

UNDERSTANDING SINGLE DIGIT MULTIPLICATION

MINI-LESSON

For the Understanding Single Digit Multiplication key concept



Summary

Students investigate patterns with numbers of 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s and 10s on 100-charts.



Suitable for 2-6 students



Length 30 min (approximately)



Lesson Preparation

- Print **cube sheets** – one colour copy per pair of students ([download](#))
- Print **100-chart sheets** – one double-sided copy for each student ([download](#))
- **Unifix/wooden cubes/counters** – 2 colours x 50 cubes (i.e. 100 cubes) per pair of students (Note: you can get each pair of students to count the blocks needed at the start of the activity)

LEARNING INTENTIONS

This activity helps students to grasp the meaning of multiplication and to make steps towards memorising multiplication facts:

- Understand that multiplication is repeated addition of a number (e.g. 3×4 means $4 + 4 + 4$).
- Use a 100-chart to place multiplication facts and identify patterns.
- Identify any patterns in the ones digits of multiplication facts.
- Understand that 3 times 4 is the same as 4 times 3.

CURRICULUM LINKS

- Multiplication and division facts 2, 3, 5 and 10 (ACMNA056)
- Multiplication problem solving (ACMNA057)
- Counting by 3s, 4s, 6s, 7s, 8s and 9s (ACMNA074)
- 3, 4, 6, 7, 8 and 9 times tables (ACMNA075)
- Multiples and factors (AMNA098)

AFTER THE LESSON

In later lessons, follow up with practice of multiplication facts. Students may find it useful to have access to 100-charts during this practice.

INTRODUCTION

2 MINUTES

Introduction: Place 6 wooden cubes/unifix/counters of the same colour on the first 6 boxes on the cube sheet. This is one 6 (i.e. 1×6):

						7	8	9	10
11	12	13	14	15	16	17	18	19	20

Using alternate colours for each number of 6, continue placing wooden cubes/unifix/counters on the cube sheet. This shows two 6s (i.e. 2×6):

		13	14	15	16	17	18	19	20

Continue up to ten 6s (i.e. 10×6).

Whole group:
Watch or assist (e.g. by laying the numbers of 6s onto the cube sheet).

DEMONSTRATION

3 MINUTES

Introduction: On a separate 100-chart, circle each product of the numbers of 6s in a bright pen. A geometric pattern appears:

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

Ask students to identify patterns that appear, including:

- geometric patterns (i.e. how circled numbers appear in diagonals, columns and rows)
- the ones-digit pattern (i.e. 6, 2, 8, 4, 0, 6, 2, 8, etc. – observe that they are all even numbers).

Whole group:
Identify the geometric and ones-digit patterns.

DIRECT PAIRS OF STUDENTS

20 MINUTES

Direct pairs of students: For each pair of students, give 2-4 numbers from this list: numbers of 2s, 3s, 4s, 5s, 7s, 8s, 9s and 10s. Have each pair do the same as was done with the numbers of 6s and record their findings on the 100-chart sheet. [Note, you can give numbers in related sets (e.g. 3s, 6s & 9s).]

Prompt student thinking: As students work, ask scaffolding questions e.g.:

- Is 2×3 the same as 3×2 ? Why?
- What ones-digit patterns do you notice? Are the ones-digits even/odd?
- Are all digits used for the numbers of 4s?
- What do you notice about how the numbers of 8s are laid out on the 100-chart? Are there patterns in the rows, columns or diagonals? E.g. in the 100-chart above, there are 2 circled numbers in every second column.
- What numbers have been circled in more than one 100-chart? E.g. the numbers of 8s (8, 16, 24, etc.) can be found in the numbers of 2s.
- What are some numbers that have many factors? What are some numbers that have no factors? [Note, you may need to discuss what a factor is.]

In pairs: work on the same activity for 2-4 of these numbers: numbers of 2s, 3s, 4s, 5s, 7s, 8s, 9s, 10s, (up to $10 \times$ for each number). Record findings on 100-chart sheet.

DISCUSSION

5 MINUTES

Ask students questions about what they have learned, such as:

- What patterns did you notice on the 100-charts?
- Can you explain why there are these patterns?
- Were there some patterns you can't explain?

Whole group:
Identify and explain the patterns found.