

PREFACE

Maths Partner is a series of six guide books (Primary 1 to Primary 6) designed to help students understand basic primary mathematical concepts.

This series of books covers every topic in each level. Examples are carefully selected based on the latest syllabus and solutions are explained in detail using simple English that can be easily understood by students.

This series of books also provides some useful tips or 'short-cuts' that help students solve mathematical sums with speed and accuracy.

Students can therefore refer to this book to learn simple and practical ways of solving mathematical problems, enabling them to become effective and efficient problem solvers.

Wayne T

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Whole Numbers (1)

Objectives

Students should be able to

- express numbers in numerals and words,
- state the place and value of each digit in a number from 100 000 to 10 million,
- compare numbers within 10 million.

10 hundreds = 1 thousand = 1000

10 thousands = 1 ten thousand = 10 000

10 ten thousands = 1 hundred thousand = 100 000

10 hundred thousands = 1 million = 1 000 000

Numbers in Numerals and Words

	Numerals	Words
7 hundred thousands	700 000	seven hundred thousand
5 ten thousands	50 000	fifty thousand
6 thousands	6 000	six thousand
9 hundreds	900	nine hundred
2 tens	20	twenty
8 ones	8	eight

In numerals, the number is 756 928.

In words, 756 928 is “seven hundred and fifty-six thousand, nine hundred and twenty-eight”.

✚ Always read the thousands first, followed by the rest. Remember to use a comma (,) to separate the thousands and the hundreds.

6 872 451 is “six million, eight hundred and seventy-two thousand, four hundred and fifty-one”.

✚ We read the millions before the thousands. Always read the greatest place value first.

Place Value

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
6	8	7	2	4	5	1

In 6 872 451,

the digit 6 stands for 6 000 000
the value of the digit 6 is 6 000 000

the digit 8 stands for 800 000
the value of the digit 8 is 800 000

the digit 7 stands for 70 000
the value of the digit 7 is 70 000

the digit 2 stands for 2000
the value of the digit 2 is 2000

the digit 4 stands for 400
the value of the digit 4 is 400

the digit 5 stands for 50
the value of the digit 5 is 50

the digit 1 stands for 1
the value of the digit 1 is 1

$$6\ 872\ 451 = 6\ 000\ 000 + 800\ 000 + 70\ 000 + 2000 + 400 + 50 + 1$$

$$= 6\ 000\ 000 + 872\ 000 + 451$$

6 872 451



1st space 2nd space

We leave 2 spaces in the number.

The 1st space helps us to read the millions.

The 2nd space helps us to read the thousands.

Comparing Numbers within 10 Million

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
4	1	9	7	0	2	3
4	1	7	2	5	0	3

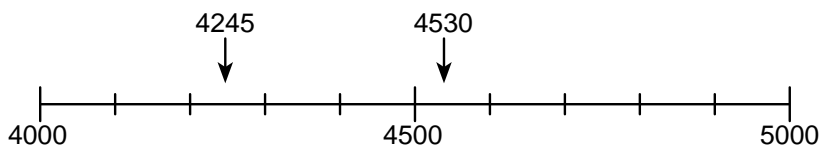


When we compare numbers, we look at the value of each digit. Always start from the left to the right. If they are the same, we continue to compare until the values of the digits are different.

In this case, 9 ten thousands is greater than 7 ten thousands.

So, 4 197 023 is greater than 4 172 503.

Rounding Off to the Nearest Thousand / Estimation



Both 4245 and 4530 are between 4000 and 5000.

4245 is nearer to 4000 than to 5000 and 4530 is nearer to 5000 than to 4000.

4245 is 4000 when rounded off to the nearest thousand.

4530 is 5000 when rounded off to the nearest thousand.

$$4245 \approx 4000$$

$$4530 \approx 5000$$

4500 is the centre value between 4000 and 5000. It is the smallest number that is 5000 when rounded off to the nearest 1000.

1. $4550 + 3299$

To estimate the value of $4550 + 3299$, let us first round off the numbers to the nearest thousand.

$$4550 \approx 5000$$

$$3299 \approx 3000$$

$$5000 + 3000 = 8000$$

So, $4550 + 3299 \approx 8000$.

2. $7431 - 2190$

$$7431 \approx 7000$$

$$2190 \approx 2000$$

$$7000 - 2000 = 5000$$

So, $7431 - 2190 \approx 5000$.

3. 5110×3

$$5110 \approx 5000$$

$$5000 \times 3 = 15\ 000$$

So, $5110 \times 3 \approx 15\ 000$.

4. $3542 \div 6$

To estimate the value of $3542 \div 6$, we choose a number that is close to 3542 and can be divided exactly by 6. 3000 and 3600 can both be divided exactly by 6, but 3542 is closer to 3600 than to 3000.

$$3542 \approx 3600$$

$$3600 \div 6 = 600$$

So, $3542 \div 6 \approx 600$.

Objectives

Students should be able to

- multiply numbers by 10,
- recognise the order of operations,
- solve two-step word problems involving the four operations.

Multiplying by 10

Look at the table below.

	Hundreds	Tens	Ones
8			8
8×10		8	0
16		1	6
16×10	1	6	0

From the table, you can see that when multiplying a number by 10, each digit moves one place to the left.

When we multiply a whole number by 10, we add 1 zero behind the number. When we multiply it by 100 or 1000, we add 2 zeros or 3 zeros behind, respectively, and so on.

Multiplying by 100 or 1000

	Ten Thousands	Thousands	Hundreds	Tens	Ones
6					6
6×100			6	0	0
12				1	2
12×100		1	2	0	0
8					8
8×1000		8	0	0	0
14				1	4
14×1000	1	4	0	0	0

From the table, when multiplying a number by 100, each digit moves two places to the left and when multiplying a number by 1000, each digit moves three places to the left.

✚ The number of zeros in the multiplier will determine the number of places that each digit moves.

✚ For division by tens, hundreds or thousands, we move the digits to the right instead of to the left. Similarly, the number of zeros in the divisor will determine the number of places that the digits move.

E.g. $90 \div 10 = 9$, $700 \div 100 = 7$, $5000 \div 1000 = 5$.

Order of Operations

✚ Always work from left to right when there are only addition and subtraction, or when there are only multiplication and division.

1. 306 people were watching a basketball match. 85 people left their seats and 112 people came for the following match. How many people were watching the new match?

$$\begin{aligned} (306 - 85) + 112 &= 221 + 112 \\ &= 333 \end{aligned}$$

333 people were watching the new match.

2. A fruit seller ordered 20 cartons of oranges. There were 48 oranges in each carton. He sold 60 oranges each day. How many days did the fruit seller take to sell all the oranges?

$$\begin{aligned} (20 \times 48) \div 60 &= 960 \div 60 \\ &= 16 \end{aligned}$$

The fruit seller took 16 days to sell all the oranges.

✚ If there are addition and subtraction with multiplication and division, we carry out multiplication and division before addition and subtraction unless there are brackets. The operations in the brackets have to be carried out first.

$$\begin{aligned} 3. \quad 178 - (25 \times 6) &= 178 - 150 \\ &= 28 \end{aligned}$$

$$\begin{aligned} 4. \quad (570 + 630) \div 40 &= 1200 \div 40 \\ &= 30 \end{aligned}$$

Word Problems

1. Bryan buys a motorbike and pays for it in monthly instalments. He pays \$215 every month. After paying 36 monthly instalments, he still has a balance of \$5160 to pay. How much will Bryan have to pay each month if he pays for the motorbike in 100 monthly instalments?

1st step: Find the total cost of the motorbike.

$$215 \times 36 + 5160 = 7740 + 5160 \\ = 12\,900$$

The motorbike costs \$12 900.

2nd step: Divide \$12 900 by 100.

$$12\,900 \div 100 = 129$$

✚ When we divide 12 900 by 100, we move each digit in 12 900 two places to the right in the place value table.

Bryan has to pay \$129 each month if he pays for the motorbike in 100 monthly instalments.

Working

$$\begin{array}{r} \overset{1}{2} \overset{3}{1} \overset{5}{5} \\ \times \quad \overset{1}{3} \overset{6}{6} \\ \hline \overset{1}{1} \overset{2}{2} \overset{9}{9} \overset{0}{0} \\ \overset{6}{6} \overset{4}{4} \overset{5}{5} \overset{0}{0} \\ \hline \overset{7}{7} \overset{7}{7} \overset{4}{4} \overset{0}{0} \end{array}$$

$$\begin{array}{r} \overset{1}{7} \overset{7}{7} \overset{4}{4} \overset{0}{0} \\ + \quad \overset{5}{5} \overset{1}{1} \overset{6}{6} \overset{0}{0} \\ \hline \overset{1}{1} \overset{2}{2} \overset{9}{9} \overset{0}{0} \end{array}$$

2. In a fruit stall, mangoes were sold at 3 for \$5. How much profit did the fruit seller make if he bought 516 mangoes at 4 for \$5?

1st step: Find out how much he paid for the mangoes.

$$516 \div 4 \times 5 = 129 \times 5 \\ = 645$$

He paid \$645 for the mangoes.

2nd step: Find out how much he made from selling the mangoes at 3 for \$5.

$$516 \div 3 \times 5 = 172 \times 5 \\ = 860$$

He made \$860 from selling the mangoes at 3 for \$5.

3rd step: Find out the profit he made.

$$860 - 645 = 215$$

The fruit seller made a profit of \$215.

Working

$$\begin{array}{r} \overset{1}{1} \overset{2}{2} \overset{9}{9} \\ 4 \overline{) 516} \\ \underline{4} \\ 11 \\ \underline{8} \\ 36 \\ \underline{36} \\ 0 \end{array}$$

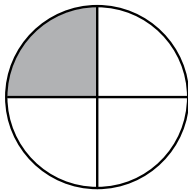
$$\begin{array}{r} \overset{3}{1} \overset{1}{7} \overset{2}{2} \\ 3 \overline{) 516} \\ \underline{3} \\ 21 \\ \underline{21} \\ 0 \end{array}$$

$$\begin{array}{r} \overset{5}{8} \overset{10}{6} \overset{0}{0} \\ - \overset{6}{6} \overset{4}{4} \overset{5}{5} \\ \hline \overset{2}{2} \overset{1}{1} \overset{5}{5} \end{array}$$

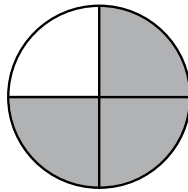
Objectives

Students should be able to

- recognise like and unlike fractions,
- add and subtract unlike fractions,
- recognise the relationship between fractions and division,
- convert proper and improper fractions to decimals,
- add and subtract mixed numbers.

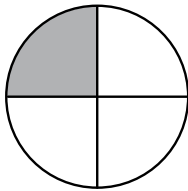
Like and Unlike Fractions

$$\frac{1}{4}$$

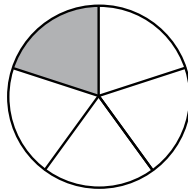


$$\frac{3}{4}$$

$\frac{1}{4}$ and $\frac{3}{4}$ are like fractions. They have the same denominator, 4.



$$\frac{1}{4}$$



$$\frac{1}{5}$$

$\frac{1}{4}$ and $\frac{1}{5}$ are unlike fractions. They have different denominators, 4 and 5 respectively.

Adding Unlike Fractions

✚ In order to add unlike fractions, we first need to convert them to like fractions.