

Mathsercise

Year
4

CURRICULUM INTO THE CLASSROOM
Independent Learning Materials



Produced by:

Education Queensland C2C Project Team

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Icon legend



Sheet



Keep



Prac work



Tutor



English Pack



Send-in



Digital



Safety



Maths Pack



Science Pack



Focused teaching and learning



Play learning situations



Real life situations



Routines and transitions



Investigations

Introduction

This booklet is designed to support your student's knowledge of number facts, number, computation and content that underpins their understanding in mathematics.

The booklet has the following sections:

- Today's number
- Number facts — Addition and subtraction
- Let's calculate
- Everyday maths

It has been designed for tutors or teachers to use at their own discretion.

You may like to complete some of these activities as regular routines in the form of five-minute revision sessions each day or use them to reinforce and revise concepts that students have difficulty with. It is suggested that these activities be completed multiple times so that students work towards being flexible and confident mathematics learners.

With **Today's number**, students may choose a number or several numbers and then answer some of the activities.

To develop an understanding of **Number facts**, students need opportunities to:

- practise facts so that they can recall facts with fluency
- look for number patterns
- learn related facts together.

When learning number facts students can nominate:

- *Facts I know well*
- *Facts I do not know*
- *Facts I can work out.*

Visual models can be used to help students to learn number facts and to thoroughly develop knowledge.

Let's calculate is to practise calculating numbers. When teaching for understanding, students can begin to use concrete and visual representations and move along to symbolic representations.

The use of concrete material is appropriate for assisting all students in their mathematical development. The use of concrete materials will change as students progress throughout the year levels.

In **Everyday maths** students can be asked any practical mathematical questions that will help them in everyday life.

It may be useful to keep a separate exercise book for students to write their answers in or complete their working (if necessary).

Today's number

Number of the day

Have the students select and record a four-digit or five-digit number, for example:

5 268

Choose some activities from the following options:

Say the number

Write in words

Write the place value of each digit

Write the number on a number expander, close the number expander in different places, record the partitioning representations using number sentences for example:

5 000 + 200 + 60 + 8 or 5 200 + 68

Write the number before/after your 4 or 5 digit number

1 000 more than

100 less than

100 more than

10 less than

Write the number before and after

Round to the nearest 1 000

Round to the nearest 100

Play the number game Higher or lower

- Have a game leader, write a mystery number (up to five digits) on a piece of paper. Have the student show the tutor and then conceal it.
- Tell students the range of the mystery number, for example: 'The mystery number is between three-digits and five-digits' or 'The mystery number is larger than 10 but smaller than 50 000'.
(Note: Students may benefit from further scaffolding by recording the range on the board as the game progresses).
- Students attempt to guess the mystery number by saying what number they think it is.
- The game leader is only allowed to respond with 'higher' or 'lower' (no other clues) until the target number is reached.
- Students continue to diminish the range of possible answers until the target number is identified.

Number facts — Addition and subtraction

Card turnover — Addition and subtraction (a game for two or more players)

What you need:

- Two packs of playing cards (remove all Kings, Queens, Jacks and Jokers)

What to do:

- Place the cards in two piles face down.
- Students take it in turns to turn over the top card from each pile and add the numbers, for example: $6 + 3 = 9$.
- If the answer is correct, the student keeps the cards. If the answer is incorrect, the next student can attempt to answer the problem.
- The winner is the student holding the most cards at the end of the game.

Makes a number (a game for two players)

What you need:

- Two packs of playing cards (use only Ace (1)–9)

What to do:

- Deal out all the playing cards to both students. Students hold them face down.
- Students take it in turns putting the cards face up in the middle alternately in two piles.
- The first student to recognise that the two cards showing can be added to 'Make seven', calls out 'Makes seven'. That player wins all the cards in the middle.
- The overall winner is the player who gains all the cards.

The game can be adapted to 'Make six, Make eight' or Make ...'. The purpose is to reinforce number facts.

Multiplication grid

Have students open the **Learning object — Multiplication grid** to show the 2s facts.

Identify the related facts, for example: 2×6 and 6×2 .

Explain that for each row of facts, there is a corresponding column of equivalent facts.

Identify and discuss the other facts.

Students can record multiplication facts on the **Sheet — Multiplication grid**.

X	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

Arrays game

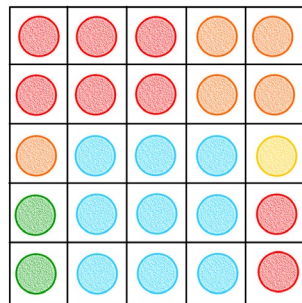
What you need:

- A 10 × 10 grid and access to counters for each student
- Two 1, 2, 3 dice

What to do:

- Roll two 1, 2, 3 dice. For each roll of the dice, have students use their counters to cover a portion of their grid as an array:
 - If 3 and 2 are rolled, students cover a 2 × 3 or 3 × 2 array.
 - If 1 and 2 are rolled, students cover a 1 × 2 or 2 × 1 array.
 - If a player cannot create an array in the remaining space on the grid, he/she waits for the next roll. The student who first fills their grid wins the game.

Example of a completed grid:

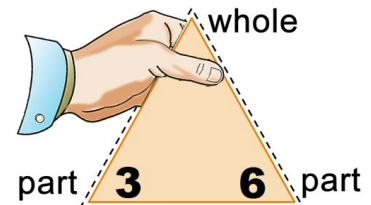


Hidden values

Display fact family triangles with one value hidden. Discuss strategies for calculating the missing value, for example dividing, thinking multiplication.

Have students to work with a partner, taking turns to:

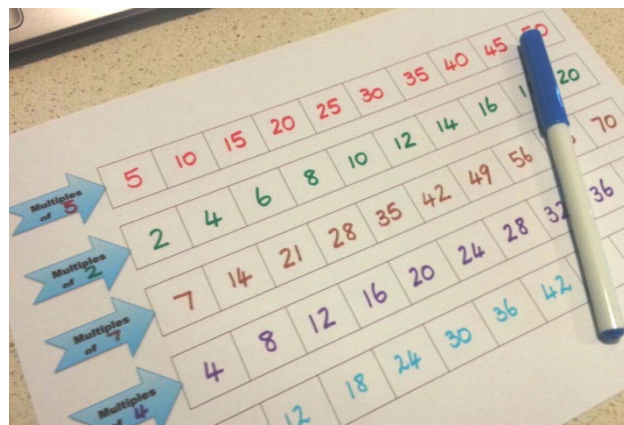
- represent a multiplication fact in a fact family triangle
- cover one value on the triangle
- challenge the partner to calculate the missing value.



Students may use materials to help work out the hidden values.

Recall multiplication facts

Have students list the first 10 multiples of the numbers 1 to 10 on separate paper strips.



Multiple cover-up

Play Multiple cover-up to reinforce fluency of recall of multiplication facts.

What you need:

- completed Multiples sheet (each player has their own)
- two dice and a set of counters

What to do:

- Roll one or two dice to determine which set of multiples to play with, for example: roll a seven, work with the strip of multiples of seven.
- Students take turns to roll one or two dice (their choice).
- Multiply the total of the dice by the designated number from step 2.
- Place a counter over that multiple on the strip.
- If a number is not on the strip or has already been covered with a counter, the player misses a turn.
- The first student to cover all multiples on their strip wins.

Discuss, compare and give examples of the application of strategies for recall of multiplication facts. Make links to:

- related facts (commutativity principle), for example: If I know 7×5 , then I also know 5×7
- extended facts, for example: If I know $7 \times 5 = 35$, then I also know $70 \times 5 = 350$, $7 \times 50 = 350$, $70 \times 50 = 3500$, etc.

Recall division facts

Demonstrate how to use a multiplication grid to locate answers for division questions, for example, for the problem $54 \div 6$:

- travel across the 6s row until the 54 is reached
- travel up from the 54 to find the correlating factor (9).

Identify the inverse relationship between multiplication and division, highlighting how recall of division facts is easily done by 'thinking multiplication'.

Promote fluency of recall of division facts by playing games of speed and accuracy, for example in Number fact shoot-out:

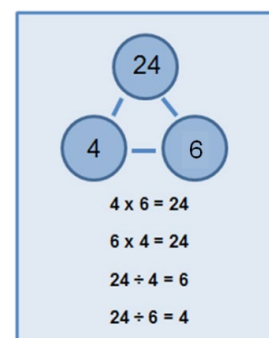
- two students play against each other
- teacher or game leader calls a division fact
- first student to answer correctly 'shoots' the other student and eliminates them
- the losing student chooses a replacement player
- repeat the process.

Make links to and practise extended facts, for example:

If I know $12 \div 3 = 4$, I also know $120 \div 30 = 4$, $120 \div 3 = 40$, $1200 \div 30 = 40$ and $1200 \div 300 = 4$.

Multiplication grid

x	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100



Total speed

Play the game Total speed to reinforce fluency and accuracy of recall of facts.

What you need:

- Playing cards (remove all Kings, Queens, Jacks and Jokers; the Ace represents one).

What to do:

- Shuffle and deal the deck of cards face down between two players.
- Each student flips a card simultaneously on to the table.
- The first student to call out the correct total wins the pair of cards.
- The student who has all the cards at the end of the game is the winner.

Reinforce extended facts using materials such as tens dice, larger number dice or interactive dice. Construct a set of cards using tens, hundreds and thousands to use for extended number facts.

Card sharks

Play the game Card sharks to reinforce fluency and accuracy of recall facts.

What you need:

- Playing cards (remove all Kings, Queens, Jacks and Jokers; the Ace represents one)

What to do:

- Shuffle and divide the pack evenly between both students.
- Each student keeps their pack face down.
- Both students take their top two cards from their respective packs and places them face up.
- Each student adds their two cards together.
- The student with the highest number wins all the cards.
- If the answer is the same then a number war is declared.

A number war is where each student takes three cards from their pack and places them face down on the table. Each student then takes two more cards from their pack and places these face up on the table.

- Each student adds their own two cards together.
- The highest answer wins all the cards that have been placed on the table for the student for that hand.

Let's calculate

Covers (a game for two or more players)

Play the Covers game to consolidate students' understanding and confidence in partitioning smaller numbers.

What you need:

- A game board and a ten-sided dice
- A different coloured set of counters for each student

What to do:

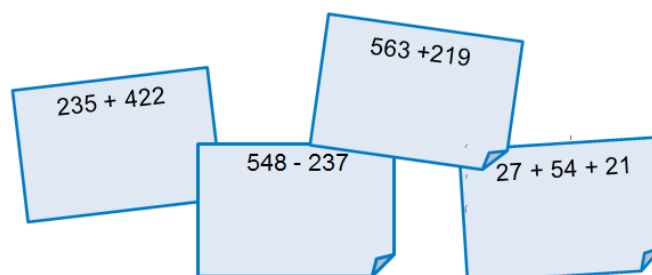
- Students take turns to roll the ten-sided dice. Students partition each number rolled and cover these digits on the board, for example for the rolled number 8, a player could cover the digits: 4 and 4 or 6 and 2 or 1, 5 and 2.
- The first student to first cover four digits in a straight line, using only their coloured counters, wins the game.

Covers

2	1	3	5	3	7	5	4	5	1
6	5	2	5	5	1	3	5	2	3
1	3	4	6	8	4	6	8	1	5
4	7	1	7	3	2	1	4	8	3
5	3	7	8	3	4	6	3	6	1
7	4	6	2	5	1	5	2	6	4
2	7	4	6	3	6	4	6	1	8

Number problems

Give each student a sheet of paper with a different addition (or subtraction) problem, for example:



Students solve their problem mentally, using materials or visual models if required.

Each student records their personal method for solving the problem.

Solving word problems

Present addition and subtraction word problems involving two-digit numbers. Include bridging for addition once this has been introduced. Do not include bridging for subtraction.

Example word problems:

- Joe planted 35 seedlings on Saturday and 21 seedlings on Sunday. How many seedlings did he plant altogether?
- Hannah bought a box of 25 doughnuts. She gave 12 to her sister. How many doughnuts did Hannah have left?

Have the students:

- use the SCAN-THINK-DO strategy
- attempt a mental calculation first
- represent both numbers with base ten modelling materials to confirm the sum
- record the strategy using an informal written method.

Thinkboards

Present students with a variety of two-digit and three-digit addition problems, for example:

Demi went to the movies twice to see Tiger Queen. The first time she counted 187 people in the cinema. The second time she counted 253 people. How many people did Demi count altogether?



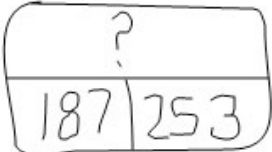
Have the students:

- draw a simple thinkboard (see example below)
- copy the number story into one cell of the thinkboard.

Discuss the problem.

Identify the values as parts and wholes, for example: 187 as one part; 253 as the other part (the whole is unknown).

Identify the missing value, for example, the total number of people.

<p><i>Demi went to the movies twice. The first time she counted 187 people. The second time she counted 253 people. How many people did Demi count altogether?</i></p>	<p>Day 1 : 187 people watching</p>  <p>Day 2 : 253 people watching</p> 
	<p>$187 + 253 =$</p>

Have the students complete the thinkboard with different representations for the same situation, including:


- a drawing
- a part-part-whole model
- a number sentence.

Practise strategies

Provide a selection of number problems for students to solve using mental computation strategies, for example:

56 + 78	34 + 49	83 + 59	66 + 36
324 + 457	420 + 420 + 420	526 + 763	975 + 120

Have students practise mental computation strategies of Jump, Split, and Compensate, for example:

$623 + 305$ 623 723 823 923 928 <p>Example Jump strategy</p>	$\begin{array}{r} 623 + 305 \\ \swarrow \quad \searrow \\ 600 + 300 = 900 \\ 23 + 5 = 28 \\ \hline 928 \end{array}$ <p>Example Split strategy</p>	<div style="text-align: right; margin-bottom: 10px;">  </div> $623 + 305$ $623 + 300 = 923$ <p style="text-align: center;"><i>Add the extra 5</i></p> <hr style="width: 10%; margin: auto;"/> 928 <p>Example Compensate strategy</p>
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Remind students about the efficiency of mental computation. Practise using each of the strategies for fast and accurate recall.

Everyday maths

Time

Have the students:

- use a calendar (for the current year) to:
 - order months of the year
 - identify which season we are in
 - identify day, date and month
 - find how many days in June
 - find how many days until ... (pick a date, for example, a birthday or holiday).
-

Duration of time

Have the students:

- make comparisons of durations of time, for example:
 - short time/long time, shorter/shortest time, longer/longest time
 - fast/slow
 - activities that take a month, a week, a day, an hour
 - use a clock (analogue and digital)
 - ask about o'clock and half-past, quarter to/past times.
-

Length

Have the students:

- make comparisons of objects and distances, for example:
 - longer/shorter/longest/shortest
 - wider/narrower/widest/narrowest
 - thicker/thinner/thickest/thinnest
 - taller/shorter/tallest/shortest.
 - measure length using:
 - informal units
 - formal units.
-

Capacity

Have the students:

- make comparisons of objects/containers that:
 - are full/empty
 - hold more than/hold less than
 - hold as much as
 - hold the most/hold the least.
- measure capacity using:
 - informal units
 - formal units.

Location

Have the students:

- follow directions by moving:
 - forwards/backwards/sideways
 - clockwise/anticlockwise
 - half turn/quarter turn
 - compass points (north, south, east, west)
 - directional language (under, over, left, right).
-

Area

Have the students:

- make comparisons of shapes that:
 - cover more/cover less
 - have a larger area/smaller area
 - have a larger surface/smaller surface.
-

Mass

Have the students:

- make comparisons of objects that:
 - weigh more/weigh less
 - weigh the same
 - are heavier than/lighter than
 - are heaviest/lightest.
 - measure mass using:
 - informal units
 - formal units.
-

Money

Have the students:

- use collections of money to:
 - identify Australian coins and notes and their value
 - describe features of coins and notes
 - count collections of coins (5c, 10c, \$1, \$2) and notes
 - identify familiar coin and note combinations.