

Australian Curriculum YR 4

ACMNA075 Recall multiplication facts up to 10 x 10 and related division facts

- **Count** by fours, sixes, sevens, eights, and nines using skip counting
- **Use** the term product to describe the result of multiplying two or more numbers
- **Use** mental strategies to build multiplication facts to at least 10 x 10
- **Find** multiples for a given whole number
- **Use** the equals sign to record equivalent number relationships involving multiplication and to mean 'is the same as' rather than to mean 'perform an operation'
- **Connect** number relationships involving multiplication to factors of a number

Key Ideas-

- The commutative property of multiplication states that 3 x 5 is the same value as 5 x 3.
- Multiplication involves finding the total in all the groups.
- Division finds the missing part (factor), when we know one part and the total (product).
- Linking multiplication and division as inverse operations just as addition and subtraction undo each other.

Suggested sequence for teaching multiplication facts:

x0, x1, x10, x5

x11

x2, x4, x8

x9, x3, x6

x7 x12

Introductory Activity Process- Review of Multiplication

- Ask students to brainstorm, either in writing/ pictures or diagrams, all they know about the concept of multiplication. Share and discuss, adding any language to the maths word wall.
- When do we use multiplication in real life? Why do we need to know multiplication facts?
- Review link to repeated addition.
- Arrays
 1. Children draw rectangles on grid paper that match the dimensions of particular facts. Turning the rectangle (array) will demonstrate the commutative property of multiplication e.g. 3 x 5 is the same value as 5 x 3.
 2. Provide geoboards, grid paper, counters or cubes for students to make arrays.
 3. Class arrays - students in the class are divided into groups with different numbers in each group; e.g. 6, 9, 10. One group comes to the front of the class and arranges themselves in an array; e.g. six students could arrange themselves in two rows with three students in each. Students who are not part of that group have to work out the related multiplication and division sentences.
 4. PowerPoint presentations: a) Multiplication is commutative b) Multiplication arrays c) Arrays.2 located in [Multiplication Resources - Review of multiplication concept - Arrays]
 5. Array Worksheets located in [Multiplication Resources - Review of multiplication concept - Arrays]
- Linking multiplication and division as inverse operations just as addition and subtraction undo each other.
 1. Use 20 flashcards of multiplication number sentences and 20 matching division number sentences to play games such as 'Concentration', 'Snap' or 'Fish'.

2. Triangle card game - The triangular-shaped [templates](#) can be used to show the connection between multiplication and division. Write each blank card with three related numbers on each corner of a card with the highest number written on the top of the triangle. Use as flashcards with a partner who covers one number with their finger. The other person must use multiplication or division to work out the missing number.
3. Multiplication/Division Worksheets located in [Multiplication Resources - Review of multiplication concept - Mult.Div Link]
 - It is valuable at this point to draw attention to the language clues of word problems - differentiating between the language of addition, subtraction, multiplication and division. Make word banks for each operation with the children.
 1. Use student texts to highlight language of word problems
 2. Alternative resources located in [Multiplication Resources - Review of multiplication concept - Word.Pic Problems]

Activity Process- 0x, 1x, 10x, 5x

Strategies:

- **Multiplication by 0 (grey)**
Students can easily grasp that 0 times any number is zero
- **Multiplication by 1 (grey)**
Again students can see that 1 times any number is the number
- **Multiplication by 10 (grey)**
This is the same strategy as counting on by 10.

● **Multiplication by 5 (grey)**

This is the same as counting on by 5. Each answer ends in a 5 or 0.

'Ten then Five' x10 facts come quite easily to children. Using an array of a ten fact and folding it in half allows the children to see that 5 is half of 10, half of a 10 fact is a 5 fact e.g. $6 \times 10 = 60$ so 6×5 is half of this = 30

x	0	1	2	3	4	5	6	7	8	9	10	11	12
0													
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													

Resources:

Worksheets:

1. Student workbook - Multiplication Tables Revision
 2. 2x, 5x, 10x Worksheet
 3. 2x, 4x, 5x Worksheet
 4. Missing Picture 5x table
 5. Gingerbread Men 10x table
 6. Toes 10x table
- W/S 2-6 located in [Multiplication Resources - x5, x10]

Games:

1. x2, x5, x10 Bingo located in [Multiplication Resources - x5, x10]

Interactive PowerPoint's:

1. Times 5 auto
 2. 5 tables interactive
 3. Jeopardy x5
- located in [Multiplication Resources – Interactive tables not in order - x5, x10]

Activity Process- 11x

Strategy:

● **Multiplication by 11 (purple)**

The answer is always two of the multiplicand e.g. $3 \times 11 = 33$, $5 \times 11 = 55$... up to $9 \times 11 = 99$

For $10 \times 11 =$ Write the multiplicand 10 with a space in the middle e.g. 1__0, then in the middle write the sum of the two digits e.g. 110; $11 \times 11 = 1_1 = 121$; $12 \times 11 = 1_2 = 132$

x	0	1	2	3	4	5	6	7	8	9	10	11	12
0													
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													

Activity Process- 2x, 4x, 8x

Strategies:

● **Multiplication by 2 (yellow)**

This is the 'double strategy' used in addition. $3 \times 2 = 6$

● **Multiplication by 4 (yellow)**

'Double-double strategy' involves doubling 'twos' facts to calculate a 'fours' fact or its turnaround. 4×7 can be thought of as double 7 is 14. Double that is 28

● **Multiplication by 8 (yellow)**

'Double-double-double strategy' involves repeated doubling from a twos fact to calculate an eights fact or its turnaround. 8×7 can be thought of as double 7 is 14. Double 14 is 28 and double 28 is 56.

x	0	1	2	3	4	5	6	7	8	9	10	11	12
0													
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													

Possible Resources:

Worksheets:

1. Student workbook - x2, x4
 2. Student workbook - x8
 3. Student workbook - x2, x4, x8
 4. Bears 2x table
 5. Missing picture 2x table
 6. x4
 7. x4 + brackets; x4 + brackets.2
 8. 4x Trios
 9. Mult.Div by 4
 10. x2, x4, x5
- W/S 4-10 located in [Multiplication Resources - x2, x4 x8]

Interactive PowerPoint's:

1. Times 2 auto
 2. 2 tables interactive
 3. Times 4 auto
 4. 4 tables interactive
 5. Jeopardy x4
 6. Times 8 auto
 7. 8 tables interactive
 8. Jeopardy x8
- located in [Multiplication Resources – Interactive tables not in order - x2, x4, x8]

Activity Process- 9x, 3x, 6x

Strategies:

x	0	1	2	3	4	5	6	7	8	9	10	11	12
0													
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													

● **Multiplication by 9 (orange)**

Patterns emerge when multiplying by 9. $1 \times 9 = 9$, $2 \times 9 = 18$, $3 \times 9 = 27$ the sum of the digits is equal to 9.

- For each fact use a hundreds chart to mark off the multiples by using skip counting located in [Multiplication Resources - Interactive Tables in order - Multiples]

The other pattern can be seen vertically

$1 \times 9 =$	0	9	$(0+9=9)$
$2 \times 9 =$	1	8	$(1+8=9)$
$3 \times 9 =$	2	7	$(2+7=9)$
$4 \times 9 =$	3	6	$(3+6=9)$
$5 \times 9 =$	4	5	$(4+5=9)$

'Finger Trick' Use both hands palms down. If you want to do 3×9 , bend your third finger.

Count the number of fingers to the left of the bent finger (2) - these represent the number of tens.

The number of fingers to the right of the bent finger (7) - represent the number of ones.

Thus $3 \times 9 = 2 \text{ tens} + 7 \text{ ones} = 27$

- **Multiplication by 3 & 6 - Choose the strategy that you find easier to learn only those facts that have not been covered yet (x3=red; x6=blue)**

'Build-down strategy' This involves building down from a known fact to calculate an unknown fact or its turnaround. $9 \times 3 = 27$ can be thought of as $10 \times 3 = 30$ less $1 \times 3 = 3$ therefore 27

'Build-up strategy' This involves building up from a known fact to calculate an unknown fact or its turnaround. $6 \times 3 = 18$ can be thought of as $5 \times 3 = 15$ plus $1 \times 3 = 3$ therefore 18; or $7 \times 3 = 21$ can be thought of as $2 \times 7 = 14$ plus $1 \times 7 = 7$ therefore $14 + 7 = 21$

Resources:

PowerPoint:

1. 9 times table finger trick located in [Multiplication Resources - x3, x6, x9]

Worksheets:

1. Student workbook- x3, x6
 2. Student workbook - x9
 3. 9x table word search
 4. x9.div hidden word
 5. x3 trios
 6. x3 +brackets
 7. 6x table speed test
 8. x6 +brackets
- W/S 3 - 8 located in [Multiplication Resources - x3, x6, x9]

Interactive PowerPoint's:

1. Times 3 auto
 2. 3 tables interactive
 3. Jeopardy x3
 4. x3
 5. Times 6 auto
 6. 6 tables interactive
 7. Jeopardy x6
 8. Times 9 auto
 9. 9 tables interactive
 10. Jeopardy x9
- located in [Multiplication Resources - Interactive tables not in order - x3, x6, x9]

Activity Process- 7x, 12x

Strategies:

- The remaining facts (white) have to be learnt by rote e.g. $7 \times 7 = 49$, $7 \times 12 = 84$, $12 \times 7 = 84$, $12 \times 12 = 144$

Resources:

Worksheets:

1. Student workbook - x7
2. x7 +bracket located in [Multiplication Resources - x7]

Interactive PowerPoint's:

1. Times 7 auto
2. 7 tables interactive
3. Times 7 auto
4. x6, x7, x8

located in [Multiplication Resources - Interactive tables not in order - x7]

Activity Process- Generic Activities for any multiplication facts

Activities:

- Chants/Songs - Times Table CD; PowerPoint's located in [Multiplication Resources - Interactive Tables in order]
- Using a multiplication recording grid, students can, over time, fill in the blanks with the facts they know. Point out to them that if they know 2×3 then they also know 3×2 so two sections can be filled in (commutative property). Use different colours to mark each new set. [Multiplication Resources - Multiplication Recording Grid]

Speed Tests:

1. Student workbook - Single table grids
2. Student workbook - Speed wheels
3. Various located in [Multiplication Resources - Speed Tests]

Flashcards:

1. Used with a partner to practise immediate recall, sort into known and unknown facts as they are answered. Practise unknown facts on second run through. [Flashcards - question on front, answer on back]
2. Beat the clock - Students work in pairs. One shows cards and the other answers. If the student answers correctly, that card is placed in a pile; if not, it is replaced at the back of the pack. The aim of the activity is to correctly answer as many tables as possible in a set time (such as one minute) or to use a timer to work out who completes one set of cards faster. [Flashcards - question on front, answer on back]

Dice games:

1. Give each student a 6x6 multiplication grid (Signpost BLM 12, p.204) and take turns to throw two dice (0-5). Multiply the numbers and fill in that space on the grid. When a player has five numbers in a row the game is over.
2. Play round the world with the person standing rolling 2 die. Multiply the total of the two die with the number fact being consolidated that week e.g. Die = $3 + 2 = 5$ times # fact being consolidated $4, 5 \times 4 = 20$. First to answer correctly moves on to the next player.
3. Win & Lose: Each player starts with 100 in place-value blocks. Each player in turn tosses a coin and rolls two dice. If heads is tossed, the product of the two dice is won from the bank. If tails is tossed, the amount is lost to the bank. After five throws each, the player with the highest number wins.

Assessment

Students work in pairs to create their own game boards; a worthwhile challenge. They learn by experimenting and by making mistakes, about what factors and products to include in a game.

Assessment: Make your own product

Children complete timed multiplication grids on a regular basis to increase their speed. Improvement measured against their own previous score and time. *Challenge them to Beat the*

'I have, who has?' cards:

1. Multiplication - 1 pp.61-65
 2. Multiplication - 2 pp.66-70
 3. Multiplication - 3 pp.71-75
 4. Multiplication - 4 pp.76-80
 5. Working with doubles pp.81-85
- ('I have, who has?' - Mathematics Ages 8-10, R.I.C Publications 2010)

Card games:

1. The above dice game #1 could be played using cards with the face cards removed. The jokers could be kept to represent 0. Use a larger grid to play on (Signpost BLM 12, p.204).

Bingo:

1. x2, x3, x4, x5, x10 (Number and Algebra Year 4, RIC Publications, pp.50 & 51)
2. x6, x7, x8, x9 (Number and Algebra Year 4, RIC Publications, pp.52 & 53)
3. Blank (Number and Algebra Year 4, RIC Publications, p.54)
4. Bingo located in [Multiplication Resources - Generic]

Games:

1. Counter Game
 2. Game goal
 3. Laminate & Write multiplication cards
 4. Tables & Answer Match cards
 5. Trionimoes Puzzle.1 & .2
- located in [Multiplication Resources - Generic]

Worksheets:

1. Student Workbook - Multiplication Tables Review
 2. Function Machine
 3. x height
 4. Stair Sprints
- located in [Multiplication Resources - Generic]

Interactive Basic Games:

<http://www.fun4thebrain.com/multiplication/alienmunchmult.html>



<http://www.fun4thebrain.com/Division/alienmunchdiv.html>



<http://www.fun4thebrain.com/multiplication/herocostumecloset.html>

www.maths-games.org/times-tables-games.html

5. Moon Maths Game
6. 4 in a row
7. Tables Practice all sets
8. Write a number sentence for
located in [Multiplication Resources - Interactive tables not in order - Generic]

Teacher's Time!

Background

- In Year 2/3? children were introduced to the concept of multiplication as repeated addition before moving on to 'groups of' or 'lots of'.

Children need to be confident in this understanding to be able to see the effectiveness and value of using multiplication.
- A solid number sense is invaluable for children to be able to manipulate numbers using any operation.
- Children need to understand the meaning of what they are doing with numbers, but at some point they need to have the facts memorised in order to work on larger algorithms without having to work through the basic facts strategy first.

Rote learning of multiplication tables is not a strategy for *understanding facts*. It is one tool for *memorising facts* that when combined with music is effective for many children.

Website many resources collected from:

<http://www.primaryresources.co.uk/maths/mathsC2.htm>



Word Wall:

number story, grid, row, pattern, groups of, rows of, times, multiplication, equals, estimate, word problem, number sentence, across, altogether, totals, makes, multiplication facts, speed, accuracy, table of twos [fours etc.], skip counting, multiply, lots of, product, arrays, multiples

[Links to other MAGs](#)