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Learning MATHS 3B

Reviewed and recommended by Teachers and Parents

SAMPLE

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NAME : _____

CLASS : _____



Learning Maths Book 3B

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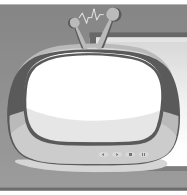
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PREFACE

Learning Maths Book 3B is a comprehensive workbook that provides students with ample practice on various mathematics question types. How is the book helpful to students?

Summary of Learning Outcomes
Refer to the overview of the topics in the book which sets the pace for learning each topic.

Formulae Sheet
Check and recall the essential and critical mathematical formulae and information for each topic.

Free Online Activities
Go online to try the fun activities. Refer to the Contents page to access them.

Topical Exercises
Work on these questions as you learn and become familiar with various question types.

Revision Papers
Test yourself. This is the best way to assess your understanding of the topics taught and learnt.

Non-routine Questions
Understand the heuristics better. Try these non-routine questions to develop your thinking and analytical skills.

Step-by-step Solutions
Learn from the carefully worked out solutions included at the back of the book.

Through this comprehensive workbook, students can gain a thorough understanding of the mathematical concepts, hone their problem-solving skills and develop creative and critical thinking skills. This book will inspire confidence as the student progresses.

Tina Myung
Dip. Ed.

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❷ Click on the title of the book.
❸ Key in the 13-digit ISBN of this book (found on back cover).



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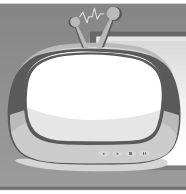
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LEARNING OUTCOMES

Unit 10 Money

Students should be able to

- add and subtract money in dollars and cents
- solve word problems related to money

Unit 11 Length, Mass and Volume

Students should be able to

- express length in kilometres, metres or centimetres
- express mass in kilograms and grams
- read the correct mass on the scales
- express volume in litres and millilitres
- read the correct volume in measuring beakers

Unit 12 Problem-Solving (Length, Mass and Volume)

Students should be able to

- solve word problems related to length, mass and volume

Revision 1

This revision paper tests a student's understanding of Units 10, 11 & 12.

Unit 13 Bar Graphs

Students should be able to

- read and interpret data from bar graphs
- draw bar graphs based on given data

Unit 14 Fractions

Students should be able to

- recognise equivalent fractions
- list up to the first eight equivalent fractions
- complete equivalent fractions
- express a fraction in its simplest form
- compare and arrange fractions
- add and subtract fractions

Unit 15 Time

Students should be able to

- read and draw the correct time
- express time in minutes or hours and minutes
- find duration between two different time
- find the starting time or ending time
- add and subtract time in hours and minutes
- solve word problems related to time

Revision 2

This revision paper tests a student's understanding of Units 13, 14 & 15.

Unit 16 Angles

Students should be able to

- identify angles and right angles
- identify angles in 2D and 3D objects
- identify the number of sides and angles in a figure

Unit 17 Perpendicular and Parallel Lines

Students should be able to

- identify and draw perpendicular lines
- identify and draw parallel lines

Unit 18 Area and Perimeter

Students should be able to

- find the area of figures in cm^2 or m^2
- find the perimeter of figures
- use the formula to find the area of figures
- solve word problems related to area and perimeter

Revision 3

This revision paper tests a student's understanding of Units 16, 17 & 18.

Final Revision

This revision paper is an excellent assessment of a student's understanding of all the topics in this book.

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FORMULAE SHEET

Unit 10 Money

Adding Money

There are three ways to add money.

❶ Add the dollars first.
Add the cents next.
Add the cents to the dollars.

Example: What is \$10.20 + \$28.35?

\$10 + \$28 = \$38
20¢ + 35¢ = 55¢
\$38 + 55¢ = **\$38.55**

❷ Round up one of the addends (A) to the nearest dollar. Add the other addend (B) and the round addend. Subtract the difference between the round addend and addend (A) from the sum.

Example: What is \$32.50 + \$0.90?

\$32.50 + \$1 = \$33.50
\$33.50 – 10¢ = **\$33.40**

❸ Add by formal algorithm.

Example: What is \$61.80 + \$12.70?

$$\begin{array}{r} \overset{1}{\$}\,6\,\overset{1}{1}.8\,0 \\ +\,\$\,1\,2.7\,0 \\ \hline \$\,7\,4.5\,0 \end{array}$$

Make sure the dollar sign (\$) and decimal point (.) align. If one of the addends does not have cents, add two zeros after the decimal point.

Subtracting Money

There are three ways to subtract money.

❶ Subtract the dollars first.
Subtract the cents next.
Add the cents to the dollars.

Example: What is \$50.90 – \$12.60?

\$50 – \$12 = \$38
90¢ – 60¢ = 30¢
\$38 + 30¢ = **\$38.30**

❷ Round up one of the subtraheads (A) to the nearest dollar. Subtract the round subtrahead from the other subtrahead (B). Add the difference between the round subtrahead and subtrahead (A) to the result.

Example: What is \$49.60 – \$8.70?

\$49.60 – \$9 = \$40.60
\$40.60 + 30¢ = **\$40.90**

❸ Add by formal algorithm.

Example: What is \$88.00 – \$54.60?

$$\begin{array}{r} \$\,8\,\overset{7}{8}.\overset{10}{0}\,0 \\ -\,\$\,5\,4.6\,0 \\ \hline \$\,3\,3.4\,0 \end{array}$$

Make sure the dollar sign (\$) and decimal point (.) align. If one of the subtraheads does not have cents, add two zeros after the decimal point.

Unit 11 Length, Mass and Volume

Length

Units of measurement: kilometres (km), metres (m) and centimetres (cm)
1 km = 1000 m
1 m = 100 cm

Mass

Units of measurement: kilograms (kg) and grams (g)
1 kg = 1000 g

When reading the scale on a weighing machine,
- find how many grams or kilograms does each small marking stand for,
- note the marking which the needle points to.

The marking pointed by the needle shows the mass of an item on a weighing machine.

Volume

Units of measurement: litres (ℓ) and millilitres (ml)
1 ℓ = 1000 ml

Capacity is the total amount of water that a container can hold.
Volume is the amount of water in a container.

When reading the scale on a measuring container,
- find how many litres or millilitres does each small marking stand for,
- note the water level that coincides with the marking on the measuring container.

The marking that coincides with the water level shows the capacity or volume of water in the measuring container.

Unit 12 Problem-Solving (Length, Mass and Volume)

Below is a suggested procedure when solving word problems.

1. Read the word problem carefully.
2. Find what you are supposed to solve in the word problem.
3. Draw model(s) for better understanding.
4. Write number sentence. You have to write two number sentences when working on a two-step word problem.
5. Do the formal algorithm on the right side of the space.
6. Write a statement to answer the question in the word problem. You can underline the final answer in the statement.

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Unit 13 Bar Graphs

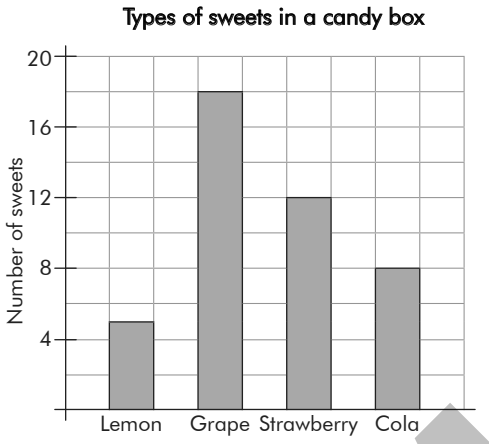
A bar graph is a single chart that displays bars representing certain values along its axis.

Bar graph is useful as it computes data or information neatly, helps in easy comparison and problem solving.

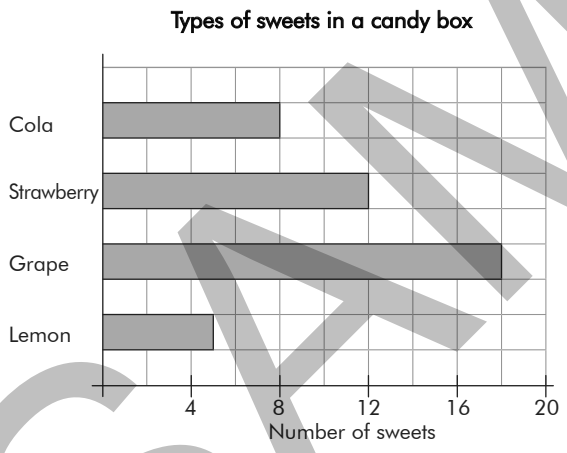
When interpreting data from bar graphs, we have to take note of the scale in the axis.

Two types of bar graphs are introduced in this book. They are, namely vertical and horizontal bar graphs.

An example of vertical bar graph is shown below.



An example of horizontal bar graph is shown below.



Unit 14 Fractions

Equivalent fractions are fractions that have the same value.

Examples: $\frac{1}{3}$, $\frac{2}{6}$, $\frac{3}{9}$ and $\frac{4}{12}$

In order to find an equivalent fraction, you have to multiply both numerator and denominator of a fraction by the same number.

Example: $\frac{3 \times 2}{5 \times 2} = \frac{6}{10}$

Comparing fractions

- When fractions have the same denominator, just compare their numerators.
  The greater the numerator, the greater the fraction.
- When fractions have the same numerator, just compare their denominators.
  The greater the denominator, the smaller the fraction.
- When fractions do not have the same numerator or denominator, make these fractions equivalent first.
  It is easier to compare when the fractions have the same numerator or denominator.

Adding fractions

1. Make sure all addends have the same denominator.
   If they do not have, find the equivalent fractions.
2. Add all numerators of each fraction to get the result.
3. Express the final fraction in its simplest form if required.

Subtracting fractions

1. Make sure all subtraheads have the same denominator.
   If they do not have, find the equivalent fractions.
   A whole (1) can be expressed in equivalent fractions like $\frac{2}{2}$, $\frac{3}{3}$, $\frac{4}{4}$, $\frac{5}{5}$, $\frac{6}{6}$, $\frac{7}{7}$, $\frac{8}{8}$, $\frac{9}{9}$, $\frac{10}{10}$, $\frac{11}{11}$ and $\frac{12}{12}$.
2. Subtract all numerators of each fraction to get the result.
3. Express the final fraction in its simplest form if required.

Unit 15 Time

Telling time

When the minute hand points before/to 6 on the face of a clock, use the word '**past**'.
When using the word 'past', you have to count the minutes that past a certain hour.

Example:



10.20 is **20 minutes past 10**.

When the minute hand has moved past 6 on the face of a clock, use the word '**to**'.
When using the word 'to', you have to count the minutes needed to move to the next hour.

Example:



12.45 is **15 minutes to 1**.

Converting hours and minutes

1 hour = 60 minutes

- When converting hours to minutes, multiply the number of hours by 60.
  Example: 7 h = 7 × 60 min = 420 min
- When converting minutes to hours, divide the number of hours by 60.
  Example: 540 min = 540 min ÷ 60 min = 9 h

Adding time

1. Add the minutes. If the total is more than 60, regroup the hours and minutes.
2. Add the hours. Remember to add an hour from the regrouping if there is any.

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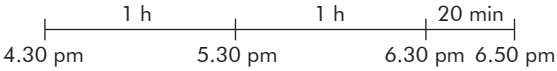
Subtracting time

1. Subtract the minutes. If this is not possible, regroup the hours and minutes.
2. Subtract the hours.

Finding the duration

A timeline is used to find the duration of time in minutes and hours. It can also be used to find the time before/ after a certain time.

Example:

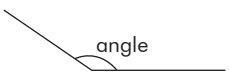


There are **2 h 20 min** from 4.30 pm to 6.50 pm.
2 h 20 min before 6.50 pm is **4.30 pm**.
2 h 20 min after 4.30 pm is **6.50 pm**.

Unit 16 Angles

When two straight lines meet, an angle is formed. Hence an angle is the amount of turning between these two lines.

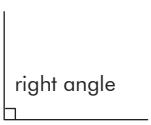
Example:



A right angle is formed when a vertical line meets a horizontal line.

Symbol: ⌝

Example:



We can compare angles based on their amount of turning. The greater the amount of turning, the greater the angle.

Angles can be found in 2-D shapes and 3-D objects. The number of sides of a 2-D shape and the number of angles in that shape are usually the same.

Example:



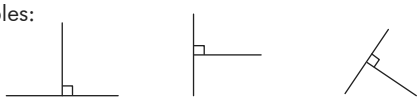
This 2-D shape has 4 sides and 4 angles.

Unit 17 Perpendicular and Parallel Lines

When two straight lines meet and form a right angle, these two lines are known as **perpendicular lines**.

Symbol: ⊥

Examples:



When drawing perpendicular lines,

1. draw two straight lines with a ruler,
2. make sure a right angle is formed when these two lines meet.

When two straight lines are equal distance away from each other and do not meet, they are known as **parallel lines**.

Symbol: //

Examples:



When drawing parallel lines,

1. draw two straight lines with a ruler,
2. make sure one line is equal distance away from the other line at all points.

Unit 18 Area and Perimeter

Area

Area is defined as the size of a surface.
Units of measurement: square centimetres (cm^2) and square metres (m^2)

Finding area of a figure in a grid of 1-cm squares

Count the number of squares that make up the figure.

Finding area of a rectangle

Area = Length × Breadth
Make sure the units of measurement for both length and breadth are the same.

Finding area of a square

Area = Length × Length
Make sure the units of measurement for all four sides are the same.

Perimeter

Perimeter is defined as the distance around a figure or an object.
Units of measurement: centimetres (cm) and metres (m)

Finding perimeter of a figure in a grid of 1-cm squares

Count the number of lines that make up the figure.

Finding perimeter of a rectangle

Total up the length and breadth of its four sides.

Finding perimeter of a square

Total up the length of its four sides.
Alternatively, we can multiply the length of one side by 4 as all sides of a square are equal.

SAMPLE

10 MONEY

Examples

1. What is \$27.35 + \$12.35?

   \$27 + \$12 = \$39

   35¢ + 35¢ = 70¢

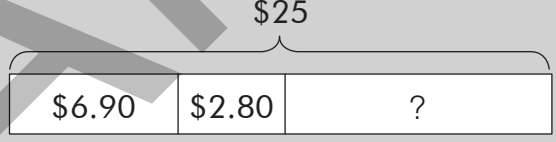
   \$39 + 70¢ = **\$39.70**

2. What is \$98.50 – \$14.90?

   \$98.50 – \$15.00 = \$83.50

   \$83.50 + 10¢ = **\$83.60**

3. Jessie has \$25 at first. She spends \$6.90 on a notebook and \$2.80 on a pen. How much money has Jessie left?



   \$6.90 + \$2.80 = \$9.70

   \$25.00 – \$9.70 = \$15.30

   Jessie has **\$15.30** left.

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Write the correct answers on the lines provided.

1. $5.35 + $3.00 = $_____

2. $43.20 + $8.00 = $_____

3. $14.00 + $90.75 = $_____

4. $30.00 + $68.90 = $_____

5. $9.05 + $0.55 = $_____

6. $24.00 + $0.90 = $_____

7. $0.80 + $70.00 = $_____

8. $82.40 + $6.80 = $_____

9. $53.60 + $2.25 = $_____

10. $43.50 + $1.80 = $_____

Fill in each blank with the correct answer.

Example:

$25.40 + $0.90 = $?

$25.40 + $1 = $26.40

$26.40 – 10¢ = **$26.30**

11. $18.20 + $0.70 = $?

$_____ + $_____= $_____

$_____ – _____¢ = $_____

SAMPLE

12. $26.90 + $0.80 = $?

$_____ + $_____ = $_____

$_____ – _____¢ = $_____

13. $72.50 + $0.90 = $?

$_____ + $_____ = $_____

$_____ – _____¢ = $_____

14. $59.60 + $0.80 = $?

$_____ + $_____ = $_____

$_____ – _____¢ = $_____

15. $76.40 + $0.70 = $?

$_____ + $_____ = $_____

$_____ – _____¢ = $_____

Add these numbers. Show your working clearly.

16.
$$\begin{array}{r} \$\ 23.50 \\ +\ \$\ 13.20 \\ \hline \\ \hline \end{array}$$

17.
$$\begin{array}{r} \$\ 86.75 \\ +\ \$\ 37.45 \\ \hline \\ \hline \end{array}$$

18.
$$\begin{array}{r} \$\ 515.55 \\ +\ \$\ 79.25 \\ \hline \\ \hline \end{array}$$

19.
$$\begin{array}{r} \$\ 4.35 \\ +\ \$\ 0.90 \\ \hline \\ \hline \end{array}$$

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20. $ 73.20
+ $ 18.00

21. $ 125.80
+ $ 214.40

22. $ 217.00
+ $ 142.85

23. $ 56.20
+ $ 64.15

24. $ 49.70
+ $ 28.50

25. $ 67.90
+ $ 17.70

Write the correct answers on the lines provided.

26. $39.40 – $5.00 = $_____

27. $78.55 – $4.00 = $_____

28. $36.70 – $0.60 = $_____

29. $82.75 – $0.20 = $_____

30. $48.60 – $0.45 = $_____

31. $99.50 – $0.35 = $_____

32. $87.30 – $4.10 = $_____

33. $69.55 – $3.35 = $_____

34. $92.60 – $1.30 = $_____

35. $58.80 – $7.50 = $_____

SAMPLE

Fill in each blank with the correct answer.

Example:

$80.50 – $0.90 = $?
$80.50 – $1 = $79.50
$79.50 + 10¢ = **$79.60**

36. $67.40 – $0.80 = $?

$_____ – $_____ = $_____

$_____ + _____¢ = $_____

37. $46.20 – $0.70 = $?

$_____ – $_____ = $_____

$_____ + _____¢ = $_____

38. $28.30 – $0.90 = $?

$_____ – $_____ = $_____

$_____ + _____¢ = $_____

39. $70.60 – $0.80 = $?

$_____ – $_____ = $_____

$_____ + _____¢ = $_____

40. $45.20 – $0.90 = $?

$_____ – $_____ = $_____

$_____ + _____¢ = $_____

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SOLUTIONS
Learning Maths 3B

Unit 10: Money

1. **8.35**
   $5 + $3 = $8
   $8 + 35¢ = $8.35
2. **51.20**
   $43 + $8 = $51
   $51 + 20¢ = $51.20
3. **104.75**
   $14 + $90 = $104
   $104 + 75¢ = $104.75
4. **98.90**
   $30 + $68 = $98
   $98 + 90¢ = $98.90
5. **9.60**
   5¢ + 55¢ = 60¢
   $9 + 60¢ = $9.60
6. **24.90**
   $24 + 90¢ = $24.90
7. **70.80**
   $70 + 80¢ = $70.80
8. **89.20**
   20¢ + $6.80 = $7
   $82.20 + $7 = $89.20
9. **55.85**
   $53 + $2 = $55
   60¢ + 25¢ = 85¢
   $55 + 85¢ = $55.85
10. **45.30**
    20¢ + $1.80 = $2
    $43.30 + $2 = $45.30
11. **18.20**, **1**, **19.20**
    19.20, **30**, **18.90**
12. **26.90**, **1**, **27.90**
    27.90, **20**, **27.70**
13. **72.50**, **1**, **73.50**
    73.50, **10**, **73.40**
14. **59.60**, **1**, **60.60**
    60.60, **20**, **60.40**
15. **76.40**, **1**, **77.40**
    77.40, **30**, **77.10**
16. $23.50 + $13.20 = **$36.70**
17. $86.75 + $37.45 = **$124.20**
18. $515.55 + $79.25 = **$594.80**
19. $4.35 + $0.90 = **$5.25**
20. $73.20 + $18.00 = **$91.20**
21. $125.80 + $214.40 = **$340.20**
22. $217.00 + $142.85 = **$359.85**
23. $56.20 + $64.15 = **$120.35**
24. $49.70 + $28.50 = **$78.20**
25. $67.90 + $17.70 = **$85.60**
26. **34.40**
    $39 – $5 = $34
    $34 + 40¢ = $34.40
27. **74.55**
    $78 – $4 = $74
    $74 + 55¢ = $74.55
28. **36.10**
    70¢ – 60¢ = 10¢
    $36 + 10¢ = $36.10
29. **82.55**
    75¢ – 20¢ = 55¢
    $82 + 55¢ = $82.55
30. **48.15**
    60¢ – 45¢ = 15¢
    $48 + 15¢ = $48.15
31. **99.15**
    50¢ – 35¢ = 15¢
    $99 + 15¢ = $99.15
32. **83.20**
    30¢ – 10¢ = 20¢
    $87 – $4 = $83
    $83 + 20¢ = $83.20
33. **66.20**
    55¢ – 35¢ = 20¢
    $69 – $3 = $66
    $66 + 20¢ = $66.20
34. **91.30**
    60¢ – 30¢ = 30¢
    $92 – $1 = $91
    $91 + 30¢ = $91.30
35. **51.30**
    80¢ – 50¢ = 30¢
    $58 – $7 = $51
    $51 + 30¢ = $51.30
36. **67.40**, **1**, **66.40**
    66.40, **20**, **66.60**
37. **46.20**, **1**, **45.20**
    45.20, **30**, **45.50**
38. **28.30**, **1**, **27.30**
    27.30, **10**, **27.40**
39. **70.60**, **1**, **69.60**
    69.60, **20**, **69.80**
40. **45.20**, **1**, **44.20**
    44.20, **10**, **44.30**
41. $7.80 – $3.50 = **$4.30**
42. $50.00 – $5.60 = **$44.40**
43. $280.50 – $66.60 = **$213.90**
44. $23.10 – $2.30 = **$20.80**
45. $758.70 – $329.40 = **$429.30**
46. $143.05 – $21.80 = **$121.25**
47. $955.60 – $89.45 = **$866.15**
48. $49.25 – $5.60 = **$43.65**
49. $10.00 – $3.45 = **$6.55**
50. $633.20 – $92.25 = **$566.95**
51. (a) **8.80**
    $3.20 + $5.60 = $8.80
    (b) **12.95**
    $5.60 + $7.35 = $12.95
    (c) **kite and a box of crayons**
    $1.15 + $3.20 = $4.35
    (d) **7.40**
    $11.45 + $1.15 = $12.60
    $20 – $12.60 = $7.40
    (e) **2.40**
    $6.50 – $4.10 = $2.40
52. $1.10 | $3.50 (?)
    $1.10 + $3.50 = $4.60
    Ashley pays **$4.60** altogether.
53. $75.35 | ? ($100)
    $100 – $75.35 = $24.65
    She would receive **$24.65** in change.
54. Desmond: $500; Brother: ? | $200 (?)
    $500 + $200 = $700
    $700 + $500 = $1200
    His parents receive **$1200** altogether.

SAMPLE

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