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Learning MATHS 5A

Reviewed and recommended by Teachers and Parents

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Learning Maths Book 5A

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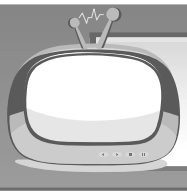
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PREFACE

Learning Maths Book 5A 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.

Use of Calculators
Learn to use the calculator to work out your answers through specially designed 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.

Norrin Hasim
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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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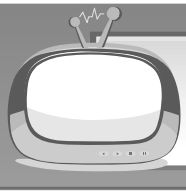
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LEARNING OUTCOMES

Unit 1 Whole Numbers (Part 1)

Students should be able to

- recognise numbers within 10 million in words and numerals
- recognise the place and value of each digit of the numbers
- compare numbers within 10 million
- arrange numbers in order and complete number patterns
- round off numbers to the nearest 1000
- estimate the answers for addition, subtraction, multiplication or division

Unit 2 Whole Numbers (Part 2)

Students should be able to

- perform addition, subtraction, multiplication and division with the use of a calculator
- perform multiplication and division of tens, hundreds and thousands
- estimate the values in multiplication and division
- perform order of operations
- solve word problems related to whole numbers

Revision 1

This revision paper tests a student's understanding of Units 1 & 2.

Unit 3 Fractions (Part 1)

Students should be able to

- identify like and unlike fractions
- add and subtract unlike fractions and mixed numbers
- make a connection between fractions and division
- convert fractions to decimals
- solve word problems related to fractions

Unit 4 Fractions (Part 2)

Students should be able to

- find the product of proper fractions
- find the product of improper and proper fractions
- find the product of improper and improper fractions
- find the product of mixed numbers and whole numbers
- divide fractions by whole numbers
- solve word problems related to fractions

Revision 2

This revision paper tests a student's understanding of Units 3 & 4.

Unit 5 Area of Triangles

Students should be able to

- identify the sides of a triangle
- identify the base and height of a triangle
- apply the formula to calculate the area of triangles
- find the area of shaded triangles

Unit 6 Ratio

Students should be able to

- find ratio and equivalent ratio
- find the ratio of two or three given quantities
- reduce a ratio to its simplest form
- solve word problems related to ratio

Revision 3

This revision paper tests a student's understanding of Units 5 & 6.

Final Revision

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

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FORMULAE SHEET

Unit 1 Whole Numbers (Part 1)

numerals	1	10	100	1000	10 000	100 000	1 000 000
words	one	ten	one hundred	one thousand	ten thousand	one hundred thousand	one million
value of digit 1	1	10	100	1000	10 000	100 000	1 000 000
place of digit 1	ones	tens	hundreds	thousands	ten thousands	hundred thousands	millions

Rules for comparing numbers

- Start from the left
- If the values of the digits are the same, compare until they are different

Rules for rounding off numbers to the nearest thousand

- use the approximation sign (≈)
- round up to the nearest thousand when the value of the digit in the hundreds place is 5 or more
- round down to the nearest thousand when the value of the digit in the hundreds place is less than 5

When estimating the value in addition and subtraction, round off the numbers first before adding or subtracting.

When estimating the value in multiplication, round off the multiplicand first before multiplying.

When estimating the value in division, round off the dividend to a number that can be divided by the divisor exactly.

Unit 2 Whole Numbers (Part 2)

Things to note when using a calculator

- Press [C] to clear the display on the calculator before starting to key in the numbers.
- Key in the numbers and operation signs (+, –, ×, ÷) on the calculator.
- Press [=] to get the final answer displayed on the calculator.

Shortcuts for multiplying numbers by 10, 100 and 1000

Multiplying numbers by 10, add a zero after the number.
Multiplying numbers by 100, add two zeros after the number.
Multiplying numbers by 1000, add three zeros after the number.

Shortcuts for dividing numbers by 10, 100 and 1000

Dividing numbers ending with 0 by 10, simply remove a zero.
Dividing numbers ending with 00 by 100, simply remove two zeros.
Dividing numbers ending with 000 by 1000, simply remove three zeros.

Estimation in Multiplication and Division

In multiplication, round off
2-digit numbers to the nearest ten,
3-digit numbers to the nearest hundred,
4-digit numbers to the nearest thousand.
In division, round off
the divisor to the nearest ten,
the dividend to a number that can be divided by the divisor without any remainder.

Rules for Order of Operations

- Brackets – work out operations in brackets first
- Multiplication and Division – work out operations involving multiplication and division before addition and subtraction
- Addition and Subtraction – work out operations involving addition and subtraction last

* If the sum involves only addition and subtraction or only multiplication and division, work from left to right.

Unit 3 Fractions (Part 1)

Like fractions have same denominators.

Examples: $\frac{1}{3}$ and $\frac{2}{3}$

Unlike fractions have different denominators.

Examples: $\frac{1}{6}$ and $\frac{2}{5}$

Adding and subtracting unlike fractions

- Make sure the denominators are the same before adding or subtracting.
- In order to make the denominators common, we must find the common multiple of the denominators.

Fractions and Division

$\frac{\text{Numerator}}{\text{Denominator}}$ = Numerator ÷ Denominator

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Fractions to Decimals

Some fractions can be converted to tenths, hundredths and thousandths first before converting to decimals.

Examples: $\frac{1}{2} = \frac{5}{10} = 0.5$

$\frac{6}{25} = \frac{24}{100} = 0.24$

$\frac{16}{125} = \frac{128}{1000} = 0.128$

When fractions cannot be converted to tenths, hundredths and thousandths, use long division to convert fractions to decimals.

Example:

$\frac{5}{9} = 5 \div 9 \approx 0.56$ (2 decimal places)

Convert Improper Fractions to Decimals

Convert improper fractions to whole numbers and proper fractions first.

Use long division to convert proper fractions to decimals.

Add decimals to whole numbers to get the answers.

Example:

$\frac{13}{9} = \frac{9}{9} + \frac{4}{9}$

$\approx 1 + 0.44$ (2 decimal places)

$= 1.44$

Convert Mixed Numbers to Decimals

Separate whole numbers and fractions in the mixed numbers.

Use long division to convert fractions to decimals.

Add decimals to whole numbers to get the answers.

Example:

$4\frac{1}{6} = 4 + \frac{1}{6}$

$\approx 4 + 0.17$ (2 decimal places)

$= 4.17$

Adding and subtracting mixed numbers

- Make the unlike fractions common first.
- Add or subtract the whole numbers.
- Add or subtract the fractions.
- If the final fraction becomes improper after adding, make it a proper fraction. Remember to add to the whole number.

Things to note when using a calculator for fractions

Use [a b/c] when keying fractions.

Examples:

$\frac{1}{2}$ Press [C] [1] [a b/c] [2]

$3\frac{1}{5}$ Press [C] [3] [a b/c] [1] [a b/c] [5]

Unit 4 Fractions (Part 2)

Finding the product of fractions

Multiply the two numerators.

Multiply the two denominators.

Express the final answer in its simplest form.

Alternatively, when there is a common factor between the numerators and denominators, we can divide accordingly to make the final answer smaller. However, there are some things to take note when doing this.

Divide only when there is a common factor between the

- numerator and denominator in a fraction
- numerator of a fraction and denominator of another fraction

Finding the product of mixed numbers and whole numbers

Convert the mixed number into an improper fraction.

Multiply the numerator of the fraction by the whole number.

The denominator remains the same.

Express the final answer in mixed number.

Dividing fractions by whole numbers

Make the whole number a reciprocal. This means making the whole number as the denominator. The numerator will be 1.

Change the division sign (÷) to multiplication sign (×).

Multiply the fractions as usual.

Unit 5 Area of Triangles

In a triangle, its height is always perpendicular to its base.

Area of triangle = $\frac{1}{2}$ x base x height

Unit 6 Ratio

Ratio is used to show comparison between two or three quantities.

Note that ratio may not be the actual quantities being compared.

To obtain an equivalent ratio, multiply ratio by a common factor.

Similarly, we can divide ratio by a common factor to reduce it to its simplest form.

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1 WHOLE NUMBERS (PART 1)

Examples

1. Write four million, nine hundred thousand, six hundred and thirteen in numeral.

   4 900 613

2. Write 853 147 in words.

   Eight hundred and fifty-three thousand, one hundred and forty-seven

3. In 397 102,
   (a) what is the value of the digit 7?
   (b) in which place is the digit 9?

   (a) **7000**
   (b) **ten thousands**

4. Which is greater, 516 489 or 516 752?

   516 752

5. Round off the numbers to the nearest thousand and estimate the value of 1735 + 3432.

   $1735 + 3432 \approx 2000 + 3000 =$ **5000**

6. Estimate the value of 8269 ÷ 9.

   $8269 \div 9 \approx 8100 \div 9 =$ **900**

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Write the following numbers in words.

1. 4 003 000 _____

2. 7 800 000 _____

3. 869 539 _____

4. 4 502 146 _____

5. 397 653 _____

Write the numbers on the lines provided.

6. Two million, seven hundred and six thousand _____

7. Four hundred and eighty-three thousand _____

8. Eight million, three hundred and fourteen _____

9. One hundred and forty-five thousand and one _____

10. Six million, one hundred and one thousand and six hundred _____

Fill in each blank with the correct answer.

11. In 54 617,
    (a) the digit 7 is in the _____ place.
    (b) the value of the digit 1 is _____.

12. In 24 367,
    (a) the digit 4 is in the _____ place.
    (b) the value of the digit 2 is _____.

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13. In 512 463,

    (a) the digit _____ is in the ten thousands place.

    (b) the value of the digit 5 is _____.

14. In 208 943,

    (a) the digit _____ is in the hundred thousands place.

    (b) the digit 8 stands for _____.

15. Circle the smallest number.

    597 630 579 603 569 730

16. Circle the smallest number.

    345 028 354 280 345 208

17. Circle the greatest number.

    612 011 621 101 621 110

18. Circle the greatest number.

    740 877 704 788 740 787

19. 72 662 = 70 000 + _____ + 600 + 62

20. 551 700 = 550 000 + 1000 + _____

21. 1 854 000 = 1 000 000 + _____ + 4000

22. 4 600 800 = _____ + 600 000 + 800

23. 1 000 000 = 999 000 + _____

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Arrange the following numbers in increasing order.

24. 35 425, 34 552, 32 554, 35 524

_____

25. 68 190, 68 091, 68 910, 68 109

_____

Arrange the following numbers in decreasing order.

26. 270 153, 207 153, 270 351, 207 531

_____

27. 419 527, 914 257, 419 257, 914 527

_____

28. 3 926 000, 3 269 000, 3 962 000, 3 296 000

_____

Complete the number patterns.

29. 66 001, 68 002, 70 003, _____, _____

30. 233 055, 234 055, _____, _____, 237 055

31. 47 405, _____, 49 405, 50 405, _____, 52 405

32. 187 310, 197 310, _____, _____, 227 310

33. 5 004 000, 5 014 000, _____, 5 034 000, _____

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Round off the following numbers to the nearest thousand.

34. 1563 ≈ _____

35. 5099 ≈ _____

36. 21 459 ≈ _____

37. 708 600 ≈ _____

38. 139 999 ≈ _____

Round off each number to the nearest thousand. Then estimate the value of the following.

39. 2157 + 6193 ≈ _____

40. 38 500 + 18 692 ≈ _____

41. 4165 – 2842 ≈ _____

42. 78 213 – 18 218 ≈ _____

43. 4915 × 5 ≈ _____

44. 8199 × 4 ≈ _____

45. 16 003 ÷ 8 ≈ _____

46. 83 562 ÷ 7 ≈ _____

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SOLUTIONS
Learning Maths 5A

Unit 1: Whole Numbers (Part 1)

1. **Four million and three thousand**
2. **Seven million and eight hundred thousand**
3. **Eight hundred and sixty-nine thousand, five hundred and thirty-nine**
4. **Four million, five hundred and two thousand, one hundred and forty-six**
5. **Three hundred and ninety-seven thousand, six hundred and fifty-three**
6. **2 706 000**
7. **483 000**
8. **8 000 314**
9. **145 001**
10. **6 101 600**
11. 54 617 = 50 000 + 4000 + 600 + 10 + 7
    (a) **ones**
    (b) **10**
12. 24 367 = 20 000 + 4000 + 300 + 60 + 7
    (a) **thousands**
    (b) **20 000**
13. 512 463 = 500 000 +10 000 + 2000 + 400 + 60 + 3
    (a) **1**
    (b) **500 000**
14. 208 943 = 200 000 + 8000 + 900 + 40 + 3
    (a) **2**
    (b) **8000**
15. **569 730**
    597 630 579 603 5(6)9 730
    In the ten thousands place, the digit 6 is the smallest.
16. **345 028**
    345 (0)28 354 280 345 208
    Comparing 345 028 and 345 208, the digit 0 in the hundreds place is smaller.
17. **621 110**
    612 011 621 101 621 1(1)0
    Comparing 621 101 and 621 110, the digit 1 in the tens place is greater.
18. **740 877**
    740(8)77 704 788 740 787
    Comparing 740 877 and 740 787, the digit 8 in the hundreds place is greater.
19. **2000**
    72 662 = 70 000 + 2000 + 600 + 62
20. **700**
    551 700 = 550 000 + 1000 + 700
21. **850 000**
    1 854 000 = 1 000 000 + 850 000 + 4000
22. **4 000 000**
    4 600 800 = 4 000 000 + 600 000 + 800
23. **1000**
    1 000 000 – 999 000 =1000
24. **32 554, 34 552, 35 425, 35 524**
    32 554 is the smallest and 35 524 is the greatest.
    34 552 is smaller than 35 425.
25. **68 091, 68 109, 68 190, 68 910**
    68 091 is the smallest and 68 910 is the greatest.
    68 109 is smaller than 68 190.
26. **270 351, 270 153, 207 531, 207 153**
    270 351 is the greatest and 207 153 is the smallest.
    270 153 is greater than 207 531.
27. **914 527, 914 257, 419 527, 419 257**
    914 527 is the greatest and 419 257 is the smallest.
    914 257 is greater than 419 527.
28. **3 962 000, 3 926 000, 3 296 000, 3 269 000**
    3 962 000 is the greatest and 3 269 000 is the smallest.
    3 926 000 is greater than 3 296 000.
29. **72 004, 74 005**
    70 003 – 68 002 = 2001
    70 003 + 2001 = 72 004
    72 004 + 2001 = 74 005
30. **235 055 , 236 055**
    234 055 – 233 055 = 1000
    234 055 + 1000 = 235 055
    235 055 + 1000 = 236 055
31. **48 405 , 51 405**
    50 405 – 49 405 = 1000
    47 405 + 1000 = 48 405
    50 405 + 1000 = 51 405
32. **207 310 , 217 310**
    197 310 – 187 310 = 10 000
    197 310 + 10 000 = 207 310
    207 310 + 10 000 = 217 310
33. **5 024 000, 5 044 000**
    5 014 000 – 5 004 000 = 10 000
    5 014 000 + 10 000 = 5 024 000
    5 034 000 + 10 000 = 5 044 000
34. **2000**
    1563 is nearer to 2000 than to 1000.
35. **5000**
    5099 is nearer to 5000 than to 6000.
36. **21 000**
    21 459 is nearer to 21 000 than to 22 000.
37. **709 000**
    708 600 is nearer to 709 000 than to 708 000.
38. **140 000**
    139 999 is nearer to 140 000 than to 139 000.
39. **8000**
    2157 + 6193 ≈ 2000 + 6000 = 8000
40. **58 000**
    38 500 + 18 692 ≈ 39 000 + 19 000 = 58 000
41. **1000**
    4165 – 2842 ≈ 4000 – 3000 = 1000
42. **60 000**
    78 213 – 18 218 ≈ 78 000 – 18 000 = 60 000
43. **25 000**
    4915 × 5 ≈ 5000 × 5 = 25 000
44. **32 000**
    8199 × 4 ≈ 8000 × 4 = 32 000

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