Mathsercise

Year 6

Queensland Government

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Icon legend

Icon	Label	Icon	Label	Icon	Label	Icon	Label	Icon	Label
	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

Year 6 Mathsercise

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 (number can be an integer, decimal, fraction or large whole number).

?

Choose some activities from the following options:

Integers	Decimals	Fractions	Large whole numbers
• Draw a diagram • If today's number was a temperature, write 3 temperatures that are colder/ warmer than it • Count forwards and backwards by 1s, 2s, 5s	• Write in words • Locate on a number line • Write as a fraction • Count forwards and backwards in 0.2s, 0.05s, 4s • Multiply by 10s, 100s, 0.1s • Add/subtract/ multiply by another number	• Write in words • Draw a diagram	• Write in words • Add/subtract/ multiply by a similar number • Is this number divisible by 4? Prove it.

Here's the answer, what's the question

Have the students develop questions to which the answer is today's number.

Encourage students to use understanding of the meaning of the number as well as calculating using all four operations when creating their questions.

For example, if today's number is 6.2, the question could be:

• *What is the number halfway between 6.1 and 6.3 on a number line?*

• *What is 4.8 + 1.4?* or *What is 3.1 × 2?*

• *What is 62 tenths written as a decimal?*

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Number facts — Addition and subtraction

> **HOT TIP**
>
> It may be appropriate to consult the Mathercise for previous year levels for activities to revise addition/subtraction facts, and multiplication/division facts.

Calculator fish (a game for two or more players)

This game reinforces place value and is played along similar lines to the Go fish card game.

What you need:

- Calculators

What to do:

- Each student enters a number into a calculator. It may include larger whole numbers or decimals.
- One student begins by asking another 'Have you got a … *(number between 0 and 9)*?' and the student addressed answers either 'Yes' or 'No'. If the response is 'Yes', the student must also give the value of the number and the player's numbers are adjusted.

Example:

- Suppose the number 387.49 was entered into the calculator of Player 1.
- Student 2 asks 'Have you got a 4?'
- Student 1 responds with 'Yes … I've got 4 in the tenths place'. Student 1 then subtracts 4 tenths from their secret number, while student 2 adds 4 tenths to their total.
- If the response is 'No', the play moves to the next student.
- A student is out when their total reaches zero and the winner is the student with all the points.

Note: The winner's total should equal the combined total of all other student's original numbers.

Flip the cards and add (a game for two or more players)

What you need:

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

What to do:

Working in pairs, students:

- take turns to flip over enough cards to make two three-digit and/or four-digit numbers
- add the numbers together mentally (using jottings) and record the answer
- check the reasonableness of their answer using an estimation strategy
- swap calculations with their partner and check
- compare the strategies they used to add the numbers.

Target 10 000

What you need:

- **Game card** — Target 10 000
- One six-sided or ten-sided dice (concrete or on screen)
- **Learning object — Wishball: ultimate**
- Four addition grids (one for each round)

What to do:

- Students play the game Target 10 000 to practise adding four-digit (and larger) numbers. The game involves arranging numbers shown on a dice so that they add to a total as close as possible to the target number.

Fraction four-in-a-line (a game for two or more players)

What you need:

- One dice and one game board (sample shown) per player.

$\dfrac{1}{6}$	$\dfrac{1}{5}$	$\dfrac{1}{4}$	$\dfrac{1}{3}$	$\dfrac{1}{3}$	$\dfrac{2}{5}$
$\dfrac{1}{2}$	$\dfrac{1}{2}$	$\dfrac{1}{2}$	$\dfrac{3}{5}$	$\dfrac{2}{3}$	$\dfrac{2}{3}$
$\dfrac{3}{4}$	$\dfrac{4}{5}$	$\dfrac{5}{6}$	1	1	1
1	1	1	$1\dfrac{1}{5}$	$1\dfrac{1}{4}$	$1\dfrac{1}{3}$
$1\dfrac{1}{2}$	$1\dfrac{1}{2}$	$1\dfrac{2}{3}$	2	2	2
$2\dfrac{1}{2}$	3	3	4	5	6

What to do:

- Distribute one game board per student.
- Instruct students to:
  ◦ toss the dice for the first time; this first number will be the numerator of the fraction
  ◦ toss the dice for a second time; this second number will be the denominator of the fraction
  ◦ mark off the square that matches (or is equivalent to) the fraction they have created.
- Take turns at tossing the dice two times (or use two different coloured dice).
- The winner is the student who fills four squares in any row, column or diagonal.

For example: Toss #1 = 5. Toss #2 = 3.

The fraction created is $\dfrac{5}{3}$ so the square $1\dfrac{2}{3}$ is marked off the game board.

Let's calculate

Bingo (a game for two or more players and one caller)
or **Make a line** (a game for one player)

What you need:

- 3 × 3 Bingo cards

The game of Bingo can be used to reinforce almost any concept in mathematics.

What to do:

- The students fill the bingo card with nine answers in a random pattern from the suggested answer list.
- The caller then calls out random questions from the suggested question list.
- The students both solve the problem. If a student has the answer to the question, they mark the answer on their bingo card.
- The caller continues to call out questions until one student has three answers in a straight line, who then calls out 'Bingo' and wins the game.

HOT TIP

Students playing alone may wish to call the game Make a line, as there will be no need to call out 'Bingo'. They may generate the bingo calls by selecting questions out of a box or by flipping question cards. They may keep a track of the number of calls needed to get 'Bingo' as a table or graph.

Here are some suggested question cards and the answer list to fill in the grid.

Integers (sample)		Large whole numbers (sample)	
Question list	**Answer list**	**Question list**	**Answer list**
Point to random whole numbers on a number line from –10 to 10	Any numbers from –10 to 10	2 328 + 4 874	7 202
		8 713 – 1 463	7 250
		21 738 ÷ 3	7 246
		1 442 × 5	7 210
		4 × (1 136 + 667)	7 212
		50% of 14 484	7 242
		7 577 + 65 – 434	7 208
		A number divisible by 9	7 236
		13 × 556	7 228

Students may wish to make their own question and answer lists and play them with another player.
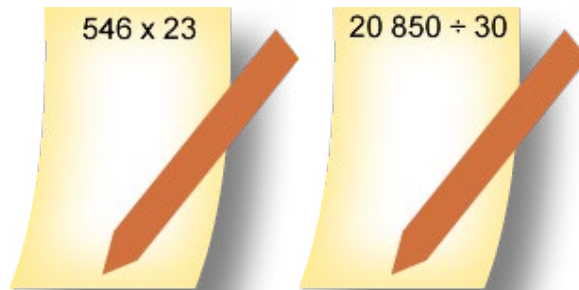
Estimate it

What you need:

- Game card, [Estimate it](#)
- Two sets of 0–9 digit cards (or use a pack of playing cards with an Ace representing one and a King representing zero).

What to do:

- Students play the game Estimate it. The aim is to have the closest estimate to a partially unseen addition.

Hot potato

Students work in groups. Give each student a sheet of paper with a different problem or operation, for example:

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

Each student records their personal method for solving the problem.

On the spoken cue, 'Hot potato!' sheets are passed from one group member to the next.

Students set about solving the new problem, again recording their method on the page. The pages continue to be passed around the group until all students have attempted each problem.

Target (a game for two to four players)

What you need:

- 20 number cards (2 × each of 0–9)
- One set of operation cards (+, –, ×, ÷) per person
- Two decimal point cards per person

What to do:

- Each student is randomly given six number cards face down. They are also allocated one set of operation cards and two decimal point cards.
- Ask questions for the students to reach a target number. For example:
  - Using only the + and – operation cards, arrange all six number cards to give a total as close as possible to 5 388.
  - Using three of your six number cards and the ÷ card, produce a two-digit number ÷ a one-digit number to give an answer as close as possible to 7.2.
  - Using only the × operation card, arrange all six number cards to make an answer that is as close as possible to 93.

Everyday maths

Time

Have the students:

- use timetables to:
  - calculate duration
  - plan a trip involving public transport
  - develop a timetable of daily activities.

Length

Have the students:

- convert between the metric units (millimetres, centimetres, metres, kilometres)
- recognise the links between the prefixes.

Capacity

Have the students:

- convert between the metric units (millilitres, litres, kilolitres, megalitres)
- recognise the links between the prefixes
- make connections to volume.

Location

Have the students:

- use transformations to:
  - explore examples of translations, reflections and rotations in the environment (flips, slides, turns).

Shape

Have the students:

- identify types of prisms
- identify types of pyramids
- explore the construction from a variety of materials (for example: nets, skeletal models).

Angles

Have the students:

- compare the size of angles and identify:
  - angles on a straight line
  - angles at a point
  - vertically opposite angles.

Mass

Have the students:

- convert between the metric units (milligrams, grams, kilograms, tonnes)
- recognise the links between the prefixes.

Money

Have the students use authentic information to:

- calculate prices on sale goods
- calculate percentage discounts (10%, 25%, 50%).

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