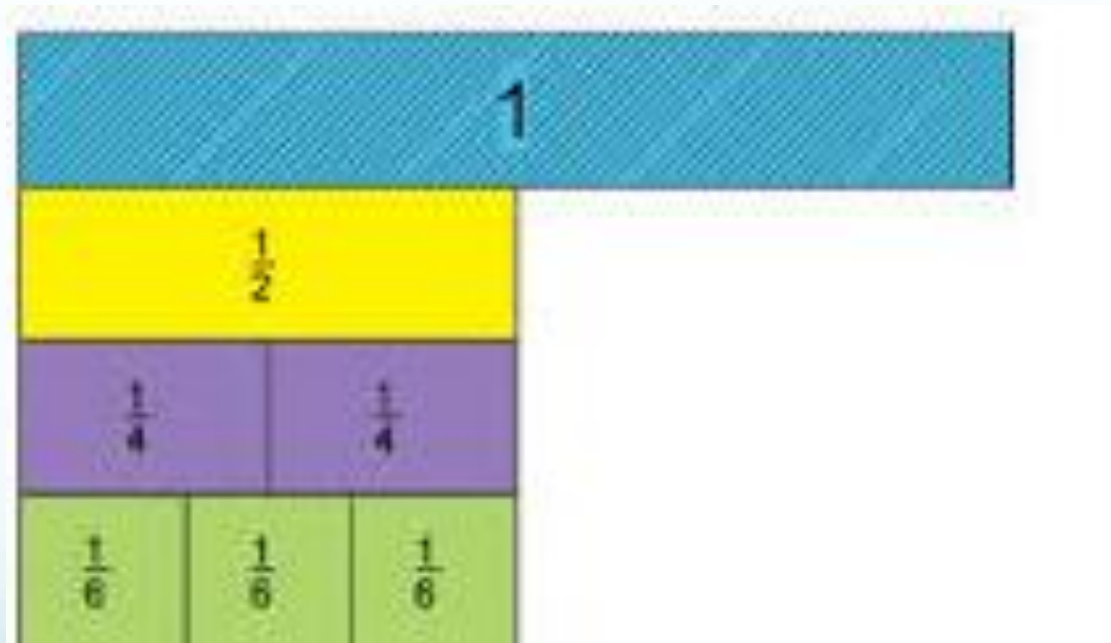
Thirds and sixths



1 part out of 4 is one quarter
1 part out of 3 is one third etc.

Fractions	
 Color $\frac{1}{4}$	 Color $\frac{2}{5}$
 Color $\frac{1}{3}$	 Color $\frac{1}{5}$
 Color $\frac{2}{4}$	 Color $\frac{3}{4}$
 Color $\frac{2}{3}$	 Color $\frac{4}{5}$
 Color $\frac{3}{5}$	 Color $\frac{1}{2}$

Fractions chart



Revision questions

1. What is ordinal number?
2. What is place value?
3. What is extended notation?

Answers

1. 1st, 2nd, 3rd etc.
2. Hundreds, tens, units
3. E.g. $27 = 20 + 7$