Year 4 - Mathematics - Learn from home timetable

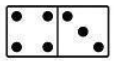
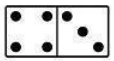
Big Idea Concept: Number Patterns in Multiplication

I can:

- Explore and describe number patterns that result from performing multiplication
- Determine any number in the sequence by performing multiplication
- Recognize and represent multiplication as repeated addition
- Identify examples of number patterns in everyday life related to multiplication

Pre-requisite knowledge: The ability to skip count by varying numbers using varying starting points, e.g. counting in 2's from 9, counting in 3's from 13 etc …

Australian Curriculum Connection: NA4.11 Explore and describe number patterns resulting from performing multiplication – identifying examples of number patterns in everyday life.

Monday	Tuesday	Wednesday	Thursday	Friday
Launch and Tune In **Fluency Activity: Skip Counting** 1. Skip count in 2, 3, 5, 10 starting from odd and even numbers. Initially begin with numbers less than 100. Extend skip counting to numbers larger than 100. 2. As you skip count, record the numerals – Do you notice a pattern forming? **Challenge:** Can you skip count 3's and 4's in numbers larger than 1000? Is the pattern the same as the smaller numbers?	**Launch and Tune In** **Multiplication and Division with Cards and Dice** Using cards, dice or Dominoes students randomly select and then use them in a multiplication or division problem. **Example:** Dominoes learners can select one die and use it as a multiplication.  4 times 3 equals 12. This can be a timed activity to race to see how many answers can be gotten in a specified period of time. **Another alternative** is to use the 2 numbers together and try and identify a multiple or division. 43 does not divide evenly by 2. Use a turnaround and 34 can. For **cards** same as above but use 2 cards, possible ways of multiplying to get that number and its division turnarounds. e.g. Dealt 12: 2x6=12, 6x2=12, 3x4=12, 4x3=12, 12 ÷ 3=4, 12÷ 4=3, 12÷2=6, 12 ÷6=2	**Launch and Tune In** **Fluency Activity Using multiplication and division grids.** Using the completed multiplication and division grids completed on Tuesday. Ask student to locate firstly multiplication facts and then division facts by using the top an side axis to locate the correct answer. This can be done as a timed activity. How many can you locate in two minutes?	**Launch and Tune In** Choose an activity from the three preceding days based on student need or enjoyment.	**Launch and Tune In** **Multiplication and Division with Cards and Dice** Using cards, dice or Dominoes students randomly select and then use them in a multiplication or division problem. **Example:** Dominoes learners can select one die and use it as a multiplication.  4 times 3 equals 12. This can be a timed activity to race to see how many answers can be gotten in a specified period of time. **Another alternative** is to use the 2 numbers together and try and identify a multiple or division. 43 does not divide evenly by 2. Use a turnaround and 34 can. For **cards** same as above but use 2 cards, possible ways of multiplying to get that number and its division turnarounds. e.g. Dealt 12: 2x6=12, 6x2=12, 3x4=12, 4x3=12, 12 ÷ 3=4, 12÷ 4=3, 12÷2=6, 12 ÷6=2

Vocabulary: skip counting, tens, hundreds, thousands, ten thousands, pattern, multiply by, repeated addition, multiples, repeated subtraction, turn arounds, multiplication, repetition, division, divisible by, sharing, equals, total, lots of,

Conceptual Development

Introductory Activity

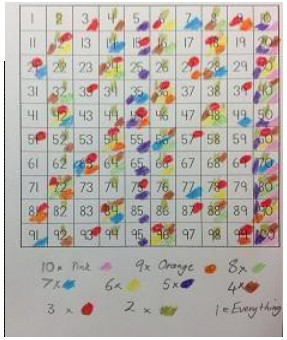
1. Recall and discuss multiplication facts up to 10 × 10 and related division facts. Make a list of these facts in two columns. One for multiplication with a corresponding division. E.g.

Multiplying by 0	Dividing by 0
Multiplying by 1	Dividing by 1
Multiplying by 2	Dividing by 2

It is not necessary to write out the facts at this stage

2. Review the idea of multiplication being repeated addition. Discuss that numbers have multiples, i.e. numbers that when multiplied together result in that number. E.g. 10 has the multiples of 2 and 5, 1 and 10.

3. Give student a hundreds board and have them put a dot beside in the numbers that have a multiple of 10. E.g. 100, 20 etc. Start with larger multiples and work to the smaller multiples. Suggest that the students use a different colour for different multiples it allows students to see that some numbers have lots of multiples while others have none. Have students write the multiple in the colour of the dot. E.g. The dot for multiples of 10 have a blue dot, write 10 at the side in blue.



Conceptual Development

Activity: Looking at Multiplication and Division together.

1. Students use a coloured hundred board with multiples.
Students then complete a blank 1- 10 division table sheet. Compare the multiplication coloured sheet and the student completed sheet and discuss the relationship between the facts. Division and Multiplication can be turnarounds.
If 3 x 7 = 21 then 21 ÷ 7 = 3 or 21 ÷ 3 = 7.

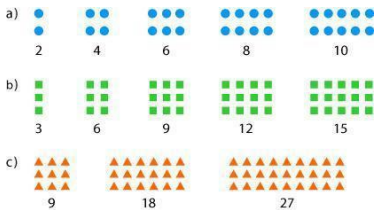
2. Review with student that multiplication is repeated addition. Division is sharing or repeated subtraction. Discuss how this statement is true.

3. Have students look at the recording sheets and explain some of the patterns that they see.

* Developing learners can have access to blocks to physically view the sharing or division process.

Conceptual Development

Activity: Identifying patterns



1. Draw or use counters to represent the counting in two's pattern above. Ask the student to identify the pattern. Link the pattern to the x2 multiplication fact.
2. Draw or use counters to represent a multiply three's pattern above. Ask the student to identify the pattern. What is the pattern you see and how can this be linked to multiplication and division?

3. Repeat the process from above to represent the x 9 represented above.

4. Ask the student to draw or represent a x 5. Discuss how the pattern can be linked to multiplication and division.

Learning Journal

This is a Learning Journal Activity to capture understanding and learning

Activity: Identifying patterns in times tables.

Have student use two facing pages in their learning journal and write down Multiplication on one side and the respective division on the other.

1. Ask student to write out the multiplication tables and answers from 0 to 10. When this is complete, ask the student to highlight and annotate beside the table to show what patterns they can see. Give the student a few minutes to try and see the patterns themselves. Discuss the patterns or provide a prompt – what do you notice about multiplying with zero,

2. Record the observations in the learning journal, e.g. "All multiples of 2 always end in an even number."
"In the 9's the one digit gets smaller by one each time and the tens get bigger by one."

3. Discuss with learners the ideas and relationships they have identified when comparing and contrasting the multiplication and the division at the same time. 3 x 4 = 12 so if we look directly across at the division side, 12÷4 = 3

The grids used on Tuesday can be used to complete this activity.

Conceptual Development

Activity: **A number 4 ways**

After students have engaged in previous activities, they should be noticing that some numbers can be said to have 4 like facts. 2x6=12, 6x2=12, 3x4=12, 4x3=12, 12 ÷ 3=4, 12÷ 4=3, 12÷2=6,
12 ÷6=2
Multiplication can be turned around and then the same total can be divided in the same way.
Give students 1 like facts and then they have to fill in the missing 3, some examples 16, 18 20

Then change your questions so that students now have to write the missing number. 3x?=12, 35 ÷ ? =7
Discuss with students that we can do the opposite operation. 12÷3=? 35÷7 =?
be 2 x 17 or 34 ÷ 2 = 17.

Note: not all numbers have more than one set of multiples, if you come across a number that only has one set of multiples (i.e. 1 and the number itself, talk to the student about this and indicate they're called prime numbers. Prime and composite numbers are not the focus of this series of lessons and as such do not require a full explanation other than to note that some numbers have more than one set of multiples while others have more than one.

Learning Journal Glue marked hundreds board in learning journal. Discuss and record your observations. Which numbers on the hundreds board have only a few multiples? Which numbers have many multiples? Which numbers have none? Can you propose any reasons for this?	**Learning Journal** Glue multiplication and divisions squares in your learning journal. 1. Explain in your own words with an example how Division and multiplication are turnarounds. 2. Describe at least two of the patterns you saw.	**Learning Journal** Draw a x 6 pattern and write how the pattern can be linked to multiplication and division.	.	**Learning Journal** **Students look for patterns in nature:** Student looks around the house or outside to see if there are any number patterns, e.g. flowers all being 5 or 7 petals. Work out how many petals on the plant by counting the flowers and multiplying by 5 or 7, number of fronds on a palm leaf, a trail of ants. Louvers/ panes of glass in a window. Student photographs or writes a description (including the related multiplication/ division fact in their learning journal.

Problem Solving and Reasoning:
Digital Learning
Using a calculator students experiment with larger numbers and multiplication. Students write down numbers to see if they see any patterns that they can describe. Try this using any number. Describe the pattern and your reasoning.

$1 \times 1 = 1$
$11 \times 11 = 121$
$111 \times 111 = 12321$
$1111 \times 1111 = 1234321$
$11111 \times 11111 = 123454321$
$111111 \times 111111 = 12345654321$
$1111111 \times 1111111 = 1234567654321$
$11111111 \times 11111111 = 123456787654321$
$111111111 \times 111111111 = 12345678987654321$

x	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

÷	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

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