

# 5 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.

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## 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](http://www.drpaulswan.com.au/planning)

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



# Quick Curriculum Guide (Year Five)

We understand that children as well as parents of children that are home from school may be feeling a bit stressed at the current time. Our aim is to try to make mathematics a little more accessible for you. We have put together a simple overview of some of the Australian Mathematics Curriculum, for each year level from Foundation to Year 6. Please note, most States and territories have made some adjustments to the Curriculum.

## About Year 5:

- Year 5 becomes a lot more formal. As a result, not every card can have a quick, suitable at-home activity.
- Because of this Year 5 represents the transition to more “paper and pencil” type work.

## 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 Five (Number)

**The Australian National Curriculum Says:**

Identify and describe factors and multiples of whole numbers and use them to solve problems

#### What this means

- The factor of a number is any counting number that divides into it without a remainder, e.g. the factors of 6 are 1, 2, 3 and 6. The multiple of a number is any number into which it will divide without a remainder, e.g. the multiples of 6 are 6, 12, 18, 24, ...

#### Activity Idea

do 'Fill in the gap' activities; e.g. the multiples of 6 are: 6, 12, \_\_\_\_\_, 24, 30, ...

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## 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](http://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/](http://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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## #2 Year Five (Number)



### The Australian National Curriculum Says:

Use estimating and rounding to check the reasonableness of answers to calculations

### What this means

- When doing any calculation, the child should estimate what the answer will look like. So, if they are using a calculator to work out, e.g.  $28 \times 42$ , it will be about  $30 \times 40$  which is 1200.

### Activity Idea

Ask them to estimate answers such as the above calculation  $28 \times 42$ .

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## #3 Year Five (Number)



### The Australian National Curriculum Says:

Solve problems involving multiplication of large numbers by one or two-digit numbers using efficient mental, written and appropriate digital technologies

### What this means

- This can be done mentally, on paper or using a calculator.

### Activity Idea

Try to find real-life examples, e.g;

- 5 movie tickets at \$22 per ticket. (Mental)
- 8 movie tickets at \$22.79 (Paper or calculator or rounding)

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## #4 Year Five (Number)



### The Australian National Curriculum Says:

Solve problems involving division by a one digit number, including those that result in a remainder

### What this means

$50 \div 5 = 10$  (no remainder)

$50 \div 4 = 12 \text{ r } 2$  (12 remainder 2) or 12.5

### Activity Idea

Try to find real-life examples, e.g. a \$240 shared between five people will give each person \$48 ( $240 \div 5$ ). If it is to be shared between nine people, each person will get about \$26.65 ( $249 \div 9$ ).

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## #5 Year Five (Number)

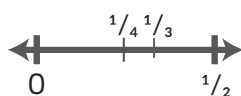


### The Australian National Curriculum Says:

Compare and order common unit fractions and locate and represent them on a number line

### What this means

- Unit fractions have a numerator (top number) of 1, e.g.  $\frac{1}{2}$ ,  $\frac{1}{3}$  &  $\frac{1}{4}$ , etc.



### Activity Idea

Locate  $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{1}{4}$ ,  $\frac{1}{5}$ ,  $\frac{1}{6}$ ,  $\frac{1}{8}$ ,  $\frac{1}{10}$  on the number line



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## #6 Year Five (Number)



### The Australian National Curriculum Says:

Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominators

### What this means

- The denominator in a fraction is the bottom number; it indicates the fraction name; e.g. with  $\frac{1}{5}$ , the denominator is 5 which tells us that the whole has been divided into 5 equal parts, and each part is called one fifth.
- Same denominators:** This is asking you to do calculations like  $\frac{1}{5} + \frac{2}{5}$  and  $\frac{5}{8} - \frac{2}{8}$ .

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## #7 Year Five (Number)



**The Australian National Curriculum Says:**

Recognise that the place value system can be extended beyond hundredths

### What this means

- In our decimal place value system, the value of a digit depends on its position in a numeral. To the left, the numbers increase ten-fold; to the right they decrease by powers of ten.

2.165  
          ↑  ↑  
      tenths hundredths thousandths

### Activity Idea

Split (partition) numbers like the above example. See Year 4 Quick Guide for more information.

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## #8 Year Five (Number)



**The Australian National Curriculum Says:**

Compare, order and represent decimals

### What this means

- Compare:** Compare the size of two decimals
- Order:** 3 or more decimals.
- Represent:** Best done on a number line.
- Watch for the common misconception that the longer decimal is larger. For example, some students at first believe that 4.106 is larger than 4.2. This may stem from them incorrectly reading the number as "four point one-hundred and six."

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## #9 Year Five (Number)



**The Australian National Curriculum Says:**

Create simple financial plans

### What this means

A financial plan may look at costs (expenses or expenditure) and profits (money left over). Or at savings and expenditure.

### Activity Idea

Have the child plan a simple meal and work out the cost of the ingredients. If they are given \$50, what will they get as change?

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## #10 Year Five (Measurement)



**The Australian National Curriculum Says:**

Choose appropriate units of measurement for length, area, volume, capacity and mass.

### What this means

- The key word here is 'Choose'. The child thinks about which unit is appropriate. For example, we would not work out the mass (weight) of an egg using kilograms; grams would be more appropriate.

### Activity Idea

Make up a fictional recipe.

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## #11 Year Five (Measurement)

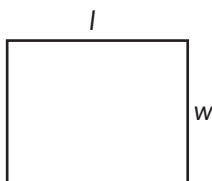


**The Australian National Curriculum Says:**

Calculate perimeter and area of rectangles using familiar metric units

### What this means

- The perimeter of a rectangle is the distance around the outside of it. It is calculated using  $l + w + l + w$  or  $2 \times l + 2 \times w$
- The area of a rectangle is the inside of it. It is calculated using  $l \times w$ .



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## #12 Year Five (Measurement)



**The Australian National Curriculum Says:**

Compare 12- and 24-hour time and convert between them

### What this means

- This is useful when reading bus or plane timetables.

### Activity Idea

Play "POP 12 Hour to 24 Hour" 1 and 2 (free games from [www.drpaulswan.com.au](http://www.drpaulswan.com.au))

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## #13 Year Five (Geometry)

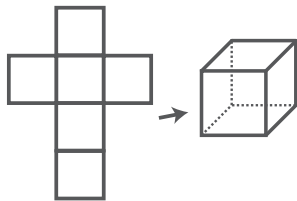


**The Australian National Curriculum Says:**

Connect three-dimensional objects with their nets and other two-dimensional representations

### What this means

- A net is a 2D pattern which can be folded to make a model of a 3D object.



### Activity Idea

Play "POP 3D Objects Nets" (free game from [www.drpaulswan.com.au](http://www.drpaulswan.com.au))  
Make some nets from card and fold.

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## #14 Year Five (Geometry)



**The Australian National Curriculum Says:**

Use a grid reference system to describe locations. Describe routes using landmarks and directional language

### What this means

- See image. The landmark in this case would be at D2.
- Always read horizontally then vertically.
- Describe with directional language (e.g. left, right)

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

### Activity Idea

Make a grid reference map of your bedroom.

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## #15 Year Five (Geometry)

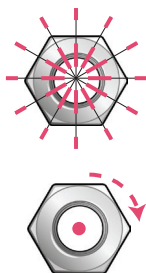


**The Australian National Curriculum Says:**

Describe translations, reflections and rotations of two-dimensional shapes. Identify line and rotational symmetries.

### What this means

- Translation: a.k.a 'sliding'
- Reflection
- Rotation: a.k.a 'turning'
- Line symmetry: see image 1
- Rotational symmetry: see image 2



### Activity Idea

Start with a shape and do a translation, reflection, etc.

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## #16 Year Five (Geometry)



**The Australian National Curriculum Says:**

Apply the enlargement transformation to familiar two dimensional shapes and explore the properties of the resulting image compared with the original.

### What this means

- With an enlargement transformation, the object or figure is made larger by a certain factor (e.g. doubled or trebled), but the same shape is maintained.

### Activity Idea

On grid paper, scale up a simple shape (e.g. a rectangle) by doubling its side lengths.

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## #17 Year Five (Geometry)



**The Australian National Curriculum Says:**

Estimate, measure and compare angles using degrees. Construct angles using a protractor

### What this means

- The most common angle we refer to is the right angle ( $90^\circ$ ). Other types of angles are compared to this, e.g. an acute angle is less than  $90^\circ$ , an obtuse angle is between  $90^\circ$  and  $180^\circ$  (two right angles), etc. See [https://www.youtube.com/watch?v=852yX-5\\_N4](https://www.youtube.com/watch?v=852yX-5_N4)
- While most protractors are 180 degrees we prefer the 360 degree (full circle) protractors because many students confuse the double scale on the 180 degree protractor.

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## #18 Year Five (Stats & Probability)



**The Australian National Curriculum Says:**

List outcomes of chance experiments involving equally likely outcomes and represent probabilities of these outcomes using fractions

### What this means

- When a dice is thrown, there is an equal chance of getting a 1, or a 2, or a 3, etc. When a coin is tossed, there is an equal chance of getting a Head or a Tail.

### Activity Idea

Flip a coin 50 times and record results.

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## #19 Year Five (Stats & Probability)



**The Australian National Curriculum Says:**

Recognise that probabilities range from 0 to 1

### What this means

- No probability at all (impossible) is a 0 chance. Absolute certain probability is 1.



### Activity Idea

Write chance words onto a probability number line e.g. "likely", "unlikely", "maybe", "once in a blue moon" etc.

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## #20 Year Five (Stats & Probability)



**The Australian National Curriculum Says:**

Pose questions and collect categorical or numerical data by observation or survey

### What this means

- e.g. "Which colour car passes the window the most?" Collect data to answer the question.

### Activity Idea

Collect data and make a table/graph.

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## #21 Year Five (Stats & Probability)



**The Australian National Curriculum Says:**

Construct displays, including column graphs, dot plots and tables appropriate for data type, with and without digital technologies

### What this means

- Data displays = a graph or table.
- Dot plot is new at this year level, students will have encountered column graphs in Year 4.

### Activity Idea

Explore making a graph in a Microsoft Excel spreadsheet or similar program.

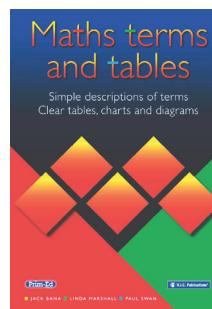
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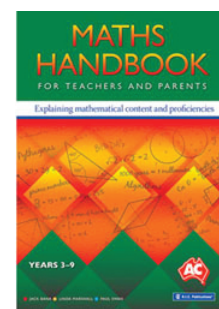
## Further Support

### Maths Terms and Tables



Definitions of mathematical terms

### Maths Handbook for Teachers and Parents



Explains mathematical content

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## Further Support: Games

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](http://www.drpaulswan.com.au/shop)

Free games for fractions and downloadable pages for grids can be downloaded from [www.drpaulswan.com.au](http://www.drpaulswan.com.au)

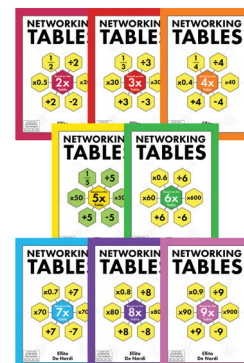
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## Further Support: Tables

The **Networking Tables** series of books is available for ebook download



Available from [www.drpaulswan.com.au/shop](http://www.drpaulswan.com.au/shop)  
You can buy the full set at a discount.

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# 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.
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- Keep in mind this is what children learn over the **whole year**, not just in one term.
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### #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
- Odd + Odd = Even
- Even + Odd = Odd
- 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.

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## A sample card

**Note the features of these cards:**

- The text from the Australian Curriculum
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## #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.

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## #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, etc.

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

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## #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](http://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..."

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## #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](http://www.drpaulswan.com.au)

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## #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](http://www.drpaulswan.com.au)

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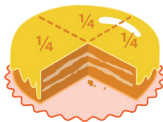


## #7 Year Four (Number)

**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](http://www.drpaulswan.com.au)

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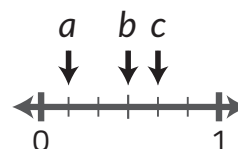
## #8 Year Four (Number)

**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?

$a$   
 $b$   
 $c$

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## #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**  
↑ hundredths  
↑ tenths

2.16 is equal to:

- $2 + \frac{1}{10} + \frac{6}{100}$
- $2 + \frac{16}{100}$

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.

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

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## #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.

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## #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](http://drpaulswan.com.au)).  
e.g. the multiples of 11.

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
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

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

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## #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](http://drpaulswan.com.au)

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## #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

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## #14 Year Four (Measurement)



**The Australian National Curriculum Says:**

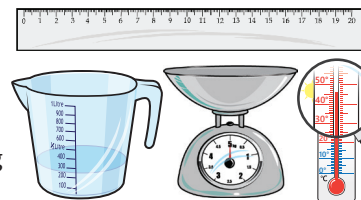
Use scaled instruments to measure and compare lengths, masses, capacities and temperatures,

### 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.



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## #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.

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## #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.

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## #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?"

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## #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.

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## #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](http://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)

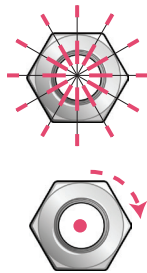


### The Australian National Curriculum Says:

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?

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## #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.

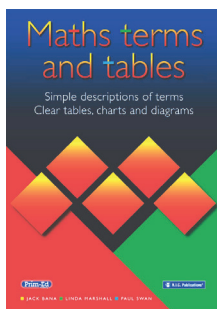
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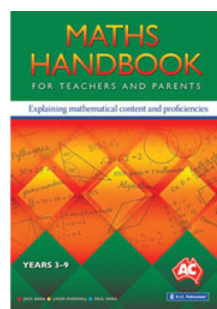
## Further Support

### Maths Terms and Tables



Definitions of mathematical terms

### Maths Handbook for Teachers and Parents



Explains mathematical content

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## Further Support: Tables

The **Networking Tables** series of books is available for ebook download



Available from [www.drpaulswan.com.au/shop](http://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

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](http://www.drpaulswan.com.au/shop)

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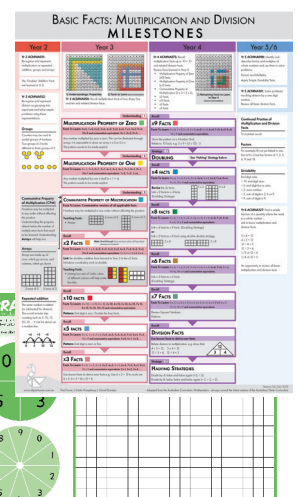
## Free Support: Multiplication / Division

### The Basic Facts

**Milestones:** A helpful suggested order for teaching basic multiplication and division facts:

[www.drpaulswan.com.au/planning](http://www.drpaulswan.com.au/planning)

Includes links to free games such as the **Arrays Game**.



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# 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](http://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.





# 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

based on data from 163 students

### 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



# 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. \_\_\_\_\_

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. \_\_\_\_\_