Teacher Development Workshop

Intermediate Phase

Mathematics
CONTENTS PAGE

ACTIVITY A: ........................................................................................................................................... 3

MATHEMATICS INTRODUCTION TO CAPS ...................................................................................... 5

ACTIVITY B: MATHEMATICS TEXTBOOKS ......................................................................................... 5

ACTIVITY C: MATHEMATICS INTERMEDIATE PHASE (GRADE 4) .................................................... 6

ACTIVITY D: MATHEMATICS INTERMEDIATE PHASE (GRADE 5) .................................................. 10

ACTIVITY E: MATHEMATICS INTERMEDIATE PHASE (GRADE 6) .................................................. 16

HOW PLATINUM AND DAY-BY-DAY MATHEMATICS BOOKS CAN HELP YOUR TEACHING ...... 23
INTRODUCTION TO CAPS

This section is an introductory section to the Intermediate Phase CAPS. Use your Survival Guide to the Intermediate Phase CAPS as a resource.

Activity A:

Topics to be covered:
- Generic CAPS information
- Assessment
- Generic timetabling and planning

Instructions:
- Participants should complete this activity in Groups of 3.
- Use the Survival Guide to the Intermediate Phase CAPS as a resource to look up the answers.
- Read the statement / question and discuss the answer in your group.
- Write down the answer in the space that has been left for discussion notes.

The questions have been developed to stimulate discussion. The facilitator will discuss the questions at the end and clarify any uncertainties.

### Answer and Discussion Notes

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1.</td>
<td>What does CAPS stand for?</td>
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<tr>
<td>2.</td>
<td>CAPS is not a new curriculum.</td>
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<td>State whether the above statement is true or false.</td>
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<td>3.</td>
<td>The Intermediate Phase CAPS will be implemented in 2014.</td>
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<tr>
<td></td>
<td>State whether the above statement is true or false.</td>
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<td>4. <strong>There are no more Learning Areas in Intermediate Phase.</strong></td>
<td>State whether the above statement is true or false.</td>
</tr>
<tr>
<td>5. <strong>Economic &amp; Management Sciences has been integrated into other subjects in the Intermediate Phase.</strong></td>
<td>State whether the above statement is true or false.</td>
</tr>
<tr>
<td>6. <strong>The number of assessments in the Intermediate Phase has increased.</strong></td>
<td>State whether the above statement is true or false.</td>
</tr>
<tr>
<td>7. <strong>Which changes in the Intermediate Phase will have the greatest impact on planning?</strong></td>
<td>Hint: Look at the time allocation in the Survival Guide.</td>
</tr>
</tbody>
</table>
MATHEMATICS INTRODUCTION TO CAPS

This section of the workshop focuses on Mathematics Grades 4 -6. It provides a taste of what to expect in the Platinum Mathematics and Day-by-Day Mathematics textbooks and how they support teaching CAPS.

Activity B: Mathematics textbooks

Topics to be covered:
- Generic CAPS information
- Criteria for choosing a textbook
- Timetabling and Planning in Mathematics
- Assessment in Mathematics

Instructions:
- Study the list provided. The list consists of 10 criteria that are considered important to most teachers when choosing a textbook.
- Rank the importance of the criteria by placing numbers 1 to 10 in the spaces provided.

| Sequencing of content according to the CAPS |   |
| Relevant and up to date content |   |
| Specific tasks required for Programme of Assessment e.g. tests, projects etc. |   |
| Annual teaching plan according to the CAPS with term by term overview |   |
| Teacher’s Guide which provides guidance and answers for Programme of Assessment |   |
| Variety of revision activities |   |
| Diagrams and Pictures to explain content |   |
| Remedial activities to support those learners that may need extra support |   |
| Extension activities to support those learners that need expanded opportunities |   |

Ranking
Activity C: Mathematics Intermediate Phase (Grade 4)

This activity is taken from a Grade 4 Numbers, operations and relationships topic in Mathematics. These examples are from Platinum Mathematics Grade 4 and Day-by-Day Mathematics Grade 4.

**Topics to be covered:**
- Grade 4 Fractions
- Relevance and contextualisation of examples and activities

**Instructions:**
- Study the extract from Day-by-Day Mathematics Grade 4 and Platinum Mathematics Grade 4 and answer the questions that follow.

**Questions:**
1. Mathematics should be relevant and understandable for all learners. Discuss the importance of using examples and activities that all Grade 4 learners can relate to.

2. Which Mathematics topic do these extracts cover?

### Grade 4 Mathematics Topics

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Grade 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers, operations and relationships</td>
<td>Whole numbers</td>
</tr>
<tr>
<td></td>
<td>Common fractions</td>
</tr>
<tr>
<td></td>
<td>Decimal fractions</td>
</tr>
<tr>
<td>Patterns, functions and algebra</td>
<td>Numeric patterns</td>
</tr>
<tr>
<td></td>
<td>Geometric patterns</td>
</tr>
<tr>
<td></td>
<td>Number sentences</td>
</tr>
<tr>
<td>Space and Shape (Geometry)</td>
<td>Properties of 2D shapes</td>
</tr>
<tr>
<td></td>
<td>Properties of 3D objects</td>
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<tr>
<td></td>
<td>Symmetry</td>
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<tr>
<td></td>
<td>Transformations</td>
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<td></td>
<td>Viewing of objects</td>
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<td></td>
<td>Position and movement</td>
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<tr>
<td>Measurement</td>
<td>Length</td>
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<td>Mass</td>
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<td>Capacity/volume</td>
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<td>Temperature</td>
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<td>Time</td>
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<td></td>
<td>Perimeter, surface area and volume</td>
</tr>
<tr>
<td>Data Handling</td>
<td>Collecting and organising data</td>
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<td></td>
<td>Representing data</td>
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<tr>
<td></td>
<td>Analysing, interpreting and reporting data</td>
</tr>
<tr>
<td></td>
<td>Probability</td>
</tr>
</tbody>
</table>
Topic 21  Common fractions 2

Unit

1 Fractions and equivalence

Mental maths teaser: How many apples do you have if you get half of 7 apples?

A fraction is always a part of something. A fraction is a part of a whole. Sometimes the whole is one thing. Sometimes the whole is a group of things (a collection).

\[
\begin{align*}
\text{I third} & \quad \frac{1}{3} \\
\text{This is I third of one.} & \\
\text{I and a third} & \quad 1\frac{1}{3} \\
\text{This is 1, and I third of one.} & \\
\text{I third of 12} & \quad \frac{1}{3} \\
\text{This is \(\frac{1}{3}\) of twelve.} & \\
\end{align*}
\]

Worked example

A box has 12 apples. How many apples are in a third of a box?

\[\frac{1}{3} \text{ of 12} = 12 \div 3 = 4\]

How many apples are \(\frac{2}{3}\) of 12?

\[\frac{2}{3} \text{ of 12} = (12 \div 3) \times 2 = 4 \times 2\]

Answer: 8

Exercise 1

1. Draw and label number lines to show the meaning of:
   a) One quarter  \hspace{1cm} b) One and a quarter
   c) One quarter of four. \hspace{1cm} d) One quarter of ten

2. A netball team has 7 players. 3 of the players are defenders.
   a) What fraction of the team are defenders?
   b) What fraction of the team are not defenders?

Keywords

Whole number – Counting numbers that start at zero: 0; 1; 2; 3; 4; 5; \(\square\) 100 is a whole number but \(\frac{1}{2}\) is not a whole number.
3. Copy the number chains and fill in the missing numbers:

\[ \begin{array}{c}
\text{\( + \frac{1}{3} \)} \\
\text{\( + \frac{1}{4} \)}
\end{array} \]

Mental maths teaser: How many is \( \frac{1}{3} \) of 18?

Equivalent fractions are equal.

\[ \begin{array}{c}
\text{\( \frac{1}{4} \)} \\
\text{\( \frac{1}{2} \)}
\end{array} \]

\[ \text{\( \frac{1}{4} \)} = \text{\( \frac{2}{8} \)} \]

I half is the same as 2 quarters. \( \frac{1}{2} = \frac{2}{4} \)

\( \frac{1}{2} \) and \( \frac{2}{4} \) are equivalent fractions.

**Worked example**

Look at these bars of chocolate.

1. Which would you choose to eat: 2 pieces of Bar A or 4 pieces of Bar B? Why?
   **Answer:** I don’t mind which bar.
   2 pieces of bar A is the same amount as 4 pieces of Bar B.

2. How much chocolate is that?
   **Answer:** 2 pieces of Bar A = \( \frac{2}{3} \) of Bar A
   4 pieces of Bar B = \( \frac{4}{6} \) of Bar B

3. Are Bar A and Bar B the same size?
   **Answer:** Yes

4. Write a number sentence that is true for the two options.
   **Answer:** \( \frac{2}{3} \) Bar A = \( \frac{3}{6} \) Bar B
   Look at this picture. Do you agree that \( \frac{2}{3} \) is the same as \( \frac{3}{6} \)?

**Keywords**

Equivalent – The same. You get the same answer.

Taken from Day-by-Day Mathematics Grade 4 (pages 129 – 130)
Solve problems with fractions

Sometimes when you add fractions, you can put them together to make a whole number together with a fraction.

Example
Themba eats one and two-fifths pizzas and Martha eats four-fifths of a pizza. How much did they eat altogether?

Use a drawing. Start with the amount for Themba. It is $1\frac{2}{5}$. Then add another $\frac{4}{5}$.

Altogether they ate $2\frac{1}{5}$ of a pizza.

We say this fraction as two-and-one-fifth.

EXERCISE 21.5

1. You have 16 biscuits that you will share in different ways. Do a drawing to show how you would solve each problem.
   a) Divide the biscuits between two people. How many biscuits do they each get?
      So $\frac{1}{2}$ of 16 = ?
   b) Divide the biscuits among eight people. How many biscuits do they each get?
      So $\frac{1}{8}$ of 16 = ?
   c) Use the previous answer to find $\frac{2}{8}$ of 16.
   d) Double the previous answer to find $\frac{4}{8}$ of 16.
   e) Do you see another fraction which would give you the same number of biscuits as $\frac{4}{8}$? Why do you think this is so?

2. Nine friends have seven bars of chocolate they want to share. Draw a picture to show how much they will each get.

3. After a match, 25 netball players get $\frac{1}{2}$ of an orange each. How many oranges are needed for the 25 netball players?

4. Themba’s mother used $2\frac{3}{8}$ loaves of bread to make sandwiches for a family lunch. His aunt used $\frac{5}{6}$ of a loaf to make more sandwiches. How much bread was used altogether?
Activity D: Mathematics Intermediate Phase (Grade 5)

This activity is taken from a Grade 5 Numbers, operations and relationships topic in Mathematics. These examples are from Platinum Mathematics Grade 5 and Day-by-Day Mathematics Grade 5.

Topics to be covered:
- Grade 5 Fractions
- Repetition and practicing of calculations

Instructions:
- Study the extracts from Platinum Mathematics Grade 5 and Day-by-Day Mathematics Grade 5 and answer the questions that follow.

Questions:
1. Discuss the importance of repetition and practice of calculations by learners.

2. Discuss how much homework is necessary and how much of the work should be completed in the classroom.

3. Which Mathematics topic do these extracts cover?

<table>
<thead>
<tr>
<th>Grade 5 Mathematics Topics</th>
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<tbody>
<tr>
<td><strong>Content Area</strong></td>
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Position and movement |
| Measurement | Length  
Mass  
Capacity/volume  
Temperature  
Time  
Perimeter, surface area and volume |
| Data Handling | Collecting and organising data  
Representing data  
Analysing, interpreting and reporting data  
Probability |
# Equivalent fractions

**EXERCISE 12.2**

When a fraction is equal to another fraction, we say the fractions are **equivalent**. This means that they have the same value.

1. Use fraction strips to help you answer the following.
   a) How many sixths do you need to make up a third?
   b) How many sixths make two-thirds?
   c) How many tenths make a fifth?
   d) How many tenths make a half?
   e) How many ninths do two-thirds make?

2. Use the fraction wall to complete these equivalent fractions.

![Fraction Wall Diagram]

<p>| | | | |</p>
<table>
<thead>
<tr>
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<td>(\frac{1}{3})</td>
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<td>(\frac{1}{9})</td>
<td>(\frac{1}{10})</td>
<td>(\frac{1}{11})</td>
<td>(\frac{1}{12})</td>
</tr>
</tbody>
</table>

a) \(\frac{1}{2} = \square\)  
b) \(\frac{1}{5} = \square\)  
c) \(\frac{2}{3} = \square\)  
d) \(\frac{3}{4} = \square\)

e) \(\frac{4}{6} = \square\)  
f) \(\frac{4}{12} = \square\)  
g) \(\frac{5}{10} = \square\)  
h) \(\frac{3}{9} = \square\)

3. Look very carefully at the fraction wall. Try to find another fraction that is equivalent to \(\frac{1}{11}\). Explain your answer.
Solve problems that involve fractions

Use your knowledge of fractions to answer these questions.

**EXERCISE 33.3**

1. \( \frac{1}{2} \) of a bag of 24 oranges is rotten.
   a) How many oranges are rotten?
   b) How many oranges are not rotten?

2. Pumi’s brother ate \( \frac{7}{12} \) of 48 pieces of chocolate. How many pieces were left?

3. Solomon’s mother cooked \( \frac{3}{10} \) of a pocket of potatoes during the week. She then gave \( \frac{2}{10} \) of the pocket to her friend.
   a) What fraction of the pocket of potatoes was left over?
   b) The pocket of potatoes had a mass of 20 kg when she bought it. How many kilograms were left over?

4. Lukas earns R640 per week. If he spends \( \frac{3}{8} \) of his money on food each week, how much money does he have left over?

5. David divides a packet of apples into three equal groups to share with his friends. If each person gets 6 apples, how many apples are there altogether?

6. For your birthday you get R50 as a present. If the R50 is equal to \( \frac{1}{2} \) of the money that you had saved, how much money had you already saved?

7. There are 36 learners in a Grade 5 class and \( \frac{5}{9} \) of the learners take part in sport.
   a) How many learners take part in sport?
   b) How many learners do not take part in sport?

8. Thembi plays soccer for \( 2\frac{1}{4} \) hours on Monday, \( \frac{3}{4} \) of an hour on Tuesday and \( 1\frac{1}{4} \) hours on Wednesday.
   a) How many hours does Thembi play each week?
   b) Thembi wants to play for \( 8\frac{1}{4} \) hours each week. How many more hours will she have to play over the weekend?

9. James bought shelving in the following lengths: \( 1\frac{5}{8} \) m; \( \frac{3}{8} \) m; \( 2\frac{3}{8} \) m and \( 1\frac{7}{8} \) m. What length of wood did he buy altogether?

10. At a Grade 5 class party, \( \frac{7}{8} \) of the class of 40 were there. How many learners did not go to the party?

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Taken from Platinum Mathematics Grade 5 (page 176)
Fractions are parts of a whole

$\frac{3}{5}$ of the shape is shaded.
What fraction of the shape is not shaded?

**Mental maths teaser:** I think of a fraction. If I halve it, I get $\frac{2}{5}$.
What is my fraction?

Fractions are used in measuring

The length of the line is $\frac{2}{3}$ units. How many thirds are there in $\frac{2}{3}$?

Fractions are used to show parts of a group or set.

$\frac{3}{9}$ of the sweets are in purple wrappers.
What fraction of the sweets is in orange wrappers?

**Exercise 1**

1. Copy and fill in the missing numbers:
   a. $\frac{1}{2}$ $\frac{2}{2}$ $\frac{3}{2}$ $\frac{4}{2}$ $\frac{5}{2}$ $\frac{6}{2}$ $\frac{7}{2}$ $\frac{8}{2}$
   b. $\frac{0}{2}$ $\frac{1}{2}$ $\frac{2}{2}$ $\frac{3}{2}$ $\frac{4}{2}$ $\frac{5}{2}$ $\frac{6}{2}$ $\frac{7}{2}$ $\frac{8}{2}$

2. Write the missing numbers:
   a. 8; $\frac{7}{2}$; 7; $\frac{6}{2}$; $\square$; $\square$; $\square$
   b. 6; $\frac{5}{2}$; $\frac{4}{2}$; $\frac{3}{2}$; $\square$; $\square$; $\square$; $\square$;

3. Copy the shapes and shade the fractions.
   a. $\frac{3}{4}$
   b. $\frac{2}{6}$

4. Write down the lengths of the lines:
   a. $\frac{0}{2}$ $\frac{1}{2}$ $\frac{2}{2}$ $\frac{3}{2}$
   b. $\frac{0}{2}$ $\frac{1}{2}$ $\frac{2}{2}$ $\frac{3}{2}$

Taken from Day-by-Day Mathematics Grade 5 (page 81)
Exercise 2

1. Copy and fill in the missing numbers:
   a. $\frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3}$
   b. $\frac{2}{5} + \frac{2}{5} + \frac{2}{5} + \frac{2}{5} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4}$

2. A muffin tin holds 6 muffins. Ephraim has 2 full tins and 1 tin with only 2 muffins. Graham has 1 and a half tins of muffins. How many muffin tins do they have altogether?

3. Write a number sentence for the calculations shown on these number lines:
   a. 
   b. 

**crate**: Strong plastic box with a rectangular prism shape.

Taken from Day-by-Day Mathematics Grade 5 (page 140)
Revision: Practice test 2

This practice test is to assess yourself. Imagine you are a teacher and mark your partner’s work. Check what you have done wrong and correct it.

Section A Multiple choice

1. Which list is in descending order?
   A. 527; 572; 752  
   B. 572; 527; 752  
   C. 527; 752; 572  
   D. 752; 572; 527

2. Which statement is true?
   A. 135 - 513 = 513 - 135
   B. 8 x 192 = 192 x 8
   C. 325 ÷ 5 = 5 ÷ 325
   D. (216 - 312) + 221 = 216 - (312 + 221)

3. Which statement is true?
   A. \( \frac{1}{2} + \frac{1}{4} = \frac{5}{4} \)
   B. \( \frac{1}{2} + \frac{1}{4} = \frac{2}{6} \)
   C. \( \frac{1}{2} + \frac{1}{4} = \frac{2}{4} \)
   D. \( \frac{1}{2} + \frac{1}{4} = \frac{1}{8} \)  
   [6 marks]

Section B Show your workings

1. a. Write a number sentence for this situation.
   b. Calculate the number at B and show your workings.  
   [4 marks]

2. Estimate the answer of 2 389 ÷ 8 and show your workings.  
   [2 marks]

3. Calculate and show your workings:
   a. \( \square - 25 336 = 47 352 \)
   b. 78 038 - 23 805 = \( \square \)  
   [4 marks]

4. For each problem, write a number sentence, then calculate the answer and write the units or name of the objects as part of the answer.
   a. A cargo ship loads 28 516 tons of cargo at harbour A. It now has 69 053 tons of cargo on board. Calculate the mass of the cargo on board, before it started loading at harbour B.
   b. A business makes a profit of R58 830. The six partners share the money equally. Calculate the amount each partner will get.  
   [8 marks]

5. Welcome drinks \( \frac{1}{4} \) litre of cool drink. How many millilitres is that?  
   [1 mark]

[Total marks: 25]
**ActivityE: Mathematics Intermediate Phase (Grade 6)**

This activity is taken from a Grade 6 Numbers, operations and relationships topic in Mathematics. These examples are from Platinum Mathematics Grade 6 and Day-by-Day Mathematics Grade 6.

**Topics to be covered:**
- Grade 6 Fractions
- Formal Assessment Tasks / Annual National Assessments

**Instructions:**
- Study the extracts from Platinum Mathematics Grade 6 and Day-by-Day Mathematics Grade 6.
- Discuss and answer the questions that follow.

**Questions:**
Platinum Mathematics and Day-by-Day Mathematics provide all of the formal assessments for the learners. There are certain areas that the learners struggle with more than others.

1. Discuss teaching strategies that could be used in the classroom to assist learners to answer the questions taken from the Annual National Assessments.

2. Discuss how the exercises in Platinum Mathematics Grade 6 and Day-by-Day Mathematics Grade 6 will assist the learners in achieving a better Annual National Assessment result.

2. **Calculate and write your answer as a mixed number.**

   2.1 \[
   \frac{8}{5} - 4\frac{1}{15}
   \]

   2.2 \[
   \frac{5}{3} + 3\frac{1}{6} + \frac{5}{12}
   \]

Taken from Annual National Assessment Exemplar Paper 2011 Grade 6
3. Which Mathematics topic do these extracts cover?

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Grade 6</th>
</tr>
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</table>
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| Measurement                         | Length  
Mass  
Capacity/volume  
Temperature  
Time  
Perimeter, surface area and volume  
History of measurement |
| Data Handling                       | Collecting and organising data  
Representing data  
Analysing, interpreting and reporting data  
Probability |
You can also draw your own fraction diagrams which you can use to answer fraction questions.

**Example**

a) What fraction of the orange is each piece?
b) If you eat 4 pieces, what fraction of the orange have you eaten?
c) There are eight equal pieces, so each piece is \(\frac{1}{8}\) (one eighth) of the orange.
d) 4 pieces is half of the orange, because there are 8 pieces and 4 is half of 8.

**EXERCISE 4.2**

1. Draw diagrams to show the fraction \(\frac{2}{3}\) (two-thirds) in these three different ways.
   a) This circle has been divided into three equal parts. Copy the diagram and shade \(\frac{2}{3}\) of the circle.
   b) Draw a rectangle made of three equal sized blocks. Shade \(\frac{2}{3}\) of your rectangle.
   c) Use your ruler to draw a line that is 6 cm long. Divide your line into three equal lengths. Now use a different colour pen to show \(\frac{2}{3}\) of the length of your line. How many centimetres is \(\frac{2}{3}\) of your line?

2. a) [Diagram of a circle divided into equal parts with \(\frac{3}{6}\)]
   b) [Diagram of a pentagon with \(\frac{2}{5}\)]
   c) [Diagram of a line with 5 equal segments shaded \(\frac{5}{6}\)]

   Copy these diagrams into your books and colour the given fraction.

3. Draw a diagram of your choice to show each fraction.
   a) \(\frac{1}{4}\) (one-quarter)
   b) \(\frac{2}{7}\) (two-sevenths)
   c) \(\frac{3}{10}\) (three-tenths)

4. Here is a pizza divided into 12 equal slices.
   a) Are eight pieces more or less than half of the pizza? Why?
   b) Copy the diagram and shade \(\frac{6}{12}\) of the pizza.
   c) If you eat six pieces, have you eaten half of the pizza? Explain.
   d) Use a different colour to shade \(\frac{3}{12}\) of the pizza.
   e) If you eat three pieces, how many quarters of the pizza have you eaten? Explain.

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Taken from Platinum Mathematics Grade 6 (page 19)
Add and subtract fractions

If fractions have the same denominator, then you can add and subtract them easily.

Example
A cake is cut into ninths. You are given 2 pieces (two-ninths) and then 3 pieces (three-ninths), but you give away 1 piece (one-ninth). What fraction of the cake do you still have?
You have $\frac{2}{9} + \frac{3}{9} - \frac{1}{9} = \frac{4}{9}$. You still have four-ninths of the cake.

A mixed number is a number that has two parts: a whole number and a fraction. If there are mixed numbers, you add or subtract the whole numbers first.

Example
$2\frac{3}{5} + 3\frac{4}{5} - 4\frac{1}{5} = (2 + 3 - 4) + (\frac{3}{5} + \frac{4}{5} - \frac{1}{5}) = 1 + \frac{6}{5} = 1 + \frac{5}{5} + \frac{1}{5}$
$= 1 + 1 = 2\frac{1}{5}$

Example
$6\frac{3}{5} - 2\frac{5}{5} = (6 - 2) + (\frac{3}{5} - \frac{5}{5}) = 4 + \frac{3}{5} - \frac{4}{5}$
To subtract $\frac{5}{3}$ from $\frac{3}{3}$, use $1 = \frac{5}{5}$ to get more fifths.
$4 + \frac{3}{5} - \frac{4}{5} = 3 + \frac{3}{5} - \frac{4}{5} = 3 + \frac{8}{5} - \frac{4}{5} = 3\frac{4}{5}$

EXERCISE 4.10

Use the above methods to do the following additions and subtractions.
Write your answers as mixed numbers with fractions in their simplest form.

1. $\frac{3}{5} + \frac{4}{5} - \frac{2}{5}$
2. $\frac{4}{15} - \frac{2}{15} + \frac{7}{15}$
3. $2\frac{1}{3} + 3\frac{1}{3} + 4\frac{2}{3}$
4. $6\frac{3}{4} - 5\frac{1}{4}$
5. $12\frac{1}{2} + 1\frac{1}{2} - 6\frac{1}{2}$
6. $1\frac{1}{6} + 3\frac{5}{6} - 2\frac{1}{6}$
7. $6\frac{2}{5} + 1\frac{2}{5} + 2\frac{1}{5} - 7\frac{2}{5}$
8. $12\frac{1}{9} - (2\frac{4}{9} + 3\frac{2}{9})$ (Remember to do the brackets first.)
9. $12\frac{1}{9} - 2\frac{4}{9} + 3\frac{2}{9}$
10. $4\frac{1}{4} - 3\frac{3}{4} + 4\frac{1}{4}$
Solve problems with fractions

Use all your knowledge of fractions to solve these problems.

**EXERCISE 4.11**

1. There are 600 people in a concert audience. \(\frac{3}{10}\) are male and \(\frac{5}{6}\) are older than 10 years of age.
   a) What fraction of the audience is female?
   b) What fraction of the audience is younger than 10 years of age?
   c) How many people in the audience are female?
   d) How many people are younger than 10 years of age?

2. Jane has walked \(2\frac{2}{5}\) km from her home towards the shops. She still has to walk a further \(1\frac{3}{5}\) km to get there. What is the total distance from her house to the shops?

3. We are erecting safety fencing around our swimming pool. The total length of fencing is \(20\frac{3}{8}\) m. The builders have already erected two pieces. One is \(3\frac{3}{8}\) m, the next is \(4\frac{5}{8}\) m. How much fencing do they still need to erect?

4. a) What fraction of an hour is 40 minutes, in its simplest form?
   b) I sleep 8 hours a night. What fraction of a day is this?
   c) How many hours is \(\frac{3}{4}\) of a day? How many hours is \(\frac{3}{4}\) of a day?

5. Mila has saved R208. She decides to spend \(\frac{5}{8}\) of her money on a new skirt.
   a) How much did the skirt cost?
   b) How much money has she got left?

6. Thando had 24 sweets. He ate one-quarter of his sweets and gave half of what was left to a friend.
   a) How many sweets did he eat?
   b) How many sweets did he give to his friend?

7. Joe had R150. He spent \(\frac{2}{5}\) of the money on a shirt, and then he spent \(\frac{2}{3}\) of the money that was left to buy a cap.
   a) How much did the shirt cost?
   b) How much did he have left after buying the shirt?
   c) How much did the cap cost?
   d) What fraction of money did he have left after buying the cap and the shirt?
Mental maths teaser: How many is 5 ninths of a mass of 450 kilograms?

Worked example
Calculate $5\frac{2}{3} - 3\frac{1}{6}$

Answer
Estimate:
$5\frac{2}{3} = 6$ and $3\frac{1}{6} = 3$
So $5\frac{2}{3} - 3\frac{1}{6} = 6 - 3 = 3$

$5\frac{2}{3} - 3\frac{1}{6} = 5\frac{2}{6} - 3\frac{1}{6}$
$= 5 - 3 + \frac{2}{6} - \frac{1}{6}$
$= 2\frac{1}{6}$

Exercise 3
I. Copy and fill in the missing numbers:

kilogram (kg) Mass is measured in kilograms. 1 kg is 1 000 g. A medium-sized bag of sugar or a very large tub of margarine has a mass of 1 kg.
2. Write down the answers only:
   a) \( \frac{3}{5} + \frac{2}{7} = \square \)  
b) \( \square - \frac{7}{8} = \frac{4}{3} \)
   c) \( \square = 2\frac{3}{7} + 3\frac{2}{7} \)  
d) \( 5\frac{3}{8} + 3\frac{7}{8} = \square \)

4. Calculate and show how you worked out the answers:
   a) \( 5\frac{2}{5} + 3\frac{3}{10} \)  
b) \( 15\frac{5}{7} - 7\frac{7}{14} \)

5. How many is:
   a) \( \frac{7}{3} \) of 240?  
b) \( \frac{5}{6} \) of 3 600?

6. Calculate:
   a) \( \frac{3}{4} \) of 768 kilogram  
b) \( \frac{5}{6} \) of 24 hours

Unit

3 Solve problems

Mental maths teaser: Helena gets 35 out of 50 marks for a test. Her friend gets 63% for the same test. Who had the better score for the test?

Worked example
14 children get cool drink. Each child gets \( \frac{1}{3} \) of a litre of cool drink.
   a) How many litres of cool drink are needed?
   b) The cool drink is in \( 1\frac{1}{2} \) litre bottles. How many bottles should be bought?

Answer
KNOW: This is about sharing \( \rightarrow \) division \( \rightarrow \) fractions.
This uses measurement. \( 1 \, 000 \, \text{m} \ell = 1 \, \ell \)
GIVEN: 14 children; \( \frac{1}{3} \) of a litre each
NUMBER SENTENCE:
(a) Litres and millilitres of cool drink needed \( = \frac{1}{3} \times 14 \)

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*number sentence*: A mathematical sentence with a left side and right side. In the middle is \( = \) or \( \neq \) or \( > \) or \( < \). For example, \( 5 + 6 = 10 + 1 \) is a number sentence. It compares two expressions.
**How Platinum and Day-by-Day Mathematics books can help your teaching**

At the beginning of the workshop, you were required to rank the importance of the criteria that are considered important to most teachers when choosing a textbook.

The Platinum and Day-by-Day Mathematics books cover all of these criteria.

**Sequencing of content according to the CAPS**

The Platinum and Day-by-Day Mathematics books follow the exact sequence of the CAPS. Teachers are able to follow the sequence of the textbook and be confident that they have covered everything required by CAPS and in the correct order.

**Relevant and up to date content**

The authors of Platinum and Day-by-Day Mathematics books have ensured that the latest CAPS requirements are covered as well as the latest content required by the subject. Assessment tasks are all relevant to the ages of the learners.

**Specific tasks required for Programme of Assessment e.g. Tests, Projects etc.**

The Platinum and Day-by-Day Mathematics books include all the required tasks for the Programme of Assessment and the Teacher’s Guide includes all of the guidelines and answers. These can also be used for revision, extension and expanded opportunities.

**Annual teaching plan according to the CAPS with term-by-term overview**

The Platinum and Day-by-Day Mathematics books follow the exact sequence of the CAPS. They also provide a term planning tool that assists in annual and quarterly planning.

**Teacher’s Guide, which provides guidance and answers for Programme of Assessment**

The Platinum and Day-by-Day Mathematics books both have a Teacher’s Guide that provides guidelines on how to use the assessments and how to mark them. Rubrics, memoranda and checklists are also provided where appropriate.
Variety of revision activities

The Platinum and Day-by-Day Mathematics books both provide many different activities, which test knowledge and understanding on a variety of levels. Teachers are able to see the learners’ understanding of the content matter straight away. These activities are very practical and assess the content in the CAPS.

Diagrams and pictures to explain content

The Platinum and Day-by-Day Mathematics books both have many supporting diagrams and pictures to support the content. They are in full colour with eye-catching photographs.

Remedial activities to support those learners that may need extra support

The Platinum and Day-by-Day Mathematics books have many activities in the chapters as well as revision sections at the end of every topic. The Platinum Mathematics book also has remedial worksheets, which accompany the Teacher’s Guide.

Extension activities to support those learners that need expanded opportunities

The Platinum and Day-by-Day Mathematics books have many activities in the chapters as well as revision sections at the end of every topic. The Platinum Mathematics book also has extension worksheets, which accompany the Teacher’s Guide.

<table>
<thead>
<tr>
<th>Day-by-Day components</th>
<th>Platinum components</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Learner’s Book</td>
<td>• Learner’s Book</td>
</tr>
<tr>
<td>• Teacher’s Guide with free book of photocopiable worksheets</td>
<td>• Teacher’s Guide with free book of photocopiable worksheets for remediation and extension</td>
</tr>
</tbody>
</table>