

4 YEAR STARTER PACK

How to use

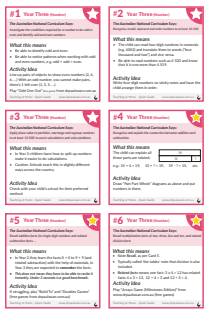
1



This Year's Content

- Uses content from the Quick Curriculum Guides for Parents & Teachers, based on the Australian Curriculum
- Take a look at what to do over the coming school year
- Pay extra attention to the items with a star ★, they're very important!

2



Last Year's Content

- With weeks of holidays behind them, students will have forgotten a little bit. Using the first few weeks of class to refresh students on this content is a good time investment.
- Take a quick look over last year's content. Recommendation: spend a little bit more time looking back at the items with a star ★.

3

Review / Assessment and Year Planning

- Review the starred ★ concepts that were in the previous year's Quick Curriculum Guide with your students.
- We have included 1 assessment item based on an important concept to help get you started at the back of this booklet.

4



More Help

- Get some helpful tips on planning - from the full year right down to the individual lesson. See the booklet "A Guide to Teacher Planning"
- Free download at www.drpaulswan.com.au/planning

These materials are provided as-is and intended as assistance tools only.

Quick Curriculum Guide (Year Four)

These Quick Curriculum Guides have been designed to take a look at the Australian Mathematics Curriculum, explain the terminology and provide a few interpretations. This tool has been designed as a document to assist both parents and teachers. The activity ideas only use a minimum of materials, most of which can be found at home and can easily be adapted to the classroom. In places where there is ambiguity, Linda and I have used our professional judgement to put forward what we feel is **appropriate for students at this year level**.

About Year 4:

- The mathematics tends to become **much** harder in Year 4.
- Students finish learning all of their **multiplication** tables and the **related division facts**, while at the same time need to **consolidate** their basic **addition** and **subtraction** facts.
- Fraction work increases and they move from whole numbers to two decimal places (e.g. 2.57).

For Teachers:

- You are welcome to send home these cards and activities to parents. A great way of organising your term might be cutting up the cards and adding to the activities ideas.
- Please note, some states and territories do not 100% match the national Curriculum in their state curriculums.

For Parents:

- Keep in mind this is what children learn over the **whole year**, not just in one term.
- All children are different, so expectations will vary even between children within the same year level.
- For the listed activities, we think these are all worth trying / could be managed in a home setting even for those inexperienced with teaching at home. We have tried to avoid specialty equipment.
- Even if you're not too sure about teaching, just introducing the idea and some related vocabulary can be a great help.
- Regular routines are beneficial for children. Many of these activities can be repeated, which will help the children retain what they learn. You can do the activity the same way or make slight changes to keep it interesting. **It is better to pick one or two activities and repeat them than it is to try them all once!**

#1 Year Four (Number)

The Australian National Curriculum Says:

Investigate and use the properties of odd and even numbers

What this means

- Even + Even = Even
- Even + Odd = Odd
- Odd + Odd = Even
- Odd + Even = Odd

Activity Idea

Ask the child to determine what happens when you add two even numbers. Two odd numbers? They should be the ones to come up with the 'rules' of Even + Even = Even, etc.

Teaching at Home - Quick Guide

www.drpaulswan.com.au



A sample card

Note the features of these cards:

- The text from the Australian Curriculum
- The star in the top right
 - Filled in: this means this is a topic that in our opinion is vital, perhaps as a building block to concepts in later years.
 - Not filled in: while still important, we consider this secondary.
- A simplified explanation of what the curriculum is describing
- A single activity or game idea. Some will reference free games and downloadables that you can find on www.drpaulswan.com.au. The vast majority of these activity ideas can be done at home.

Note: Although we have put the entries of the Australian Curriculum in one box each, they are not equal in terms of their importance or the amount of time needed to provide an understanding. Some entries will only need one of two learning sessions. Others will benefit from more, and need re-visiting a number of times throughout the year. Some entries, after an initial learning session, can be given incidental mention as the occasion arises. Teachers will use their professional judgements when deciding how long to allow for each of the entries; often combining some of them within one or more learning sessions.

The full Australian Curriculum: Mathematics can be found at www.australiancurriculum.edu.au/f-10-curriculum/mathematics/
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Acknowledgement to Linda Marshall for her assistance developing these notes.



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Activity Idea

Ask the child to determine what happens when you add two even numbers. Two odd numbers? They should be the ones to come up with the 'rules' of Even + Even = Even, etc.



#2 Year Four (Number)



The Australian National Curriculum Says:

Recognise, represent and order numbers to at least tens of thousands

What this means

- Students correctly read, write and say these larger numbers.
- Note that we no longer use a comma in numbers of five digits or more, but a gap between groups of 3 digits; so we would have 23 356 not 23,356.

Activity Idea

Write five-digit numbers on sticky notes and have the child arrange them in order.



#3 Year Four (Number)



The Australian National Curriculum Says:

Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems

What this means

- the child can 'break down' (partition) numbers into their place value parts, and then look at different combinations of them. For example, know that:

$$9415 = 9000 + 400 + 10 + 5$$

$$9415 = 9000 + 415$$

$$9415 = 8000 + 1400 + 15, \quad \text{etc.}$$

Note: Methods of calculation vary, check with your child's school for their preferred method.



#4 Year Four (Number)



The Australian National Curriculum Says:

Investigate number sequences involving multiples of 3, 4, 5, 7, 8 and 9

What this means

The **multiples** of a number are any numbers into which it will divide without a remainder, e.g. the multiples of 3 are 3, 6, 9, 12, 15, ...

Activity Idea

Use a Number Board (download a template from drpaulswan.com.au), ask the student to look for patterns in the each of the tables 3 - 9.

Ask "What are the patterns in 8, 16, 24, ... 49, 42, 35..."



#5 Year Four (Number)



The Australian National Curriculum Says:

Recall multiplication facts up to 10 x 10 and related division facts

What this means

- Typically called 'the tables' note that division is also included.
- **Recall means that the student does not have to work out the answer, they remember it. This does not mean they have to be able to recite it instantly. Under 3 seconds is a good benchmark.**

Activity Idea

Play the "Arrays Game (Milestones Edition)" from www.drpaulswan.com.au



#6 Year Four (Number)



The Australian National Curriculum Says:

Develop efficient mental and written strategies ... for multiplication and division where there is no remainder

What this means

- **Efficient strategies:** Does not get bogged down in too many steps or forget where they're up to.
- **Written strategies:** Note these vary from school to school.

Activity Idea

Play the "COMBO" Card Game, available for purchase from www.drpaulswan.com.au



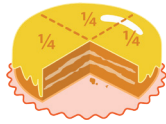
#7 Year Four (Number)



The Australian National Curriculum Says:
investigate equivalent fractions used in contexts

What this means

- Equivalent fractions are different names for the same fraction number, e.g. $\frac{1}{2}$ is the same as $\frac{2}{4}$ and $\frac{3}{6}$, so $\frac{1}{2}$, $\frac{2}{4}$ & $\frac{3}{6}$ are **equivalent fractions**.
- Match the fraction (e.g. $\frac{3}{4}$), the words "three quarters" and images.



Activity Idea

Play "Equivalent Fraction Match 1 & 2" or Equivalent Fraction POP from www.drpaulswan.com.au



#8 Year Four (Number)

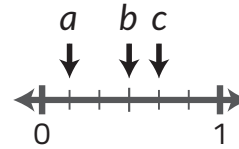


The Australian National Curriculum Says:
Count by quarters halves and thirds, including with mixed numerals.
Locate and represent these fractions on a number line

What this means

- Mixed numerals have a whole number and a fraction, e.g. $3\frac{1}{2}$

Activity Idea



- What fractions do a , b , and c represent?



#9 Year Four (Number)



The Australian National Curriculum Says:
Recognise that the place value system can be extended to tenths and hundredths. Make connections between fractions and decimal notation

What this means

2.16
↑ tenths ↑ hundredths

2.16 is read as "two and sixteen hundredths" rather than "two point one six" which allows children to see how place value allows you to name numbers.

- 2.16 is equal to:
- $2 + \frac{1}{10} + \frac{6}{100}$
 - $2 + \frac{16}{100}$

Used during other activities (e.g. Card #10)



#10 Year Four (Number)



The Australian National Curriculum Says:
Solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies

What this means

- Student can give change. e.g. a \$3.75 item, \$5 tendered, student may count back 5c and say "three dollars eighty" and 20c saying "four dollars" and count back another dollar and say "five dollars"

Activity Idea

Play shops, using method above. Use catalogues.



#11 Year Four (Number)



The Australian National Curriculum Says:
Explore and describe number patterns resulting from performing multiplication

What this means

- Do multiplications and look for patterns.

Activity Idea

- Explore multiples patterns on a number grid (download from drpaulswan.com.au).
e.g. the multiples of 11.

1	2	3	4	5	6	7	8	9	10	11	12
11	12	13	14	15	16	17	18	19	20	21	22
21	22	23	24	25	26	27	28	29	30	31	32
31	32	33	34	35	36	37	38	39	40	41	42
41	42	43	44	45	46	47	48	49	50	51	52
51	52	53	54	55	56	57	58	59	60	61	62
61	62	63	64	65	66	67	68	69	70	71	72
71	72	73	74	75	76	77	78	79	80	81	82
81	82	83	84	85	86	87	88	89	90	91	92
91	92	93	94	95	96	97	98	99	100	101	102
101	102	103	104	105	106	107	108	109	110	111	112
111	112	113	114	115	116	117	118	119	120	121	122

"The multiples of 11 go diagonally because ..."



#12 Year Four (Number)



The Australian National Curriculum Says:
Solve word problems by using number sentences involving multiplication or division where there is no remainder

What this means

- There are many words and phrases used to describe multiplication and division ('groups of', 'times as many', 'by', 'of', etc.) Children need to translate the words into the number sentence.

Activity Idea

Download "Word Problems Multiplication & Division" and the interactive version on drpaulswan.com.au



#13 Year Four (Number)



The Australian National Curriculum Says:

Find unknown quantities in number sentences involving addition and subtraction and identify equivalent number sentences involving addition and subtraction

What this means

- These are early forms of **algebra**. Boxes, lines, ? marks and later letters may be used to represent missing elements of a number sentence.

Activity Idea

$$23 + \underline{\quad} = 20 + 8$$

$$27 + 6 = 40 - ?$$

$$2734 = 2000 + \square + 70 + 4$$

Create more of your own

Teaching at Home - Quick Guide

www.drpaulswan.com.au



#14 Year Four (Measurement)



The Australian National Curriculum Says:

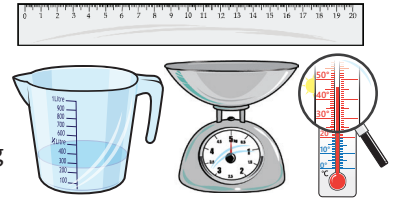
Use scaled instruments to measure and compare lengths, masses, capacities and temperatures,

What this means

- A scaled instrument is one that has markings or gradations on it; e.g. the mm and cm marks on a ruler, or the 25 mL marks on a measuring jug.

Activity Idea

Anything involving these; Cooking, measuring/weighing two objects, etc.



Teaching at Home - Quick Guide

www.drpaulswan.com.au



#15 Year Four (Measurement)



The Australian National Curriculum Says:

Compare objects using familiar metric units of area and volume

What this means

- This does **not** mean using calculations or formulas to determine the area or volume of something. Grid paper and cubes may be used.

Activity Idea

Trace your hand onto 1 cm grid paper. Count squares to determine the area. Then try your foot. Compare.

Teaching at Home - Quick Guide

www.drpaulswan.com.au



#16 Year Four (Measurement)



The Australian National Curriculum Says:

Convert between units of time

What this means

- Working out whether you need to multiply or divide when converting between units.
e.g. 60 minutes = 1 hour, so 1.5 hours = 90 minutes.

Activity Idea

Have you been alive for 1 000 000 seconds?
This requires a calculator.

Teaching at Home - Quick Guide

www.drpaulswan.com.au



#17 Year Four (Measurement)



The Australian National Curriculum Says:

Use 'am' and 'pm' notation and solve simple time problems

What this means

- Children need to understand am refers to morning and pm refers to afternoon/evening.

Activity Idea

- Solve simple time problems like: "I leave home at 11:30 am, and the walk to station takes 45 minutes. What time will I arrive at the station?"

Teaching at Home - Quick Guide

www.drpaulswan.com.au



#18 Year Four (Geometry)



The Australian National Curriculum Says:

Compare the areas of regular and irregular shapes by informal means

What this means

- This does **not** include the use of formulas. Shapes can be drawn on grid paper and the number of squares counted to find and compare the areas.

Activity Idea

Draw a blob (an irregular shape) onto 1 cm grid paper. Count squares to determine the area.

Teaching at Home - Quick Guide

www.drpaulswan.com.au



#19 Year Four (Geometry)



The Australian National Curriculum Says:

Compare and describe two dimensional shapes that result from splitting common shapes, with and without the use of digital technologies

What this means

- How many ways can a rectangle be cut in half so that each part is exactly the same as the other half?

Activity Idea

Download the Tangram Puzzles from drpaulswan.com.au



#20 Year Four (Geometry)



The Australian National Curriculum Says:

Use simple scales, legends and directions to interpret information contained in basic maps

What this means

- Maps become more formal and this involves reading maps and paying attention to the key features of scales, legends (keys) and compass directions.

Activity Idea

Use the Maps app on your phone and discuss with your child. Point out scale, local landmarks and compass directions.



#21 Year Four (Geometry)

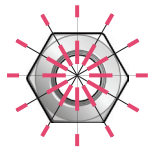


The Australian National Curriculum Says:

Create symmetrical patterns, pictures and shapes with and without the use of digital technologies

What this means

- Student understands the two types of symmetry: line symmetry and rotational symmetry.
- Students use this knowledge to draw pictures.



Activity Idea

Try a Google image search on the term 'Symmetry'. Many drawing apps include a 'symmetry' mode.



#22 Year Four (Geometry)



The Australian National Curriculum Says:

Compare angles and classify them as equal to, greater than, or less than, a right angle (90°)

What this means

- A right angle measures 90°. Example: where a wall meets the floor is a right angle.
- Classifications: right angle (90°), acute angle (less than 90°), obtuse angle (greater than 90° but less than 180°), straight angle (180°), reflex angle (greater than 180°).

Activity Idea

Look at a pair of scissors or garden shears. Consider the angles made.



#23 Year Four (Stats & Probability)



The Australian National Curriculum Says:

Describe possible everyday events and order their chances of occurring

What this means

- The word impossible means there is no chance of and event occurring, whereas possible describes a range of possibilities. Children will need to be exposed to a variety of language in order to describe and order events.

Activity Idea

Listen to/read "A Very Improbable Story" by Edward Einhorn (available on Youtube)



#24 Year Four (Stats & Probability)



The Australian National Curriculum Says:

Identify everyday events where one cannot happen if the other happens

Example

- "If there is no power, we cannot watch TV."

Activity Idea

Try activities using two dice where you add the results.

Can I get a total of 12 if I roll a 2 on the first dice?

Can I get a total of 5 if I roll a 6 on the first dice?



#25 Year Four (Stats & Probability)



The Australian National Curriculum Says:

Identify events where the chance of one will not be affected by the occurrence of the other

Example

- If I flip a coin and get four heads in a row, it would not affect the chance of getting a head or tail on the next flip.



Activity Idea

Flip a coin, discuss chances after a run of the same outcome e.g. 3 heads in a row. What do you think will come up next? Why?



#26 Year Four (Stats & Probability)



The Australian National Curriculum Says:

Construct suitable data displays, with and without the use of digital technologies, from given or collected data. Include tables, column graphs and picture graphs where one picture can represent a number of items

What this means

- Data displays = a graph or table.
- One picture can represent more than one item.

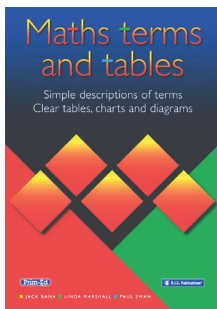
Activity Idea

Make a table of the different-coloured lollies in a lolly packet. On grid paper, produce a column graph. Keep gaps between each column.



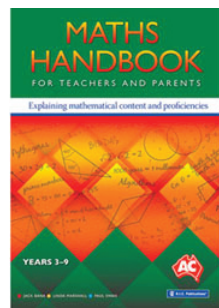
Further Support

Maths Terms and Tables



Definitions of mathematical terms

Maths Handbook for Teachers and Parents



Explains mathematical content



Further Support: Tables

The Networking Tables series of books is available for ebook download



Available from www.drpaulswan.com.au/shop

In Year 4 students learn the rest of the tables. You can buy the full set at a discount.



Further Support: Games

An Ideal game for Year 4 is the card game COMBO



Instructions on how to play as well as extra games you can play with the cards are available on Youtube

The Multispin and Spindiv games are perfect for practising the multiplication ($2x - 9x$) and division ($\div 2 - \div 9$) facts.



Purchase from www.drpaulswan.com.au/shop

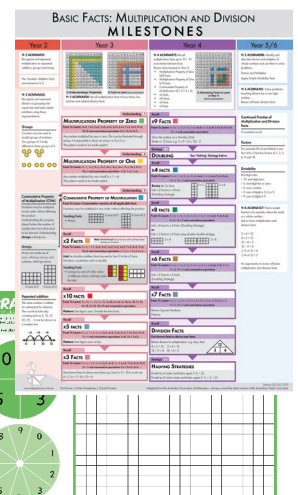


Free Support: Multiplication / Division

The Basic Facts

Milestones: A helpful suggested order for teaching basic multiplication and division facts:
www.drpaulswan.com.au/planning

Includes links to free games such as the Arrays Game.



Quick Curriculum Guide for Parents and Teachers (Year Three)

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About Year Three:

- In Year 3 children are expected to recall the basic addition facts ($0 + 0$ to $9 + 9$) and related subtraction facts (fact families)
e.g. $7 + 2 = 9$, $2 + 7 = 9$
 $9 - 2 = 7$, $9 - 7 = 2$
- In Year 2 they learned strategies for this but in Year 3 they are expected to be able to recall them.
- Children start their multiplication (a.k.a the tables) facts.

For Teachers:

- You are welcome to send home these cards and activities to parents. A great way of organising your term might be cutting up the cards and adding to the activities ideas.
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For Parents:

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- Regular routines are beneficial for children. Many of these activities can be repeated, which will help the children retain what they learn. You can do the activity the same way or make slight changes to keep it interesting. ***It is better to pick one or two activities and repeat them than it is to try them all once!***

#1 Year Three (Number)



The Australian National Curriculum Says:

Investigate the conditions required for a number to be odd or even and identify odd and even numbers

What this means

- Be able to identify odd and even.
- Be able to notice patterns when working with odd and even numbers, e.g. $odd + odd = even$.

Activity Idea

Line up pairs of objects to show even numbers (2, 4, 6, ...) With an odd number, you cannot make pairs, there's 1 left over (1, 3, 5, ...).

Play "Odd One Out" (free game) from drpaulswan.com.au

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A sample card

Note the features of these cards:

- The text from the Australian Curriculum
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#1 Year Three (Number)



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Investigate the conditions required for a number to be odd or even and identify odd and even numbers

What this means

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- Be able to notice patterns when working with odd and even numbers, e.g. odd + odd = even.

Activity Idea

Line up pairs of objects to show even numbers (2, 4, 6, ...) With an odd number, you cannot make pairs, there's 1 left over (1, 3, 5, ...).

Play "Odd One Out" (free game) from drpaulswan.com.au



#2 Year Three (Number)



The Australian National Curriculum Says:

Recognise, model, represent and order numbers to at least 10 000

What this means

- The child can read four-digit numbers in numerals (e.g. 4002) and translate them to words ("four thousand and two") and vice versa.
- Be able to read numbers such as 4 520 and know that it is one more than 4 519.

Activity Idea

Write four-digit numbers on sticky notes and have the child arrange them in order.



#3 Year Three (Number)



The Australian National Curriculum Says:

Apply place value to partition, rearrange and regroup numbers to at least 10 000 to assist calculations and solve problems

What this means

- In Year 3 children learn how to split up numbers make it easier to do calculations.
- Caution: Schools teach this in slightly different ways across the country.

Activity Idea

Check with your child's school for their preferred method.



#4 Year Three (Number)



The Australian National Curriculum Says:

Recognise and explain the connection between addition and subtraction.

What this means

The child can explain all these parts are related,

19	
15	?

e.g.: $15 + 4 = 19$, $15 + ? = 19$, $19 - ? = 15$, etc.

Activity Idea

Draw "Part Part Whole" diagrams as above and put numbers in them.



#5 Year Three (Number)



The Australian National Curriculum Says:

Recall addition facts for single-digit numbers and related subtraction facts ...

What this means

- In Year 2 they learn the facts $0 + 0$ to $9 + 9$ (and related subtraction) with the help of materials, in Year 3 they are expected to **remember** the facts.
- **This does not mean they have to be able to recite it instantly. Under 3 seconds is a good benchmark.**

Activity Idea

If struggling, play "Build To" and "Doubles Games" (free games from drpaulswan.com.au)



#6 Year Three (Number)



The Australian National Curriculum Says:

Recall multiplication facts of two, three, five and ten, and related division facts

What this means

- Note **Recall**, as per Card 5.
- Typically called 'the tables' note that division is also included.
- **Related facts** means one fact: $3 \times 4 = 12$ has related facts $4 \times 3 = 12$, $12 \div 4 = 3$ and $12 \div 3 = 4$.

Activity Idea

Play "Arrays Game (Milestones Edition)" from www.drpaulswan.com.au (free games)



#7 Year Three (Number)



The Australian National Curriculum Says:

Represent and solve problems involving multiplication using efficient mental and written strategies and appropriate digital technologies

What this means

- Understands multiplication words such as 'by', 'lots of', 'groups of', 'times as many,' etc. Can 'translate' from the words to the number sentence.
- **Efficient strategies:** Does not get bogged down in too many steps or forget where they're up to.

Activity Idea

Download "Word Problems Multiplication & Division" and the interactive version on drpaulswan.com.au



#8 Year Three (Number)



The Australian National Curriculum Says:

Model and represent unit fractions including $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{5}$ and their multiples to a complete whole

What this means

- A unit fraction is where the numerator (top number) is 1.
- **Model:** use materials e.g. paper strips.
- **Multiples:** $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$ (or $4 \times \frac{1}{4}$) is $\frac{4}{4}$ or 1.
- **Represent:** show as a picture e.g. on a number line.

Activity Idea

Fold paper strips.




#9 Year Three (Number)



The Australian National Curriculum Says:

Represent money values in multiple ways and count the change required for simple transactions to the nearest five cents

What this means

- 50c and \$0.50 are equivalent.
-  are the same, etc.
- Student can give change. e.g. a \$1.70 item, \$2 tendered, student may count back a 10c and say "one dollar eighty" and 20c saying "two dollars."

Activity Idea

Play shops, using method above. Use catalogues.



#10 Year Three (Number)



The Australian National Curriculum Says:

Describe, continue, and create number patterns resulting from performing addition or subtraction

What this means

- Able to continue a pattern such as 5, 9, 13, 17 ... and 50, 47, 44, 41, 38, __, ... and describe what is happening in each step.

Activity Idea

Calculator activity: Press +5 = = = ... and the calculator will count in 5's. Change the first number to start anywhere (e.g. $7 + 5 = = =$).

Count backwards: Try $40 - 2 = = =$...



#11 Year Three (Measurement)



The Australian National Curriculum Says:

Measure, order and compare objects using familiar metric units of length, mass and capacity

What this means

- Unlike Year 2, we use standard units (m, kg, L) etc.

Activity Idea



- Comparing containers (capacity): Use the measuring jug from your cooking cupboard to fill up 3 containers, record the millilitres or litres each holds. Order them from "holds least" to "holds most" water.



#12 Year Three (Measurement)



The Australian National Curriculum Says:

Tell time to the minute and investigate the relationship between units of time

What this means

- Can tell time to the minute
 - 60 min to 1 hr, 60 seconds to 1 minute, etc.
- We recommend the use of both analogue and digital clocks. Help the child see that, for example, 22 minutes past 4 can be written as 4:22.

Activity Idea

Play "Time Match Minute" from drpaulswan.com.au
Make references to the clocks nearby during the day.



#13 Year Three (Geometry)

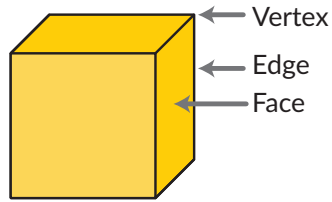


The Australian National Curriculum Says:

Make models of three-dimensional objects and describe key features

What this means

- Key features = Vertices (corners), Faces and Edges



Activity Idea

Use toothpicks and blu-tack to make a cube and a pyramid.



#14 Year Three (Geometry)



The Australian National Curriculum Says:

Create and interpret simple grid maps to show position and pathways

What this means

- Shows position. They can draw lines to show a path (e.g. Treasure Map)
- Read **across then up**. Gives (D,2)

6						
5						
4						
3						
2				X		
1						
	A	B	C	D	E	F

Activity Idea

Use the 10 & 20mm Grids Printable download from www.drpaulswan.com.au to play "Hidden Treasure" in your backyard/sandpit or somewhere inside the house.



#15 Year Three (Geometry)

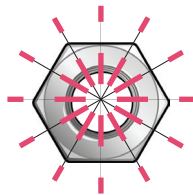


The Australian National Curriculum Says:

Identify symmetry in the environment

What this means

- There are two types of symmetry, line symmetry and rotational symmetry. Students need to know these in order to properly 'identify' symmetry in the environment



Activity Idea

Try a Google image search on the term 'Symmetry'.



#16 Year Three (Geometry)



The Australian National Curriculum Says:

Identify angles as measures of turn and compare angle sizes in everyday situations

What this means

- Does NOT mean using protractors.
- **Measures of turn:** Relate quarter turn to 90 degrees and turning around as 180 degrees (a u-turn).
- **Comparing angle sizes:** (Requires 2 pairs of scissors) show that angle is not related to size. In this case of these two pairs of scissors, one pair is bigger than the other but the angle is the same.



#17 Year Three (Stats & Probability)



The Australian National Curriculum Says:

Conduct chance experiments, identify and describe possible outcomes and recognise variation in results

What this means

- Roll dice, flip coins, flick spinners, etc.



Activity Idea

- Using a standard 1-6 dice, how many rolls do you need to get all of the numbers 1, 2, 3, 4, 5 and 6 at least once? Try several times.



#18 Year Three (Stats & Probability)



The Australian National Curriculum Says:

Collect data, organise into categories and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies

What this means

- Children can collect data They could use this data to produce tables, lists and graphs.
- In picture graphs one picture represents one item.

Activity Idea

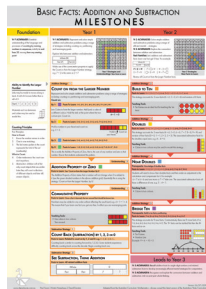
Sort a pack of lollies into the different colours. Make a column graph from the results. Keep gaps between each column. Download grid paper from drpaulswan.com.au



Free Support: Addition / Subtraction

A suggested order for teaching basic addition and subtraction facts (related to card #4) can be found at www.drpaulswan.com.au/planning

Milestones: Basic Facts Addition & Subtraction (Free Download)



Teaching at Home - Quick Guide

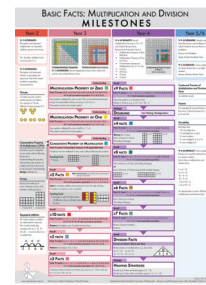
www.drpaulswan.com.au



Free Support: Multiplication / Division

A suggested order for teaching basic multiplication and division facts can be found at www.drpaulswan.com.au/planning

Milestones: Basic Facts Multiplication & Division (Free Download)



Teaching at Home - Quick Guide

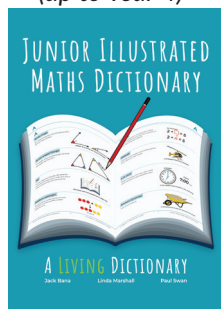
www.drpaulswan.com.au



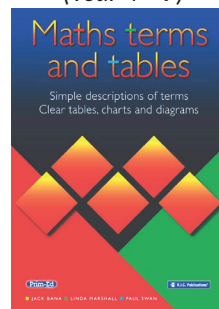
Further Support: Language of Maths

If we're unsure of what a word means in English, we look up a dictionary. Here are two maths dictionaries to help define and explain maths terms.

For younger students
(up to Year 4)



For older students
(Year 4 - 9)



Teaching at Home - Quick Guide

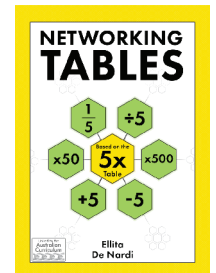
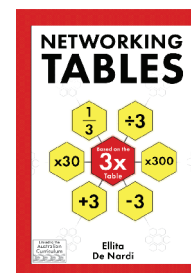
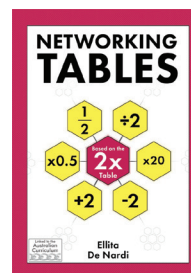
www.drpaulswan.com.au



Further Support: Tables

The Networking Tables series of books is available for ebook download

The books applicable for Year 3 are:



Available from www.drpaulswan.com.au/shop

In Year 4 students learn the rest of the tables. You can buy the full set at a discount.

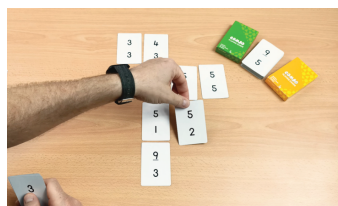
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Further Support: Games

Ideal games for Year 3 are the card games ROWCO and COMBO



Instructions on how to play as well as extra games you can play with the cards are available at [Youtube.com/user/DrPaulSwan](https://www.youtube.com/user/DrPaulSwan)

Purchase from www.drpaulswan.com.au/shop

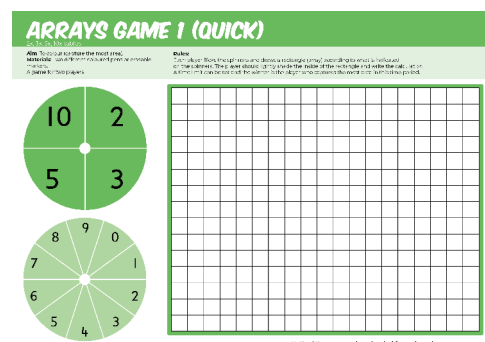
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Free Support: Downloadable Games

Games suitable for Year 3, including the Time Match and Arrays Games mentioned in this document, can be downloaded from drpaulswan.com.au/games/



Teaching at Home - Quick Guide

www.drpaulswan.com.au



Mental Computation Test - Review for Year 4's & 5's

Background

The test was used as part of a research study carried out by McIntosh, Bana and Farrell (1995).

This test was originally used with Year 3 students, however given the changes to the curriculum and the change to school starting age, I think it is appropriate to use in review with Year 4's and 5's.

The test consists of 30 items. The test is repeated on a different day using the same items, but visually instead of orally.

All items were given devoid of any context, thereby eliminating the need for students to decide from the context which operation to use.

Items were given one at a time at 20 second intervals, which the authors recognise as being generous for some students but enough time for students to at least attempt them.

The answers are to be written onto an answer sheet where there is only room to write the answer. Students should be instructed not to write anything down but the answer.

The data for students in Western Australian Schools has been provided so that teachers can 'benchmark' their students against these previous results. This is one of the few Mental Computation tests available. Note the Westwood One Minute Basic Fact Test used by many schools assesses basic facts only, whereas this test goes beyond basic facts. Over time a school or a group of schools will collect enough data for comparisons to be made.

Instructions for Administering the test

To the administrator of the test

- The test will be conducted twice - first orally, then at a later date by showing the questions visually.
- 1st test (oral) question procedure: Read twice with a brief pause of 2 – 3 seconds between readings, followed by a 20 second wait time. No further repetitions are provided.
- 2nd test (visual) question procedure: Show on screen for 20 seconds. We have created a PPT slide show with a 20 second timing that you are welcome to download from www.drpaulswan.com.au.

Explain to the students:

- Do the calculations in your head
- Do not copy the numbers down
- Write the answer on paper, nothing else.
- The question will be stated once and repeated 3 seconds later.
- You will be shown the question for 20 seconds.

Reference: McIntosh, A., Bana, J., Farrell, B. (1995), Mental Computation in School Mathematics: Preference, Attitude and Performance of Students in Years 3, 5, 7 and 9. Perth: MASTEC.

Westwood, P. (2016). Numeracy and Learning Difficulties: Approaches to teaching and assessment 2nd Ed. Melbourne: ACER.



Mental Computation Test - Review for Year 4's & 5's

Statistical Data

Year 3 range 0 – 29, Mean 12.27, SD 6.22

Results

You may be interested to learn that for this test there was a significance difference in performance between oral and written presentation, with performance overall on the oral test being much better. For the Upper Primary test (included in the Year 6 pack) the manner of presentation (visual/oral) did not matter overall, but there were a few questions where mode of presentation made a difference. I have included tables so you can make comparisons.

Generally for the majority of addition items students performed better when they were presented visually.

Year 3 students performed better on addition items than subtraction items. Likewise they tended to be better at doubling than halving numbers.

Order of Difficulty of items. Percentage Correct

#	Item	Oral	Visual	Average
16	6 + 8	91	79	85
2	20 + 70	73	95	84
29	Double 50	89	72	80
28	Double 8	79	71	74
17	16 + 9	78	62	70
1	36 + 9	67	72	69
3	36 + 20	61	70	65
13	Double 15	59	60	60
15	Half of 30	55	60	58
30	Half of 16	65	49	57
8	36 - 10	52	58	55
22	14 - 6	59	51	55
23	90 - 70	58	43	50
4	68 + 32	37	40	37
18	60 + 80	30	44	36
14	Double 26	34	35	34
9	73 - 23	30	32	31
5	25 + 27	22	38	30
6	25 + 99	29	30	30
26	100 - 25	27	32	29
7	36 - 9	30	26	28
24	74 - 30	25	17	21
25	140 - 60	16	26	20
19	79 + 26	17	16	17
20	58 + 34	17	16	17
11	100 - 68	11	10	10
10	80 - 24	4	12	8
27	105 - 97	10	6	8
12	105 - 26	6	4	5
21	182 + 97	4	2	3

Order by Question Number

#	Item	Oral	Visual	Average
1	36 + 9	67	72	69
2	20 + 70	73	95	84
3	36 + 20	61	70	65
4	68 + 32	37	40	37
5	25 + 27	22	38	30
6	25 + 99	29	30	30
7	36 - 9	30	26	28
8	36 - 10	52	58	55
9	73 - 23	30	32	31
10	80 - 24	4	12	8
11	100 - 68	11	10	10
12	105 - 26	6	4	5
13	Double 15	59	60	60
14	Double 26	34	35	34
15	Half of 30	55	60	58
16	6 + 8	91	79	85
17	16 + 9	78	62	70
18	60 + 80	30	44	36
19	79 + 26	17	16	17
20	58 + 34	17	16	17
21	182 + 97	4	2	3
22	14 - 6	59	51	55
23	90 - 70	58	43	50
24	74 - 30	25	17	21
25	140 - 60	16	26	20
26	100 - 25	27	32	29
27	105 - 97	10	6	8
28	Double 8	79	71	74
29	Double 50	89	72	80
30	Half of 16	65	49	57

based on data from 163 students



Mental Computation Student Review Questions

Use this sheet for reading out questions to students.

Remember: read once, wait 3 seconds, read again. Allow 20 seconds for students to work out an answer

- | | | | |
|-----|---------------------|-----|---------------------|
| 1. | 36 and 9 | 16. | 6 and 8 |
| 2. | 20 and 70 | 17. | 16 and 9 |
| 3. | 36 and 20 | 18. | 60 and 80 |
| 4. | 68 and 32 | 19. | 79 and 26 |
| 5. | 25 and 27 | 20. | 58 and 34 |
| 6. | 25 and 99 | 21. | 182 and 97 |
| 7. | 36 take 9 | 22. | 14 take 6 |
| 8. | 36 take 10 | 23. | 90 take 70 |
| 9. | 73 take 23 | 24. | 74 take 30 |
| 10. | 80 take 24 | 25. | 140 take 60 |
| 11. | 100 take 68 | 26. | 100 take 25 |
| 12. | 105 take 26 | 27. | 105 take 97 |
| 13. | What is double 15? | 28. | What is double 8? |
| 14. | What is double 26? | 29. | What is double 50? |
| 15. | What is half of 30? | 30. | What is half of 16? |

Mental Computation Student Review

Name _____

Date _____

1. _____

16. _____

2. _____

17. _____

3. _____

18. _____

4. _____

19. _____

5. _____

20. _____

6. _____

21. _____

7. _____

22. _____

8. _____

23. _____

9. _____

24. _____

10. _____

25. _____

11. _____

26. _____

12. _____

27. _____

13. _____

28. _____

14. _____

29. _____

15. _____

30. _____