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Learning MATHS

Reviewed and recommended by Teachers and Parents

2B

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NAME : _____

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Learning Maths Book 2B

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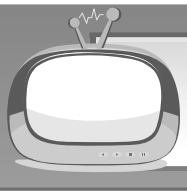
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PREFACE

Learning Maths Book 2B 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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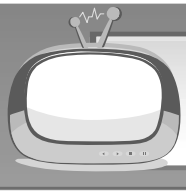
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LEARNING OUTCOMES

Unit 10 Mental Calculations
Students should be able to
- add two numbers mentally
- subtract two numbers mentally

Unit 11 Money
Students should be able to
- count and write money in dollars and cents
- convert dollars to cents or cents to dollars
- compare money
- solve word problems related to money

Revision 1
This revision paper tests a student's understanding of Units 10 & 11.

Unit 12 Fractions
Students should be able to
- understand that fractions are equal parts
- identify fractions from $\frac{1}{2}$ to $\frac{1}{12}$
- compare and arrange fractions
- add and subtract like fractions
- solve word problems related to fractions

Unit 13 Time
Students should be able to
- read and write the correct time
- use 'am', 'pm', 'h' and 'min' correctly
- draw hour and minute hands correctly
- find the time before/after a certain time given the duration of half hour or one hour

Revision 2
This revision paper tests a student's understanding of Units 12 & 13.

Unit 14 Volume
Students should be able to
- compare volume of liquid
- read and measure volume of liquid in litres
- add, subtract, multiply and divide volume
- solve word problems related to volume

Unit 15 Graphs
Students should be able to
- read and understand picture graphs with scales
- create picture graphs with scales
- use picture graphs to solve problems

Revision 3
This revision paper tests a student's understanding of Units 14 & 15.

Unit 16 Knowing Lines and Surfaces
Students should be able to
- recognise straight lines and curves
- recognise objects with only flat surfaces
- count the number of flat surfaces

Unit 17 Knowing Shapes and Patterns
Students should be able to
- recognise squares, rectangles, circles, semicircles, quarter circles and triangles in 2-D objects
- recognise cubes, cuboids, cones and cylinders in 3-D objects
- draw 2-D shapes on dot or square grid papers
- complete a pattern

Revision 4
This revision paper tests a student's understanding of Units 16 & 17.

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 Mental Calculations

Addition and subtraction can be done mentally by a few quick methods.
They are rounding numbers and breaking numbers up.

Mental addition by rounding numbers

① Round off one of the addends, A, to the nearest tens.
② Add the round tens to the other addend, B, mentally.
③ Subtract the difference between the round tens and addend A from the sum.

Mental addition by breaking numbers up

When one of the addends, A, is less than 10,
① break up the other addend, B, into ones and tens/hundreds.
Example: Break up 364 into 4 and 360.
② Add the ones to get a sum.
③ Add the sum to the remaining tens/hundreds to get the final answer.
Apply the same method to addend which is less than 100 and 1000.

Mental subtraction by rounding numbers

① Round off one of the subtraheads, A, to the nearest tens.
② Subtract the round tens from the other subtrahead, B, mentally.
③ Add the difference between the round tens and subtrahead A to the result in ②.

Mental subtraction by breaking numbers up

When one of the subtraheads, A, is less than 10,
① break up the other subtrahead, B, into ones and tens/hundreds.
Example: Break up 526 into 6 and 520.
② Subtract the ones to get a result.
③ Add the result in ② to the remaining tens/hundreds.
Apply the same method to subtrahead which is less than 100 and 1000.

Unit 11 Money

Writing dollars and cents

$1 = 100¢
When writing dollars and cents, we should place a dollar sign ($) in the front and a dot (.) to separate them.
Example: $8.95
When writing dollars without any cents, we should add two zeros after the dot.
Example: $8.00
When writing cents without any dollars, we should add a zero before the dot.
Example: $0.95

Converting dollars to cents

- Remove the dollar sign ($) and the dot (.).
- Place the cent symbol (¢) at the back.

Example: $20.50 = 2050¢

Converting cents to dollars

- Remove the cent symbol (¢).
- Place the dollar sign ($) in the front.
- Place the dot (.) just before the last two digits.

Example: 3000¢ = $30.00

Comparing money

- Compare the dollars of the two amounts first.
- If the dollars are the same, compare the cents.

Unit 12 Fractions

In a fraction, each part must be equal.
Examples of a fraction: $\frac{1}{2}$, $\frac{2}{5}$ and $\frac{8}{8}$.
To make a whole, make sure all denominators are common. All numerators add up to be like the denominator.
Example: $\frac{2}{8}$ and $\frac{6}{8}$ make a whole.

Comparing and arranging fractions in order

- When denominators of all fractions are the same, compare their numerators.
  The greatest fraction has the highest value in the numerator.
  Example: $\underset{\text{greatest}}{\frac{4}{5}}$, $\frac{2}{5}$, $\frac{1}{5}$
- When numerators of all fractions are the same, compare their denominators.
  The greatest fraction has the smallest value in the denominator.
  Example: $\underset{\text{greatest}}{\frac{1}{4}}$, $\frac{1}{8}$, $\frac{1}{12}$

You may find this table useful when comparing fractions.

$\frac{1}{2}$		$\frac{1}{8}$	
$\frac{1}{3}$		$\frac{1}{9}$	
$\frac{1}{4}$		$\frac{1}{10}$	
$\frac{1}{5}$		$\frac{1}{11}$	
$\frac{1}{6}$		$\frac{1}{12}$	
$\frac{1}{7}$			

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Adding and subtracting fractions

- Make sure denominators of all fractions are the same.
- Add and subtract the numerators accordingly.

When one of the subraheads is a whole, convert the whole into fraction before subtraction.

Unit 13 Time

There are 24 hours in a day.

1 hour = 60 minutes

Numbers 1 to 12 can be seen on the face of a clock.

We can also see hour hand and minute hand on the face of a clock.

The minute hand is longer than the hour hand.

When the minute hand moves from one number to another, it means 5 minutes has passed.

When the hour hand moves from one number to another, it means 1 hour has passed.

The units of measurement for time are hour (h) and minute (min).

Writing and reading time

We read the time on the clock as three twenty-five.

We write it as 3.25.



The abbreviation, 'am', means before noon and 'pm' means after noon.

Hence 'am' is used when we are talking about time between 12 midnight and 11.59 in the afternoon.

We use 'pm' when we are talking about time between 12 noon and 11.59 at night.

We can find the time before/after a certain time if the duration is given.

Examples: 10.00 am is 1 h before 11.00 am.
7.00 pm is 1 h after 6.00 pm.
9.30 am is 30 min before 10.00 am.
5.30 pm is 30 min after 5.00 pm.

Unit 14 Volume

The volume of water in a container is the amount of water in it.

Comparing volume

- When the water level in two identical containers is the same, use the words **as much as**.
- When the water level in one container is higher than that of the other container, use the words **more than**.
- When the water level in one container is lower than that of the other container, use the words **less than**.

The unit of measurement for volume is litre (ℓ).

Unit 15 Graphs

We use symbols to represent the items in picture graphs.

Note the scales used in picture graphs. The symbol can stand for 1 item, 2 items or even more.

Picture graphs are useful as they help to organise information for easy interpretation and problem solving.

Unit 16 Knowing Lines and Surfaces

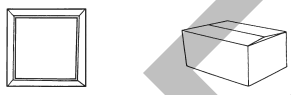
Examples of straight lines:



Examples of curves:



Examples of items with only flat surface:



Unit 17 Knowing Shapes and Patterns

Two-dimensional shapes and objects

Examples of different shapes:



square rectangle triangle circle semicircle quarter circle

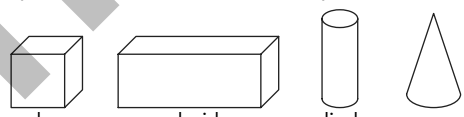
We can make use of these shapes to create a two-dimensional figure.



An example of a two-dimensional figure which is made up of two quarter circles, a square and a triangle.

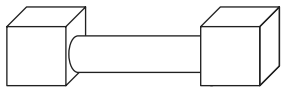
Three-dimensional objects

Examples of three-dimensional objects:



cube cuboid cylinder cone

We can make use of these shapes to create a three-dimensional figure.



An example of a three-dimensional figure which is made up of two cubes and a cylinder.

Patterns

We can use shapes in various ways to create a repeated pattern.

An example of a repeated pattern using different shapes:



An example of a repeated pattern using different sizes:



An example of a repeated pattern using different colours:



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10 MENTAL CALCULATIONS

Examples

1. What is 69 + 7?

   69 + 10 = 79

   79 – 3 = 76

   69 + 7 = **76**

2. What is 364 + 5?

   364 = 360 + 4

   4 + 5 = 9

   360 + 9 = 369

   364 + 5 = **369**

3. What is 158 + 30?

   158 = 108 + 50

   50 + 30 = 80

   108 + 80 = 188

   158 + 30 = **188**

4. What is 592 + 400?

   592 = 500 + 92

   500 + 400 = 900

   900 + 92 = 992

   592 + 400 = **992**

5. What is 95 – 9?

   95 – 10 = 85

   85 + 1 = 86

   95 – 9 = **86**

6. What is 438 – 60?

   438 – 100 = 338

   338 + 40 = 378

   438 – 60 = **378**

7. What is 247 – 40?

   247 = 207 + 40

   40 – 40 = 0

   207 + 0 = 207

   247 – 40 = **207**

8. What is 689 – 300?

   689 = 600 + 89

   600 – 300 = 300

   300 + 89 = 389

   689 – 300 = **389**

SAMPLE

Add these numbers mentally.

1. 64 + 8 = _____
2. 89 + 7 = _____
3. 26 + 5 = _____
4. 18 + 9 = _____
5. 57 + 6 = _____
6. 45 + 8 = _____
7. 37 + 5 = _____
8. 78 + 8 = _____
9. 94 + 9 = _____
10. 56 + 7 = _____
11. 127 + 5 = _____
12. 764 + 9 = _____
13. 262 + 6 = _____
14. 948 + 8 = _____
15. 435 + 7 = _____
16. 584 + 6 = _____
17. 623 + 9 = _____
18. 806 + 9 = _____
19. 366 + 5 = _____
20. 119 + 6 = _____
21. 513 + 6 = _____
22. 836 + 20 = _____
23. 723 + 80 = _____
24. 190 + 70 = _____
25. 428 + 40 = _____
26. 762 + 70 = _____
27. 503 + 90 = _____
28. 869 + 80 = _____
29. 623 + 60 = _____
30. 770 + 200 = _____
31. 323 + 600 = _____
32. 165 + 800 = _____
33. 248 + 500 = _____
34. 657 + 300 = _____
35. 195 + 700 = _____
36. 108 + 200 = _____
37. 588 + 400 = _____
38. 645 + 100 = _____
39. 199 + 600 = _____
40. 756 + 200 = _____

SAMPLE

Subtract these numbers mentally.

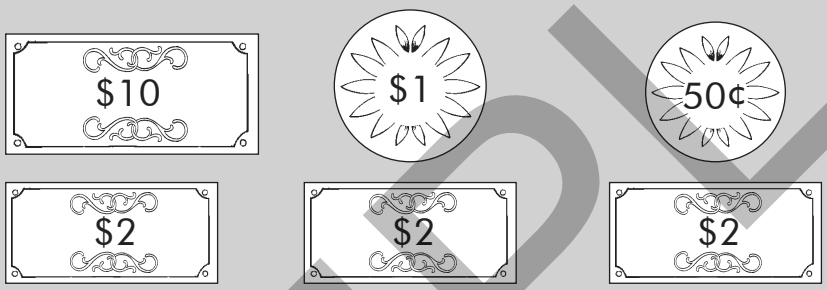
41. 52 – 5 = _____
42. 46 – 9 = _____
43. 81 – 8 = _____
44. 30 – 7 = _____
45. 88 – 3 = _____
46. 79 – 5 = _____
47. 64 – 4 = _____
48. 28 – 9 = _____
49. 93 – 1 = _____
50. 59 – 7 = _____
51. 620 – 5 = _____
52. 404 – 6 = _____
53. 875 – 4 = _____
54. 740 – 2 = _____
55. 519 – 9 = _____
56. 264 – 7 = _____
57. 329 – 6 = _____
58. 183 – 5 = _____
59. 916 – 3 = _____
60. 534 – 8 = _____
61. 415 – 30 = _____
62. 338 – 90 = _____
63. 587 – 60 = _____
64. 860 – 50 = _____
65. 609 – 10 = _____
66. 281 – 20 = _____
67. 758 – 40 = _____
68. 495 – 70 = _____
69. 164 – 80 = _____
70. 626 – 60 = _____
71. 758 – 300 = _____
72. 834 – 600 = _____
73. 905 – 800 = _____
74. 631 – 500 = _____
75. 978 – 900 = _____
76. 505 – 100 = _____
77. 784 – 400 = _____
78. 435 – 200 = _____
79. 876 – 700 = _____
80. 980 – 800 = _____

SAMPLE

11 MONEY

Examples

1. Andy receives a sum of money from his parents.
   How much does Andy receive?



   Andy receives **$17.50**.

2. Change $3.95 to cents.

   $3.95 = **395¢**

3. Change 1000¢ to dollars.

   1000¢ = **$10.00**

4. Natalie spent $12.60 on food.
   Sammi spent $15.60 and Terrence spent $20.90.
   Who spent the most money?

   Among the three amounts, $20.90 is the greatest.

   Terrence spent the most money.

SAMPLE

1. Write the correct amount of money in numerals.

   (a) ten dollars _____

   (b) two dollars and fifty cents _____

   (c) forty-four dollars and forty cents _____

   (d) thirty-nine dollars and eighty-five cents _____

   (e) sixty-seven dollars and ninety cents _____

   (f) fifty dollars and five cents _____

   (g) nineteen dollars and seventy cents _____

   (h) eighty-seven cents _____

   (i) twelve dollars and fifteen cents _____

   (j) twenty dollars and twenty-five cents _____

2. Write the amount of money in another way.

   (a) \$12.30 = _____ dollars and _____ cents

   (b) \$45.45 = _____ dollars and _____ cents

   (c) \$67.05 = _____ dollars and _____ cents

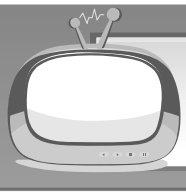
   (d) \$15.55 = _____ dollars and _____ cents

   (e) \$ 7.90 = _____ dollars and _____ cents

   (f) \$11.80 = _____ dollars and _____ cents

   (g) \$36.60 = _____ dollars and _____ cents

SAMPLE



SOLUTIONS

Learning Maths 2B

Unit 10: Mental Calculations

1. 64 + 10 = 74
   74 – 2 = **72**
2. 89 + 10 = 99
   99 – 3 = **96**
3. 26 + 10 = 36
   36 – 5 = **31**
4. 18 + 10 = 28
   28 – 1 = **27**
5. 57 + 10 = 67
   67 – 4 = **63**
6. 45 + 10 = 55
   55 – 2 = **53**
7. 37 + 10 = 47
   47 – 5 = **42**
8. 78 + 10 = 88
   88 – 2 = **86**
9. 94 + 10 = 104
   104 – 1 = **103**
10. 56 + 10 = 66
    66 – 3 = **63**
11. 127 + 10 = 137
    137 – 5 = **132**
12. 764 + 10 = 774
    774 – 1 = **773**
13. 2 + 6 = 8
    260 + 8 = **268**
14. 948 + 10 = 958
    958 – 2 = **956**
15. 435 + 10 = 445
    445 – 3 = **442**
16. 4 + 6 = 10
    580 + 10 = **590**
17. 623 + 10 = 633
    633 – 1 = **632**
18. 806 + 10 = 816
    816 – 1 = **815**
19. 366 + 10 = 376
    376 – 5 = **371**
20. 119 + 10 = 129
    129 – 4 = **125**
21. 3 + 6 = 9
    510 + 9 = **519**
22. 30 + 20 = 50
    806 + 50 = **856**
23. 20 + 80 = 100
    703 + 100 = **803**
24. 90 + 70 = 160
    100 + 160 = **260**
25. 20 + 40 = 60
    408 + 60 = **468**
26. 762 + 100 = 862
    862 – 30 = **832**
27. 503 + 100 = 603
    603 – 10 = **593**
28. 869 + 100 = 969
    969 – 20 = **949**
29. 20 + 60 = 80
    603 + 80 = **683**
30. 700 + 200 = 900
    900 + 70 = **970**
31. 300 + 600 = 900
    900 + 23 = **923**
32. 100 + 800 = 900
    900 + 65 = **965**
33. 200 + 500 = 700
    700 + 48 = **748**
34. 600 + 300 = 900
    900 + 57 = **957**
35. 100 + 700 = 800
    800 + 95 = **895**
36. 100 + 200 = 300
    300 + 8 = **308**
37. 500 + 400 = 900
    900 + 88 = **988**
38. 600 + 100 = 700
    700 + 45 = **745**
39. 100 + 600 = 700
    700 + 99 = **799**
40. 700 + 200 = 900
    900 + 56 = **956**
41. 52 – 10 = 42
    42 + 5 = **47**
42. 46 – 10 = 36
    36 + 1 = **37**
43. 81 – 10 = 71
    71 + 2 = **73**
44. 30 – 10 = 20
    20 + 3 = **23**
45. 8 – 3 = 5
    80 + 5 = **85**
46. 9 – 5 = 4
    70 + 4 = **74**
47. 4 – 4 = 0
    60 + 0 = **60**
48. 28 – 10 = 18
    18 + 1 = **19**
49. 3 – 1 = 2
    90 + 2 = **92**
50. 9 – 7 = 2
    50 + 2 = **52**
51. 620 – 10 = 610
    610 + 5 = **615**
52. 404 – 10 = 394
    394 + 4 = **398**
53. 5 – 4 = 1
    870 + 1 = **871**
54. 10 – 2 = 8
    730 + 8 = **738**
55. 9 – 9 = 0
    510 + 0 = **510**
56. 264 – 10 = 254
    254 + 3 = **257**
57. 9 – 6 = 3
    320 + 3 = **323**
58. 183 – 10 = 173
    173 + 5 = **178**
59. 6 – 3 = 3
    910 + 3 = **913**
60. 534 – 10 = 524
    524 + 2 = **526**
61. 415 – 100 = 315
    315 + 70 = **385**
62. 338 – 100 = 238
    238 + 10 = **248**
63. 80 – 60 = 20
    507 + 20 = **527**
64. 60 – 50 = 10
    800 + 10 = **810**
65. 100 – 10 = 90
    509 + 90 = **599**
66. 80 – 20 = 60
    201 + 60 = **261**
67. 50 – 40 = 10
    708 + 10 = **718**
68. 90 – 70 = 20
    405 + 20 = **425**
69. 164 – 100 = 64
    64 + 20 = **84**
70. 626 – 100 = 526
    526 + 40 = **566**
71. 700 – 300 = 400
    400 + 58 = **458**
72. 800 – 600 = 200
    200 + 34 = **234**
73. 900 – 800 = 100
    100 + 5 = **105**
74. 600 – 500 = 100
    100 + 31 = **131**
75. 900 – 900 = 0
    0 + 78 = **78**
76. 500 – 100 = 400
    400 + 5 = **405**
77. 700 – 400 = 300
    300 + 84 = **384**
78. 400 – 200 = 200
    200 + 35 = **235**
79. 800 – 700 = 100
    100 + 76 = **176**
80. 900 – 800 = 100
    100 + 80 = **180**

Unit 11: Money

1. (a) **$10.00**
   (b) **$2.50**
   (c) **$44.40**
   (d) **$39.85**
   (e) **$67.90**
   (f) **$50.05**
   (g) **$19.70**
   (h) **87¢**
   (i) **$12.15**
   (j) **$20.25**
2. (a) **twelve, thirty**
   (b) **forty-five, forty-five**
   (c) **sixty-seven, five**
   (d) **fifteen, fifty-five**
   (e) **seven, ninety**
   (f) **eleven, eighty**
   (g) **thirty-six, sixty**
   (h) **twenty, fifteen**
   (i) **fifty-nine, ninety-five**
   (j) **seventy, seventy**
3. 10¢ + 10¢ + 5¢ + 5¢ + 5¢ + 5¢ = **40¢**
4. $2 + $2 + $1 + $0.50 = **$5.50**
5. (3 × $10) + (4 × $2) + $0.20 + $0.20 + $0.10 + $0.10 + $0.05 + $0.05 + $0.05 = **$38.75**
6. $10 + $5 + $2 + (4 × $0.20) + $0.10 = **$17.90**
7. (4 × $2) + (2 × $1) + $0.10 + (3 × $0.05) = **$10.25**
8. 50¢ + 10¢ = **60¢**
9. $4.00 + $0.40 = **$4.40**
10. $11.00 + $0.10 = **$11.10**
11. $8.00 + $0.05 = **$8.05**
12. $2.00 + $0.40 = **$2.40**
13. (a) **225** (f) **8905**
    (b) **1050** (g) **10 030**
    (c) **3575** (h) **4040**
    (d) **5005** (i) **1595**
    (e) **2735** (j) **2055**
14. (a) **4.16** (f) **9.60**
    (b) **18.75** (g) **10.05**
    (c) **30.05** (h) **76.00**
    (d) **8.05** (i) **0.18**
    (e) **17.50** (j) **0.59**
15. (a) **32.50, 26.50**
    (b) **George**
16. (a) **45.90, 55.85**
    (b) **Jerry**
17. (a) **67.80, 65.90**
    (b) **65.90, 67.80**
    (c) **Mrs Drew**
18. (a) **19.60**
    (b) **26.50**
    (c) **Jennifer**
    (d) **Kate**

SAMPLE

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