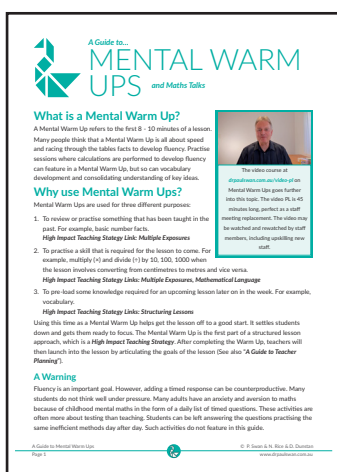


# MORE MENTAL WARM UPS *and Maths Talks*

## Introduction

This booklet follows up on the general Guide to Mental Warm Ups and Maths Talks and the first video, “Mental Warm Ups and Maths Talks”



## K/P/1+ Activities

- Human Number Line
- Fish
- Card Bingo

## Year 2-4+ Activities

- Compatible Numbers
- Function Machines

## Year 5-6+ Activities

- Find My Number
- Number Clues
- Remainder 3

Sample Warm Up activities are included for all year levels. Additionally, tasks can often be differentiated to suit the needs of younger/older students. For example, Card Bingo can be used at any year level by changing the language used and the mathematics covered. Teaching students how to play Card Bingo in the early years means that the routine is established and may be carried through the school.

This booklet is only available to schools that have purchased the **MORE Mental Warm Ups and Maths Talks** Video PL from [www.drpaulswan.com.au](http://www.drpaulswan.com.au)  
It may be freely copied and used within the school.



# Human Number Line

*Whole Class and Small Groups*

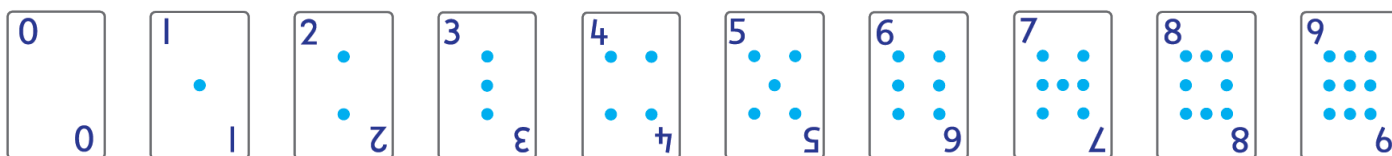
Similar to the **Pegs on a String** activity in the **Guide to Mental Warm Ups and Maths Talks** booklet, Teachers can hand out some cards 1 →10 (you can use some of the cards from a Jumbo pack of School Friendly Cards or write numbers on A4 pieces of paper) and ask the students to bring them to the front of the classroom. Don't say anything else, wait to see if they start to arrange themselves in order.



Turn to face the rest of the class. That way the rest of the class has to monitor what the students with numbers do as you give oral questions. These might include:

- Raise your number if it is:
  - more than / less than ...
  - odd / even
  - one tenth of sixty
- Find a partner so that your numbers total 11.
- Arrange yourself from smallest to largest (ascending order) / from largest to smallest (decending order)

The Cards 0 – 9 can be used back at the desk by small groups.



Set the challenges:

- Use the number cards to make three two-digit numbers which are all even.
- Try making three two-digit numbers which are all multiples of nine.
- Try sequencing two-digit numbers in ascending order / decending order.



# Fish

*Pairs*

## Purpose

Developing oral language to describe specific cards

## Materials

A deck of cards.

## Rules

Fish is a good game for improving speaking and listening skills. In the standard version of fish, players take turns asking whether another player has a particular card that matches one in their own hand. For example, a player holding a six may ask if another player has a six. If the player has a six it must be handed over to the player who requested the card. The two sixes must then be placed on the table, face up for all players to see.

If the second player did not have a six, he/she says “Go Fish” and the first player has to pick up a card from the deck.

## Variation

The potential to modify this game lies in the questions that are asked. One variation has students not allowed to directly request a specific card. For example, when requesting a six a player might say:

“Do you have:

- half of twelve?”
- one less than seven?”
- four more than two?”

More able students could be asked for harder requests.

- ten percent of sixty
- one third of eighteen



# Card Bingo

Whole Class - One person "calls"



## Purpose

Students will focus on the language of mathematics while learning the basic number facts.

## Materials

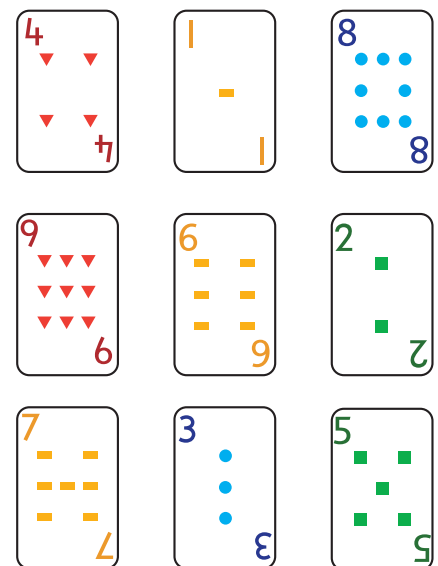
The cards 1 - 9 from a deck of School Friendly or standard playing cards per player.

## Aim

To be the first player to turn over three cards in a row, column or diagonal.

## Rules

1. Players arrange their nine cards into a 3 x 3 bingo board. The cards should be in mixed order. For example, see the next page.
2. An operation and appropriate terminology are chosen. For example, subtract one, might be called the 'Take One' game, however on another occasion it might be referred to as the 'Subtract One' game; on another occasion the 'Minus One' game.
3. The Caller has a set of cards numbered 1 - 9 and shuffles these to ensure that the cards are randomly chosen.
4. If playing the 'Take One' game, the Caller, in the first instance, the teacher, would mentally add one to the card that he/she turns over. For example, if the Caller turned over a 7, he/she would call out 'eight'.
5. The players would then hear 'eight' and think that they have to take one away from eight and turn over the card with '7' on it.
6. Play continues until one player or several players turn over three cards in a row, column or diagonal as per the normal rules for Bingo.
7. The winners must then hold up their cards and compare them with the caller's set of cards to verify they have the correct answers.



Sample Game Layout

## Variations

Extend to much harder operations that are linked. For example, the 'Halving' game, the 'Dividing by Two' game, the 'Fifty per cent' game and the 'Multiply by 0.5' game. Students can be asked what they notice about each of these games.



# Compatible Numbers

Whole Class Warm up

## Purpose

Adding two numbers that bond to a decade (e.g.  $4 + 6 = 10$ ,  $40 + 60 = 100$ ). Later, sums become more difficult (e.g.  $78 + 22 = 100$ )

## Materials

Whiteboard & Marker

## Rules

Write twenty-one numbers on the board, twenty of which are compatible (e.g. 4 and 6, 3 and 7, 2 and 8) in a scattered arrangement. The numbers will vary depending on the year level.

Have students list the 10 pairs of numbers and state the one left over.

Students can then have a go at making their own.

Total 10

4	3	9	6	1	4	5
0	2	8	10	1	5	2
7	9	8	1	6	9	4

Difficulty: Year 2 maths  
At the end, a four should remain.

Total 30

16	13	15	9	18	27	20
10	22	3	24	2	8	15
12	28	14	6	17	23	21

Difficulty: Year 3+ maths  
At the end, a 23 should remain.

Total 50

36	13	35	18	22	41	23
28	27	43	21	16	29	7
37	31	9	14	19	15	32

Difficulty: Year 3+ maths  
At the end, a 16 should remain.

Total 100

91	75	60	39	45	52	61
64	18	63	51	37	82	25
40	49	55	48	9	71	36

Difficulty: Year 3+ maths  
At the end, a 71 should remain.

Follow up with **Build to Ten** and **Build to \_** game from the Dr Paul Swan Free Board Game Pack Years 1-2 on [www.drpaulswan.com.au](http://www.drpaulswan.com.au)



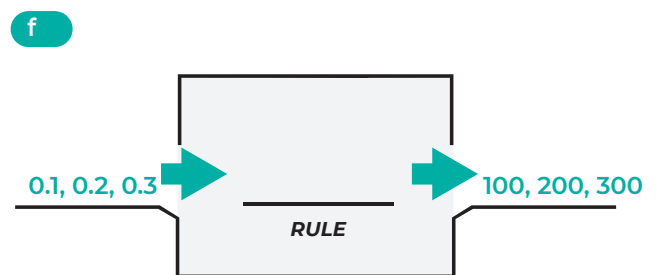
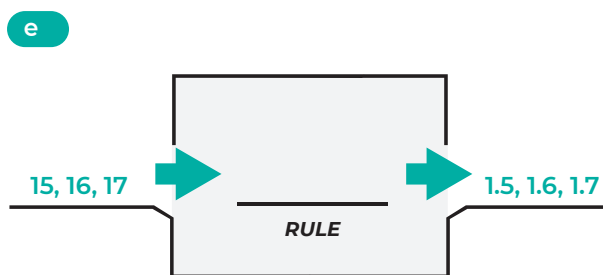
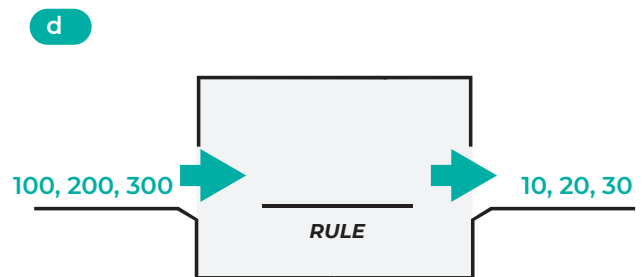
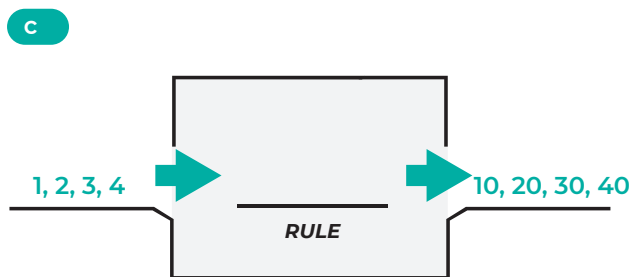
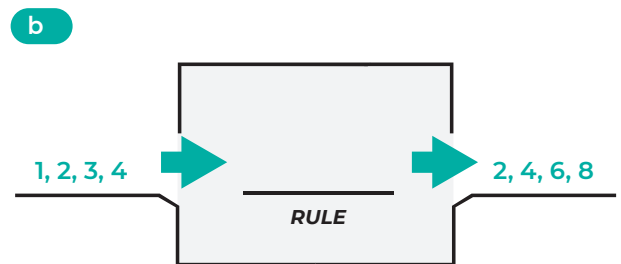
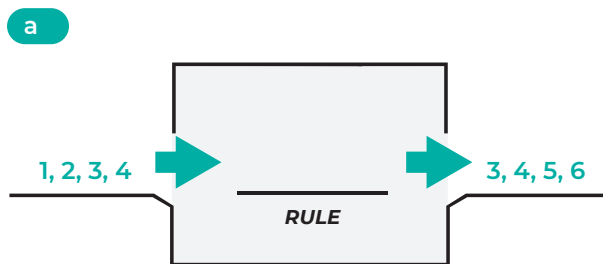
# Function Machines

Whole Class and Small Groups

Numbers pass through a function machine and come out the other side.



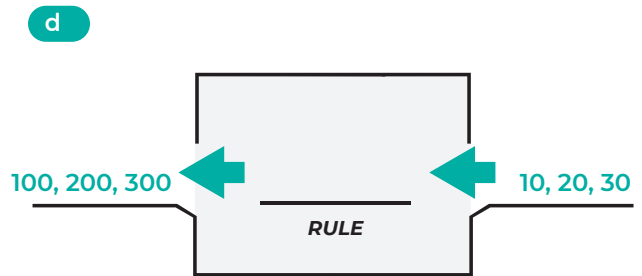
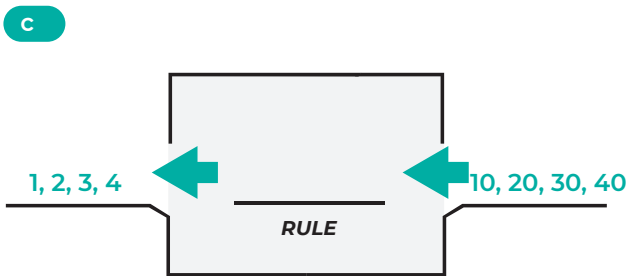
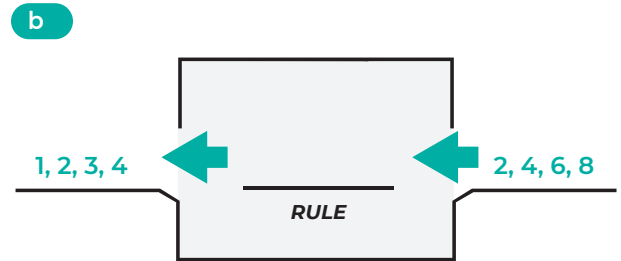
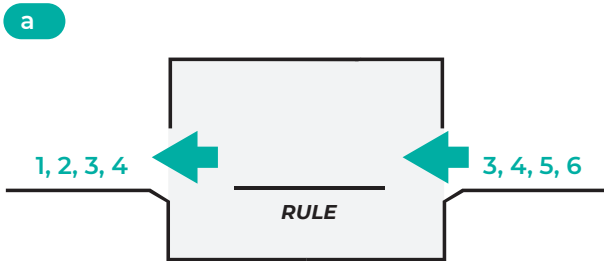
Students determine what the rule for the function machine is. Vary the numbers and the rule.



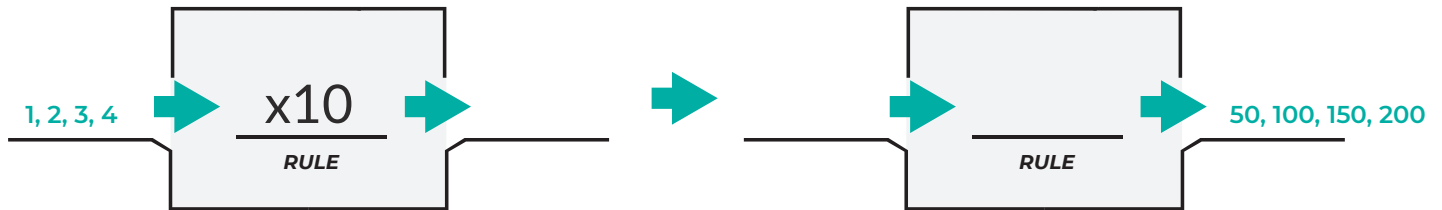
# Reverse Function Machines

Whole Class and Small Groups

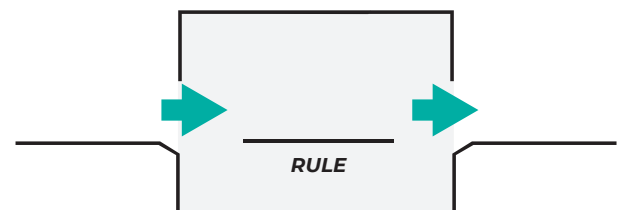
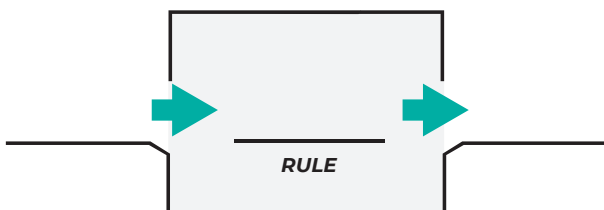
Investigate what happens when the function machine is put into reverse.



# Joined Function Machines



Decide on a rule for each of these two function machines. Show the numbers that are fed into the machine and those that exit the function machine. Ask a classmate to "work out" the rule being used.



# Find My Number

*Whole Class Warm up*

## Purpose

Develop understanding of number patterns and the vocabulary associated with types of numbers.  
Use reasoning to determine the answer.

## Materials

Whiteboard & Marker

## Rules

Teacher chooses a number between 1 and ... (depending on the age of the students).

This can be written on a piece of paper to be shown later

Students or groups of students take turns to ask the teacher questions to which the answer can either be yes or no.

**Example, 20 in a range of 1 to 50:**

*“Is it more than 30?” - No*

*“Is it even?” - Yes*

*“Does it end in a 6?” - No*

*“Is it a multiple of 3?” - No*

When three or four questions have been asked, the teacher asks “What’s the smallest number it still could be?”, “what’s the largest it could be?” and “what else could it be?”

Students discuss this in groups and offer suggestions as to what numbers are left and the teacher writes these on the board.

In this case the smallest number it could be is 2, the largest is 28 and the numbers left are 2, 4, 8, 10, 14, 20, 22, 28.

The game continues where the students ask further questions to eliminate the remaining numbers. A record of the number of questions asked can be kept. Discuss whether some questions are better than others for discovering the answer.

The 1-120 Board can also be found in PDF form at [www.drpaulswan.com.au/resources](http://www.drpaulswan.com.au/resources) under “Printables”.





# Number Board 1-120

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

# Number Clues

Whole Class Warm up

## Purpose

Build Mathematical Vocabulary as students interpret the meaning of the clues.

- I am a two-digit number.
- I am divisible by five.
- I am not a square number.
- I am less than  $7 \times 5$ .
- I am not a multiple of ten.

Answer: 15

1

- I am a counting number.
- All three of my digits are odd but different.
- The sum of my digits is 13.
- The product of my digits is greater than 30.
- The sum of my tens and hundreds digits is less than my units digit.
- Which two numbers could I be?

Answer: 157 or 517

2

- Each digit is different.
- The 1st digit is odd and is more than the 4th digit, but less than the 2nd digit.
- The last digit is odd and is half the 4th digit.
- The 2nd digit is three times the last digit.
- The third digit is an even square number and is more than the last digit.

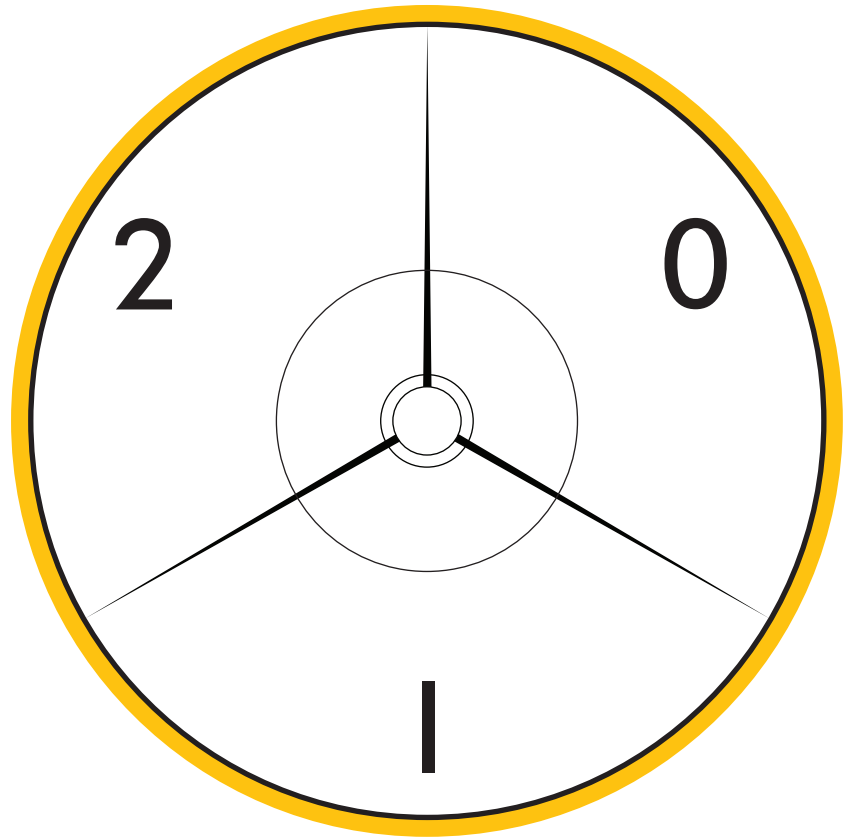
Answer: 79 463

3



# Remainder 3

- Player one flicks the spinner to determine the remainder.
- The player then marks a number on the board that when divided by 3 would produce the remainder shown on the spinner.
- Players take turns until one player manages to mark three numbers in a row, column or diagonal.
- A number that is already marked cannot be used.



6	20	15	8	33	12
32	11	22	28	5	34
24	13	39	38	26	16
17	29	37	36	25	14
35	10	4	19	7	27
18	30	23	21	31	9

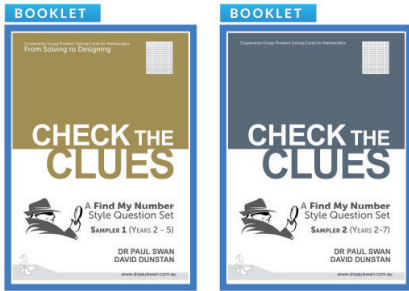


A list of materials to support Warm Ups is found on the reverse of the Guide to Mental Warm Ups and Maths Talks.

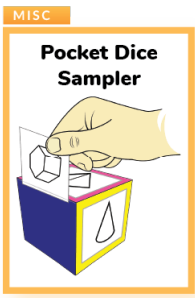
Some related activities to the ones listed in this course book are listed below, as well as materials used together with this booklet.

### Free Booklets

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



Check the Clues Samplers

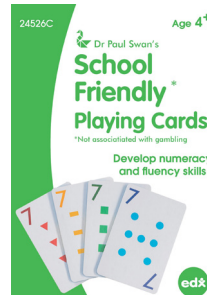


Pocket Dice Samplers

Other Guides and Video PL available from [www.drpaulswan.com.au](http://www.drpaulswan.com.au)

### Materials

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



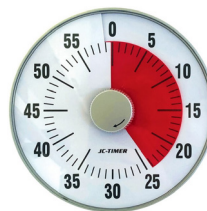
School Friendly Playing Cards



Jumbo School Friendly Playing Cards



Write and Wipe Sleeves & Round Spinners



Magnetic Countdown Classroom Timer



Number Board

