Mathematics Years 1-4

God created all things, and because He did, Maths exists.

- God spoke into existence, and Maths is a part of that speech.
- Maths is a part of all cultures because God is central to all culture.
- God is intelligent, and Maths demonstrates the vastness of that intelligence.
- God is sovereign, ruling over the universe. Maths is one means by which His rule is implemented.
- Maths, being a part of creation, does not exist independently of God.
- Maths, like every other aspect of creation, belongs to God.
- Maths, as every other part of creation, is subject to God's authority.
- Maths, is constantly speaking to us.
- We need Maths as a tool for fulfilling God's first commission in Genesis 1:26-28.
- The ability to use Maths for problem solving is a remarkable gift to people from God.
- Maths is a reminder that we are created in the image of God because we are capable of abstract reasoning and creative invention.

God counts

- Psalm 90:12 "*Teach us to number our days so that we may gain a heart of wisdom*".
- Job 147:4 "…*Does he not see my ways and count all my steps*?"
- Psalm 147:4 "…*He counts the number of stars; He calls them all by name*."
- Luke 12:7 "…*the very hairs of your head are numbered. Don't be afraid; you are worth more than many sparrows*."

Concrete materials are very important
e.g. the use of bottle caps

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

Preschool 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

- Bead threading for counting 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

Using the Bible to teach mathematical language

- Zacchaeus - short
- David and Goliath – Big/little/small; heavy/light
- The road to Bethlehem – a long way; a slow journey
- The wide and narrow road
- The Old and New Testament – before and after the birth of Jesus
- The Creation – above / below (position of the heavens and earth)
- The widow of Zarapheth – full / empty
- Crossing the Red Sea – through
- The hole in the roof – top; through
- Nathanael – under the fig tree

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.

Other activities for preschool and Grade 1

- Sorting activities
- Shapes and colours
- Reinforcing numbers to 10
- Counting rhymes and finger plays
- Bottle tops – put 7 bottle tops in a line

- Egg cartons for one-to –one correspondence and counting
- Draw 3 trees, 5 dogs, seven cats etc

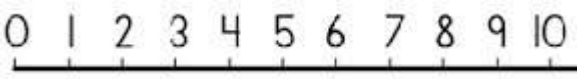
Ordinal Number

- 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



For addition and subtraction

Use a large number line on the floor or ground. Children do actual hops or jumps. Teach 'counting on'. Make sure the children start from 0.

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

All Grades

Mathematical operations

- Addition
- Subtraction
- Multiplication
- Division

Addition activities

Use concrete materials such as bottle tops, pop sticks or a number line

5 + ☐ = 10

Bible stories for addition

Noah's ark

- 2 elephants plus two lions. How many animals?
- 7 sheep plus 7 goats. How many animals?

Ten frames

This shows the number facts of 10, (What equals 10)
Use for addition or subtraction.

Subtraction
Oral work:
5 counters, take two away, How many left?
Later introduce “minus”.
Count backwards on the number line.

Bible stories for counting

- Children learn to count to 12 forwards and backwards.
- They can then count Bible characters e.g. the 12 disciples; Joseph and his 11 brothers; 8 people aboard Noah’s ark.
- The 7 days of Creation

Dice games

- Addition, subtraction – use 2 dice and add or subtract total
- Multiplication
- Probability
- Place Value

Addition: Games using two dice gives practice in adding the total of the 2 dice.
Who gets the highest score? See who is winner out of 5 throws.
Subtraction: Subtract the lowest number from the highest number. See who gets the lowest score out of 5 throws.

Brackets
e.g. (2 X 2) + (9 – 4) =
Always work out what is inside the brackets first. Write the answer above.

Renaming
Creating equations to equal a certain number, e.g. What equals 6?
3 + 3
10 – 4
3 X 2

Place Value

Introduce by using a number chart to 100.
Also use the number chart for:

- counting by 5's, 10's, 20's
- addition and subtraction, e.g. 20 plus 5 (count forwards); 30 – 6 (count backwards)
- showing odd and 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 in tens

Use bundles sticks in bundles of 10 for place value.
Addition Example: 20 + 30 (2 bundles plus 3 bundles)

Small laminated *hundreds charts* for counting in hundreds

Make a Place Value chart

	Hundreds	Tens	Ones(Units)
236	2	3	6

Use the place value chart for addition

	Hundreds	Tens	Ones(Units)
64		6	4
+32		3	2
Total		9	6

What happens when there are more than nine in the ones column?

	Hundreds	Tens	Ones(Units)
48		4	8
+39		3	9
Total		7	16
Equals		8	6

What happens when there are more than 9 tens column?

	Hundreds	Tens	Ones(Units)
75		7	5
+93		9	3
Total		16	8
Equals	1	6	8

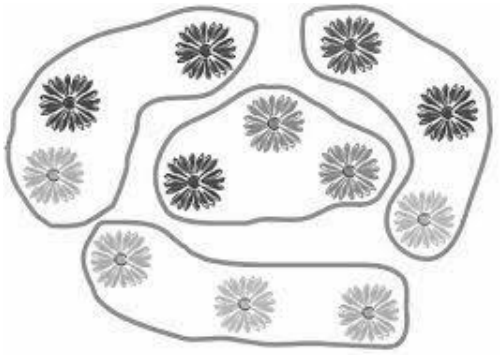
Extended notation

- Helps children understand place value

EXAMPLES:

- 97 = 9 tens + 7 ones (or units)
- 364 = 3 hundreds + 6 tens + 4 ones

Multiplication
Children begin understanding multiplication by making groups.
e.g. 4 groups of 3 – How many altogether?



Multiplication

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

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

Multiplication begin with learning to count by:

- 2s
- 3s
- 5s
- 10s
- 100s

Then learn times tables

Multiplication with equipment
e.g. 123 x 3
First set out as:

- 1 laminated hundreds chart
- 2 tens
- 3 units

Now set out 3 of each on the table or floor

Bible stories to teach Multiplication

- Animals in Noah's ark – count by 2s and 7s
- Loaves and fish – e.g. 5 loaves in each basket. How many loaves in 4 baskets?

Division

- Division and multiplication – reverse operations

Set out with equipment:

5 lots of 2 = 10 (multiplication)

Reverse it:

10, how many 2s = 5 (division)

(Later, "how many" can be substituted for the division sign.)

Applied Maths

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

Examples of practical application:

- Provide measuring cups of different sizes, plastic bottles, a jug and a bucket of water. Ask, "How many cups of water will fill this bottle?"
- Set up a "shop". Collect food packets and put prices on them. Provide play money.
- Measure around the school. To start with, don't use a ruler. Use a stick, a shoe or anything. Ask children to guess, "How many shoes will fit along this section of the wall?"

God wants us to use money wisely

- Matthew 6:21 "*For where your treasure is, there your heart will be also*."
- Proverbs 6:6-8 "*Go to the ant, sluggard; consider her ways and be wise; who having no guide, overseer, or ruler, provides her food in the summer and gathers her food in the harvest*."
- 1 Corinthians 16:2 "*On the first day of every week each one of you is to put aside and save, as he may prosper, so that no collections be made when I come*."

God set the times and seasons

- **Psalm 62:8a** "*Trust in Him at all times*."
- **Ecclesiastes 3:2** "*There is a time to be born and a time to die, a time to plant*…"
- **Psalm 8:3-4** "*When I consider your heaves, the work of your fingers, the moon and the stars, which you have set in place*…"
- **Psalm 104:20-21** "*You have made the moon to mark the seasons; the sun knows its time for setting. You make darkness, and it is night, when all the animals of the forest come creeping out*."

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?

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?

Using the Bible for mathematical word problems

1. If God made the universe in 6 24-hour days, how many days did he take to make the universe?
2. Find out the height, width and area of Noah's ark using the Biblical dimensions. (Genesis 6 – 8)
3. If the Israelites started their journey to the Promised Land in the year 4027 BC and took 40 years to get there, which year did they arrive in the Promised Land?

Fractions

Start with whole, halves, quarters
Use visual images or real-life objects, e.g. a cut-out circle representing a pizza

Divide a circle into parts
e.g. 3 parts for thirds, 8 parts for eighths
Say, "one part out of 3" is one third etc.