



Mathsercise

Year
3

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 number between 10 and 1 000, for example:

356

Choose some activities from the following options:

Activities

Write in words

Show in hundreds, tens and ones

Show in tens and ones

Add ten more

Add one hundred more

Show ten less

Count back two

Write the number before and after

Round to the nearest 10

Round to the nearest 100

Write an addition number sentence to equal today's number

Write a subtraction number sentence to equal today's number

Examples

three hundred and fifty-six

3 hundreds, 5 tens and 6 ones

35 tens and 6 ones

366

456

346

354

355, 356, 357

360

400

$320 + 36$

$400 - 44$

Find

The answer is, for example, 24.

What is the question? Example: 30 take 6 or 15 and 9.

Number facts — Addition and subtraction

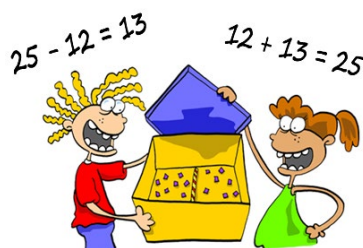
Number fact shaker

What you need:

- at least 20 counting items
- shoe box that has been divided inside with a straw.

What to do:

- Place 20 counting items inside the box.
- Replace the lid and shake the box.
- Open the lid and look at where the items are lying in the box.
- Make up an addition or subtraction fact about the items on each side of the straw.
- Write the fact(s) in their maths exercise book.



Addition/subtraction snap

What you need:

- playing cards (Ace (1)–9).

What to do:

- Divide the cards evenly between two players.
- Each player turns over a card at the same time.
- Players add the two together as quickly as possible and say the sum out loud .
- The player who gives the correct answer first, collects the cards.
- Play continues until one player collects all of the cards.

Calculator facts

Have the students open the **Learning object — Hundred board and calculator combo** to identify the 2s facts.

Remind students of the repeated addition function on the calculator, for example: $0 + 2 = = =$ to generate the pattern 2, 4, 6, 8, etc on the hundred board.

Discuss the pattern in the answers to the 2s facts.

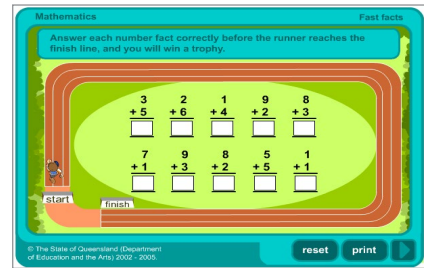
Identify the multiplication fact for each shaded multiple, for example: 6 as 'double 3'. Explore other patterns with multiples, including the pattern for 10s facts.

Fast facts (a game for one player)

Have students open the **Learning object — Fast facts** to develop quick and accurate recall of addition facts, and related subtraction facts.

Fast facts can be used for individual practice, or practice in pairs and small groups.

Encourage students to share their strategies for recalling addition and subtraction number facts.



Addition grid

What you need:

- An **Addition grid** for each student.

What to do:

- Discuss and highlight sets of number facts on the grid, including:
 - facts that use a rule (adding 0)
 - facts that use counting (adding 1, adding 2)
 - facts that use ten (pairs that add to ten, adding 8, adding 9, adding 10)
 - facts that use doubles (double facts, near doubles).

| | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|
| + | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 0 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 2 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 3 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 4 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 5 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 6 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 7 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 8 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 9 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 10 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |

Practise strategies for recalling addition facts.

Identify addition and related subtraction facts for individual facts on the grid, for example:

| | | |
|----|----|----|
| 13 | 14 | 15 |
| 14 | 15 | 16 |
| 15 | 16 | 17 |

$8 + 7 = 15$
 $7 + 8 = 15$
 $15 - 8 = 7$
 $15 - 7 = 8$

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**.



Arrays game

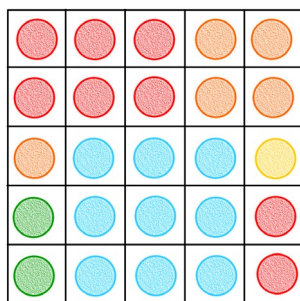
What you need:

- **5 × 5 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 without overlapping, he/she waits for the next roll. The student who first fills their grid wins the game.

Example of a completed grid:

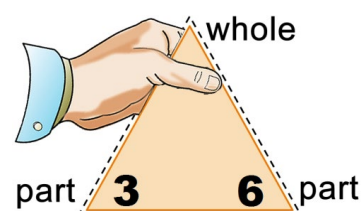


Hidden values

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

Have students 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.

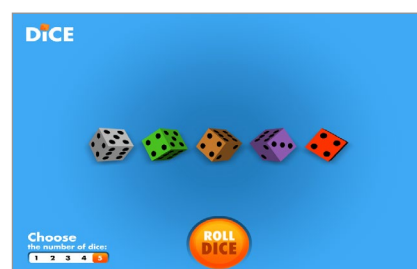
Adding three or more digits (a small group or whole class activity)

Have students roll combinations of dice using the 10-sided dice or **Learning object — Dice**.

Challenge students to find efficient ways to add three or more numbers on a dice. Allow students opportunities to add different number combinations.

Ask students to explain the different ways they added the digits together.

Depending on the demands placed on a student's memory, some students may simply add across (for example: 5 and 3 is 8; 8 and 2 is 10; 10 and 2 is 12; 12 and 6 is 18). Others may group numbers into easier computational combinations, sometimes referred to as 'compatible numbers' (for example: 10 [combining 5, 3 and 2] and 8 [combining 2 and 6] is 18).



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:

- One game board
- One ten-sided dice
- A 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 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 |

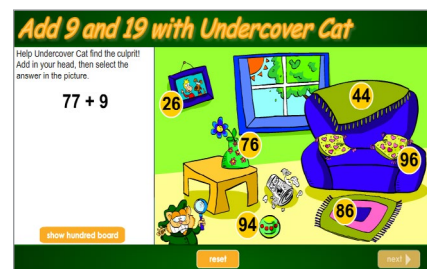
Undercover Cat

Use the Learning object — Add 9 and 19 with Undercover Cat to practise adding nine-digit to two-digit numbers using the compensate strategy.

Challenge students to apply the compensate strategy to the 'add 19' situations.

Encourage students to:

- share their personal methods
- use an empty number line
- record their methods informally (paper and pencil).



Spin and double (a game for two players)

What you need:

- Materials to make a spinner (scissors, paper, pencil).



What to do:

- Have the students:
 - make a spinner showing two-digit numbers
 - spin the spinner to identify a two-digit number
 - double the number using a mental strategy (materials, models and jottings can be used to support students' thinking)
 - check their solution on a hundred board or calculator
 - earn a point for each correct sum
 - play until they earn five points.

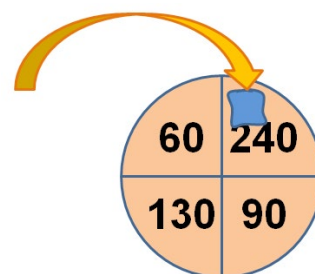
Target doubles (a game for a small group)

What you need:

- Simple chalk target outline on the floor (or on the concrete in an outside space) with a two-digit or three-digit multiple of ten in each space of the target

What to do:

- Have the students take turns to:
 - toss a beanbag onto the target
 - double the number from the target, using a mental strategy
 - check the answer on a calculator
 - collect a point for each correct answer.



Discuss students' personal methods for calculating.

Compatible numbers

Have students become familiar with rearranging single-digit numbers to add compatible numbers.

What you need:

- Collection of two-digit number cards

What to do:

- Have students take turns to:
 - collect three cards from a collection of two-digit number cards
 - arrange the cards in a sequence that uses compatible numbers
 - add the three numbers using a mental strategy (or combination of strategies)
 - represent the numbers with materials, if required
 - record their strategy using an informal written method, for example:

$$25 + 15 + 43$$

$$40 + 40 + 3 = 83$$

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?*



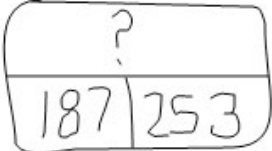
Have the students:

- draw a simple thinkboard (see example on the following page)
- 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 students complete the thinkboard with different representations for the same situation, including:

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

Solving word problems

Present addition and subtraction word problems involving two-digit numbers.

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.

Maths graffiti wall

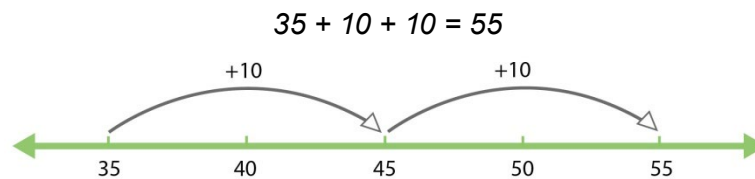
What you need:

- A whiteboard or covered wall space in the room that can be used for collecting student recordings of their addition methods. Refer to it as the Maths graffiti wall.

What to do:

- Explain the purposes of the board:
 - to record methods for adding and subtracting numbers
 - to trial different methods of addition and subtraction
 - to compare and share methods and strategies
 - to present opinions and thoughts about different methods.
- Write a two-digit addition problem (for example: $35 + 20$) at the top of the graffiti wall. Ask students to solve the problem mentally.
- Model the use of the SCAN-THINK-DO strategy.
- Ask the student to explain their method for adding and to record their method on the graffiti wall. A student might respond as follows:

I started with 35 and added two tens. So, I counted like this: 35, 45, 55. The answer is 55. I can show my method as a number sentence and on a number line.



Show different addition problems on the graffiti wall each day and encourage students to add their ideas to the board throughout the week.

Allow students to record on the graffiti wall and share their personal recording methods, for example:

$$\begin{array}{r} 60 \\ 43 + 26 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 58 = 50 + 8 \\ + 67 \quad 60 + 7 \\ \hline 100 + 15 = 125 \end{array}$$

Time

Have the students:

- use a calendar (for the current year) to:
 - identify today, tomorrow, yesterday, day after, day before, next week, last week
 - 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.
-

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.
-

Location

Have the students:

- follow directions by moving:
 - forwards/backwards/sideways
 - left/right
 - clockwise/anticlockwise
 - half turn/quarter turn.
-

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.
-

Money

Have the students:

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