

## *Top Ten Mathematics*

*The Power and Joy of Hands-on Maths*

*Units developed by Australian numeracy coaches for ten years in classrooms*

# Top 10 lessons to start the year

*10 of 500 lessons from the  
Early Years Package*

Download 3 of the 50 sequential units  
**for free** to trial this term:

<https://www.toptenresources.com/earlyyears>



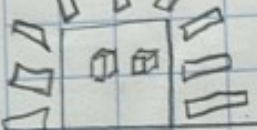

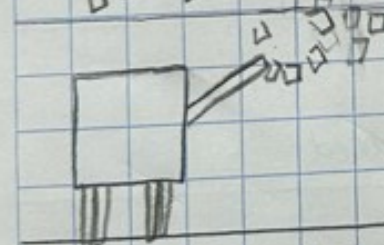
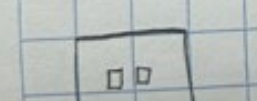
# Feed your new number pet!

*Early Years Pack – Place Value – Unit 2 Count to 3, then to 6 – Lesson 3*

Tell a story about the students finding a lost pet, taking it home and getting it ready for bed. But it is hungry! Feed it – if you feed it 2, it whines; if you feed it 4 it vomits – 3 only eats 3! However, it can eat 3 of anything!

**Extension 1:** Record number sentences for addition and subtraction (take away what it vomits). Use different representations – words, tally marks, graphs. Find multiplicative ways to make the number ( $3 \times 3 = 9$ ).

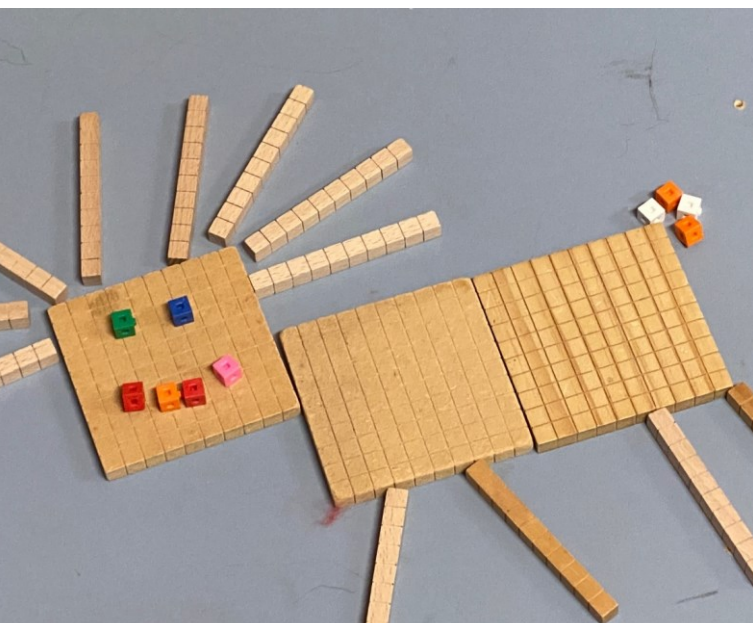
**Extension 2:** Place value patterns using tens blocks and more – if you know  $2 + 3 = 5$ , what else do you know?  
 $20 + 30 = 50$ ,  $200 + 300 = 500$ ,  $20^c + 30^c = 50^c$ ,  $0.5 - 0.2 = 0.3$

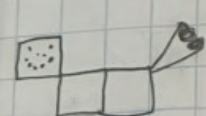

	192 ✓	1h 9t 2ones ✓	one hundred and ninety-two ✓
	65	6t 5 ones ✓	sixty five ✓ sixty
	158	1h 5t 8ones ✓	one hundred and fifty-eight ✓
	142	1h 4t 2ones	one hundred and forty-two

Make your favourite animal using place value blocks (MAB) in 5 minutes. After the timer, record using place value form, standard form, worded form and expanded form. Roam the room and record the animals made by other students (gallery walk structure – maximising recording time and minimising construction time).

# Place Value Zoo

Early Years Pack – Place Value – Unit 15 Three-digit partitioning, rounding and renaming – Lesson 3



	three hundred and thirty one.	3h 3t 1t 1u	331
	the three hundred and seventy four	3h 7t 4u	374

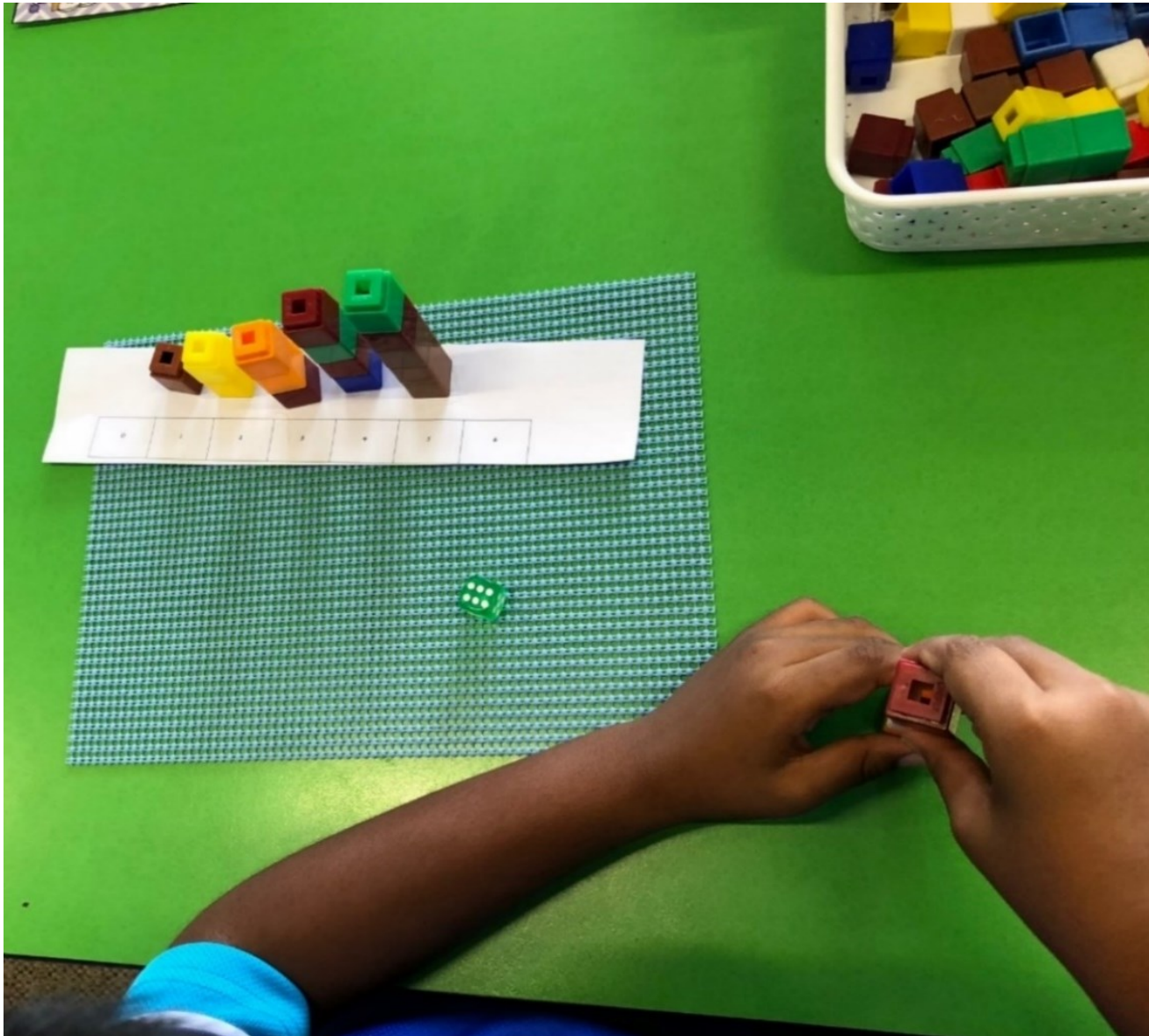
**Extension 1:** Make your animal into a tower (hundreds at the base) and work out what it is closer to using towers of place value blocks – rounding to the nearest hundred and thousand.

**Extension 2:** How many more to 1000? Work it out mentally.

**Extension 3:** Difference between your animal's value and another classmate's – work it out mentally.

**Extension 4:** Value of all animals in the room. Estimate first, then record to answer.





1. Roll a 6-sided dot dice.
2. Make the matching number as a tower of blocks and place it behind the digit on the number path (sheet with 1 to 6, or 0 to 6).
3. Once all numbers are built – say, “BINGO!”

# “BINGO!”

*Early Years Pack – Place Value – Unit 3 – Lesson 9*

**Extension 1:** Partition rolled numbers into two (or more) parts to avoid missing turns. For example, if you roll 4 but ‘4’ is already built, break it into 3 and 1 to score two more numbers, rather than nothing for that roll!

**Extension 2:** Roll 2 (or more) dice and use operations to score numbers. For example, if you rolled 6 and 3, you could subtract ( $6 - 3 = 3$ , scoring 3), or divide ( $6 \div 3 = 2$ , scoring 2).

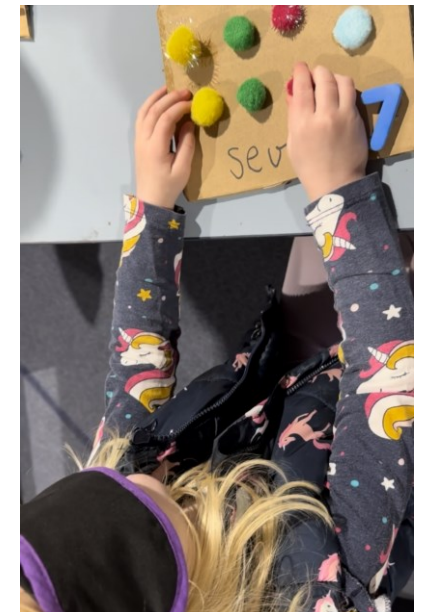
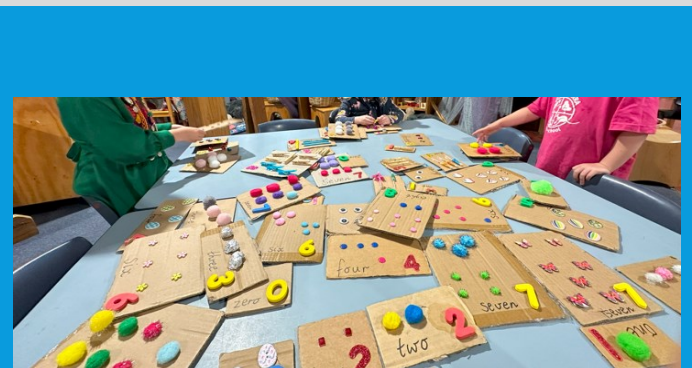
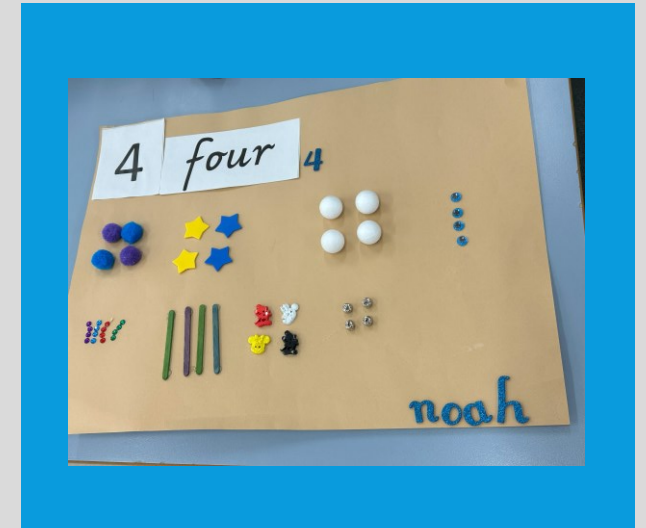
**Extension 3:** Roll 4 dice. Use all 4 in a number sentence to score a number you need.

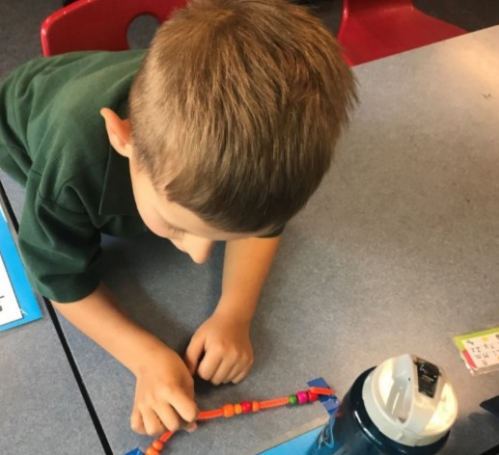
- Blindfold and feel, guess the value; partner says 'yes' or 'try again'.
- First to make a number line from 0 to 6 wins (turn boards upside-down in a pile).
- Highest wins (pull upside-down boards).

# Sensory Number Boards

*Early Years Pack – Place Value – Unit 2 – Lesson 2*

- Collect all the boards of a number (5) and verbalise all the ways to make it by seeing (subitising): "I see 2, I see 3, I see 5," circling your finger around the parts as you say it.
- Count on by flipping over the larger board, then counting on by touching the items on the smaller board. Put the larger board on your head (larger number in your head).
- Take away by collecting two boards, placing the lower board upside-down to cover its value over the higher value board.





Ninja Number Sliders

	Yellow Belt Partition 3	Orange Belt Partition 4	Pink Belt Partition 5	Dark Pink Belt Partition 6	Red Belt Partition 7	Green Belt Partition 8	Blue Belt Partition 9	Purple Belt Partition 10



Lines in the sand – Beyond counting


<https://www.youtube.com/watch?v=nPLWAZKoQSQ>

Why learning all the ways to make (partitioning) a number is so critical to later developmental progress in mathematics.

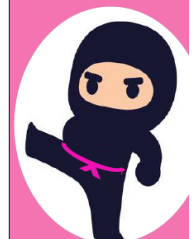
# Ninja bead sliders for all the ways to make!

Early Years Pack – Addition – Unit 4 – Lesson 1





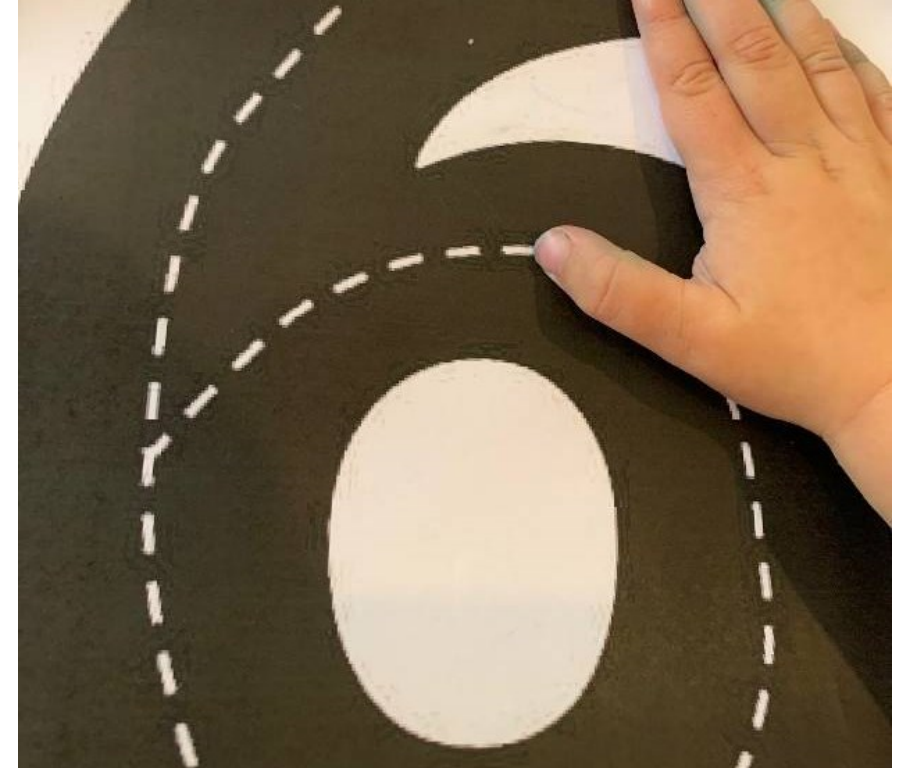
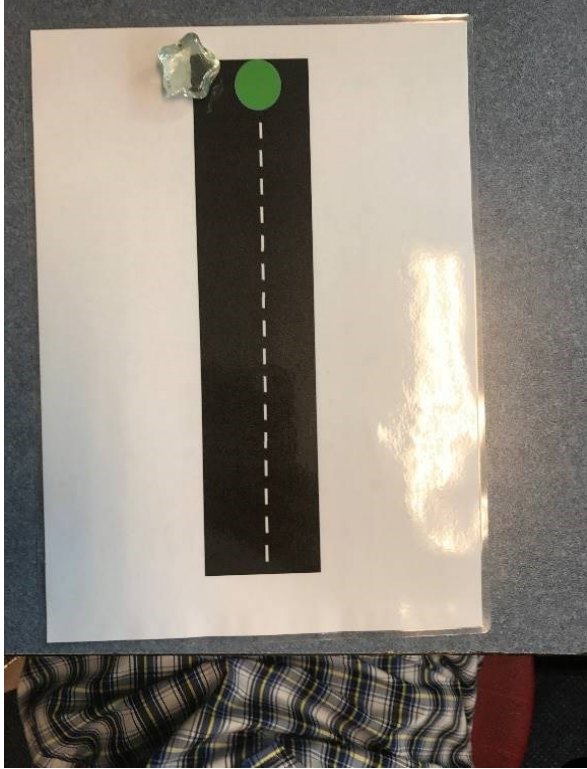
## Congratulations



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You achieved your magenta belt.  
You know all the ways to make 6!

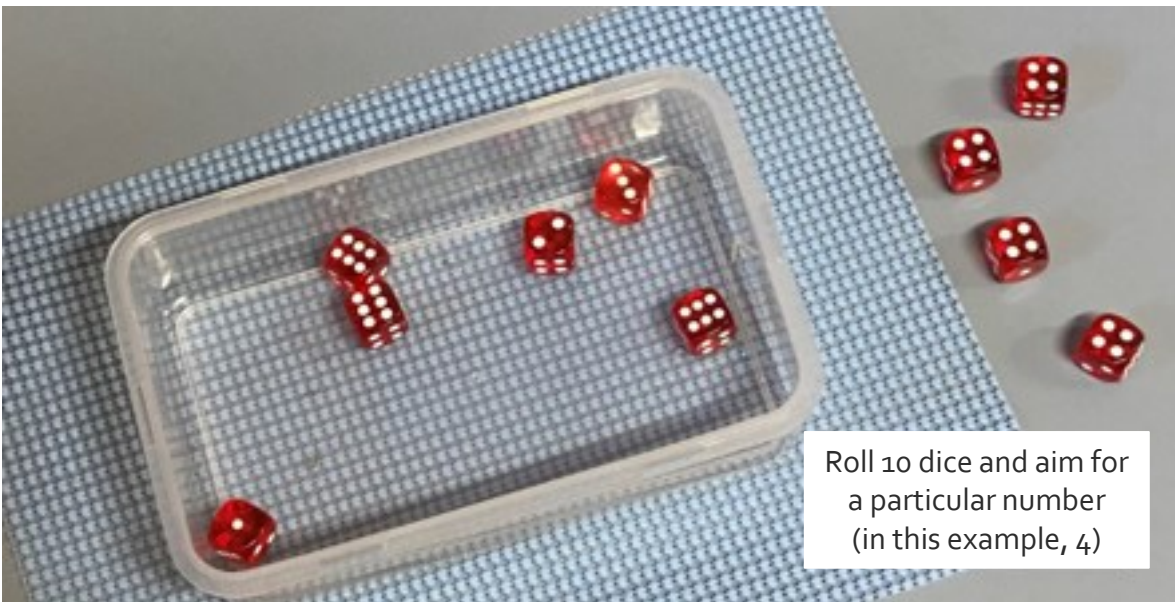
- Learn all the ways to make a number. Once you have mastered all the ways to make 6, you **earn your 6 ninja belt** and start working on 7!
- Run as an ongoing in-class warm-up or warm-down routine (sliders stuck to desks), as well as a home learning routine at bedtime – alongside home reading – throughout the year. Keep track using the included class formative assessment tracker.
- “2 and 3 is 5” (flip the bead slider around), “3 and 2 is 5” (push one across), “4 and 1 is 5 (flip the bead slider around), “1 and 4 is 5 (push one across), “0 and 5 is 5” (flip the bead slider around), “5 and 0 is 5.”



# Digit road warm-downs

*Early Years Pack – Place Value – Unit 4 – Lesson 1*

- Set up correct muscle memories from the start (or rectify mistaken muscle memories) using digit roads as a warm-down routine at the end of every maths session for 5 minutes. Sing the digit's song together, as students trace around it with a counter. "Around the tree, around the tree, that makes number 3!"
- Flip the page for fine motor practise with pencils, as students continue to whisper sing to themselves.
- Use to target reversals – provide students with a point-of-need digit each time you witness a reversal in class.
- Use the recommended desk chart in the unit plan to assist students ( / without a hat or shoes, 5 as neck, belly, hat).
- Tell students a story about how digits love to start from the top: When you eat, you feed yourself from the top. Don't feed the digits from their bottoms – that's disgusting!



Roll 10 dice and aim for a particular number (in this example, 4)

**Extension 1:** Choose a number (6 or more), so that it is made using 2 or more dice rolled. For example, student A chose 8. After the 10 dice are rolled, they take a turn to collect a dice showing 5 and 3 to make 8. Student B chose 7, so collects a 6 and 1. Take turns to collect, until neither can make their target numbers, then re-roll remaining dice.

**Extension 2:** Add all 10 dice rolled by combining dice into friendly combinations (10 facts, doubles). Arrange the dice to show how you did it in your head.

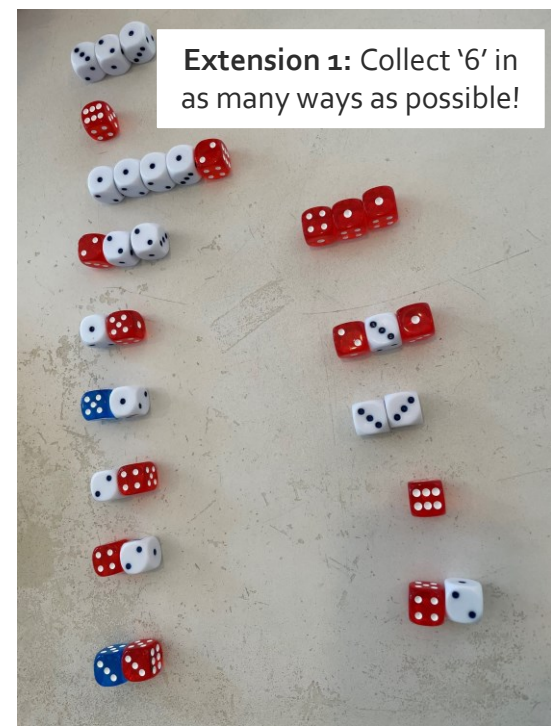
**Tip:** Don't have this many dice? Very cheap small dice can be purchased on Amazon, eBay, Temu OR raid the maths storeroom!

# TENZI

*Early Years Pack – Place Value – Unit 5 – Lesson 2*



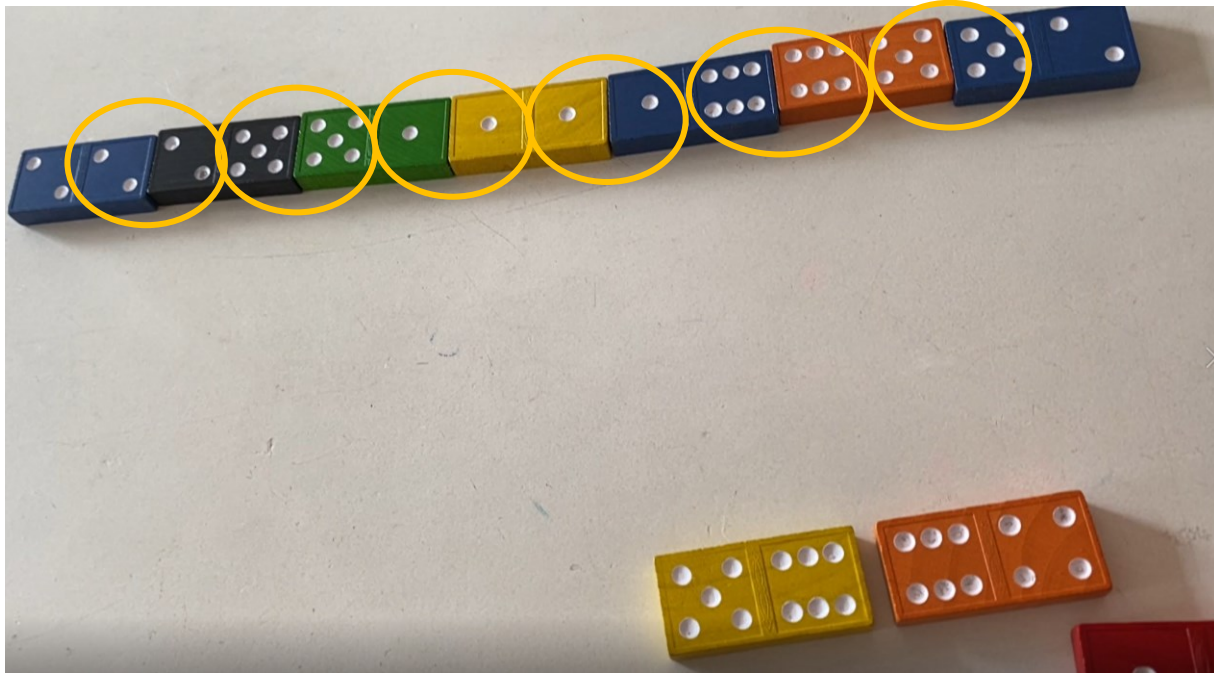
**Extension 2:** Roll 10 dice. Next, arrange the dice so that the total is easier to add (mostly using 10 facts in the example below).



**Extension 1:** Collect '6' in as many ways as possible!

- Play against a partner. Each choose a different number to practise subitising (seeing with your maths superhero eyes, rather than counting). For example, student A chooses 4 and student B chooses 5.
- Roll ten 6-sided dot dice. After rolling, collect dice that show your number. Place these on your side (beside the mat).
- Continue rolling the other dice. The player who collects more dice, once all are collected, wins!
- Practise seeing the number – not counting it, but trusting it and seeing its parts (I see 5 as 4 in the corners and 1 in the middle, or 2 at the top and 3 at the bottom).





- Play against a partner. Start with 6 dominoes each. Start with one domino in the centre and create a train.
- Try to get rid of one domino on each turn, by placing it next to a matching side (same number of dots on that side).



Focus on seeing (subbitising: maths superhero eyes), rather than counting, how many dots are on each side.

# Domino Trains

*Early Years Pack – Place Value – Unit 5 – Lesson 6*

**Extension 1:** Match using an operation (rather than only subitising exact matches).

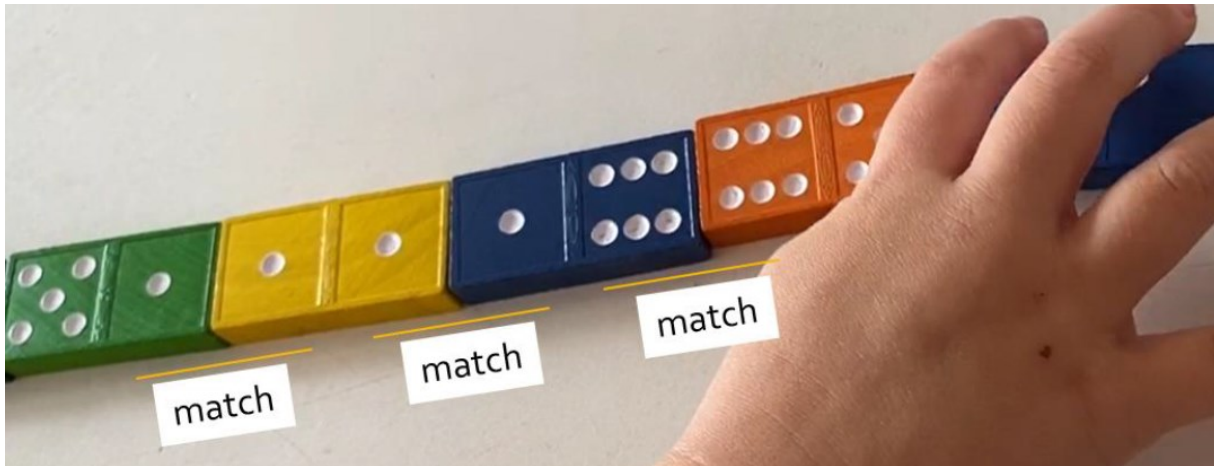
For example:



Student A: " $4 + 4 = 4 \times 2$ "

Student B: " $4 + 2 = 3 + 3$ "

**Extension 2:** All operations are in play, including multiplication and division. For example, a domino of 3 | 3 can be matched to 6 | 3 because  $3 \times 3 = 6 + 3$ . Or a domino of 6 | 2 can be matched to 3 | 1 because  $6 \div 2 = 3 \div 1$ . Also match to only one side: 4 | 6 can be matched to 2 | 3 because  $6 = 2 \times 3$ .



1								10
11								
	22	24						
<del>40</del>			35					40
	42							
								60
	63		66			69		
				87		89		
	92							
								120

**Extension 1:** Roll 4 dice. Choose 2 dice to use to make a number. For example, if you rolled '4,' '3,' '9' and '8,' you could make 34, 38, 39, 43, 48, 49, 83, 84, 89, 93, 94 or 98. This makes the game much more about strategy and less about luck/chance!

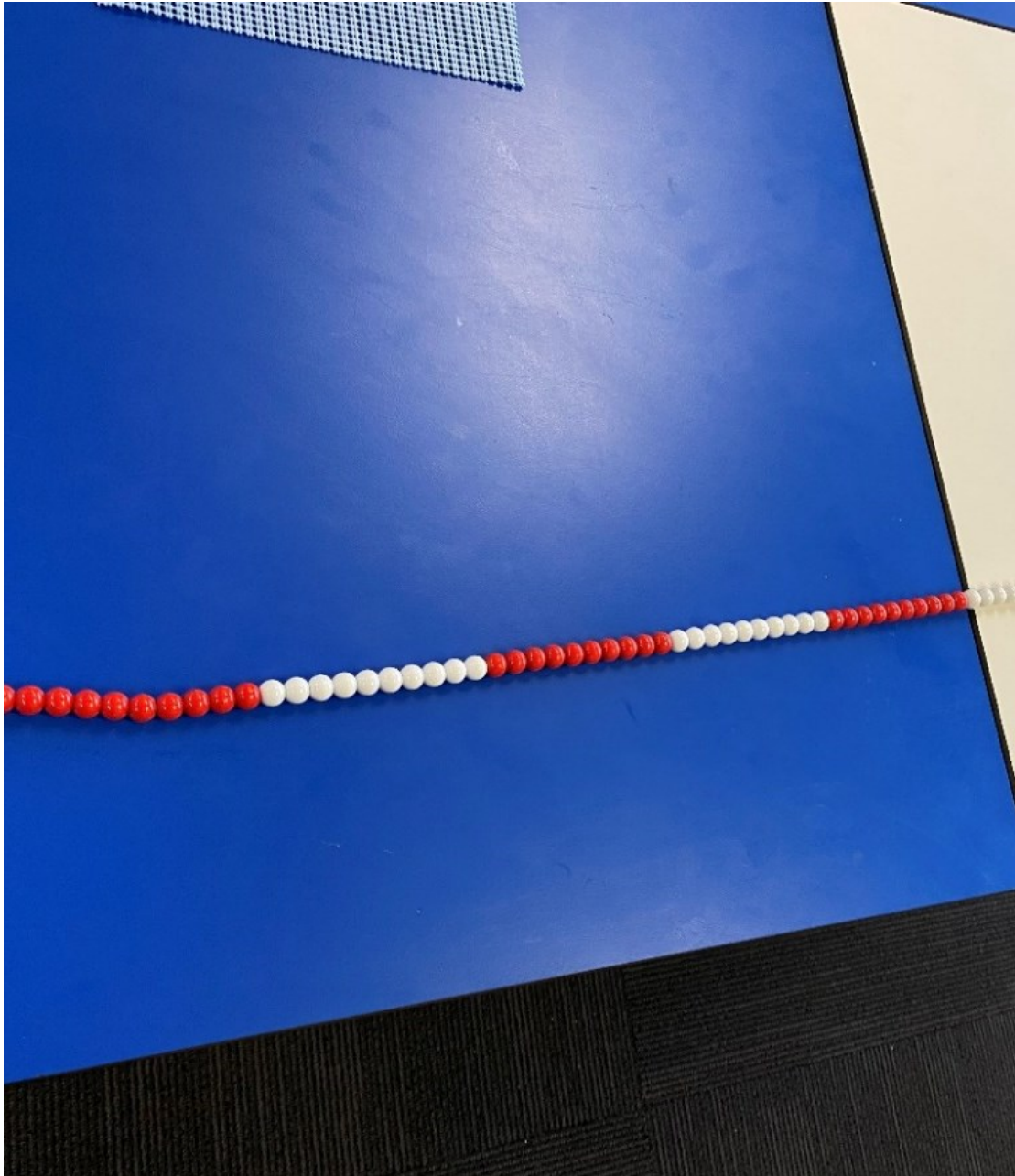
**Extension 2:** Use 4 dice and operations (+, -, x, ÷) to score a number – all 4 numbers rolled must be used in the equation.

**Extension 3:** Use the decimal version of the blank chart: 0.01 to 1.20. Use extension 2, rolling 4 dice for equations with decimal answers.

# Connect 4

*Early Years Pack – Place Value – Unit 12 – Lesson 19, templates on the pages that follow the lesson plan*

- Take turns against a partner. Roll two 10-sided dice.
- Use two different coloured pencils (student A blue, student B red).
- The first player to connect 4 of their numbers in their coloured pencil (vertically, horizontally or diagonally) wins!
- Place the number you roll on the chart in its correct position. Justify why it is correct.
- Use numbers already on the chart to assist you. For example, if you rolled '7' and '6,' you could make 67 or 76. If you choose 76, then use 66 (already on the board) and add ten (one row) to find the position of 76.
- Your partner must then check that it was placed in the correct position. Continue until one player connects 4!



**Critical rule:** If you are correct in the answer (how to make 100/complement of 100), keep the number of beads you rolled – those are now yours and assist towards your tug of war. If you are incorrect, return the beads to your partner's side. This ensures the game is a mix of skill and chance, and incentivises students to think very hard!

# Tug of war

*Early Years Pack – Place Value – Unit 12 – Lesson 9*

- Play against a partner with a 100-bead line. Split the beads in half, with 50 on either side. It is a tug of war!
- Roll one 10-sided dice (let's say you roll 7). Pull that quantity of beads towards your side, taking them from your partner's side. At the same time, your partner hides the rest of their beads (the remaining quantity) curled up in their hand.
- Now your challenge is to work out how many you have on your side and how many your partner has on their side – the number hidden/curled up in their hand. How many more is it to make 100 from what you have? "I have 57, you have 43!" **Careful – it is not 57 and 53, as that would be 110, not 100!** It can help to start at 57, add 3 to 60, then add 40, so you added 3 and 40, so 43!