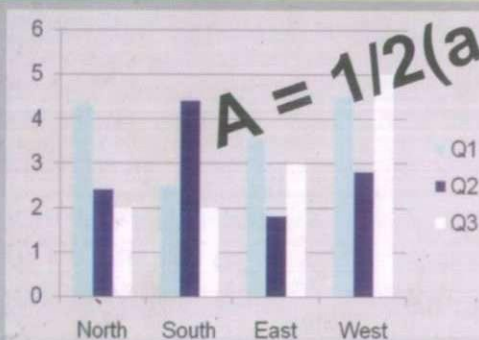


$$2y + 5 = 15$$



NA-364

Some Elementary Hints in Mathematics

M. S. M. Dahlan



National Science Foundation

Science Books Series – 11

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M. S. M. Dahlan



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**Some Elementary Hints in
Mathematics**

CONTENTS

Representation of Numbers in a Place- Value Table	1
Representation of Decimal Numbers in a Place -Value Table	1
Estimation of Decimal Numbers	2
Integers-Addition & Subtraction	2
Some Properties of Multiplication	5
Hindu Lattice Multiplication	6
Division	7
Classification of Triangles	8
Classification of Quadrilaterals	9
Application of BODMAS Sequence	10
Powers & Exponents	11
Variables & Expressions	12
Substitution	13
Equations	15
Prime Factorization	18
Greatest Common Factor (GCF)	19
Least Common Multiple (LCM)	20
Perimeter & Area	21
Use of Venn Diagrams to Solve Problems	23
Main Representational Values in Statistics	25
Representation of Data in Frequency Tables	26
Quartiles & Inter-quartile Range	27
Construction of Bar Graphs	28
Metric System	29
Some Common terminology used in Mathematics	

Representation of Numbers in a Place-Value Table

How to write a number in Standard Form and Expanded Form

Thousands Zone			Ones (Units) Zone		
H	T	O	H	T	O
2	3	8	9	6	1

How to write a larger number

Millions Zone			Thousands Zone			Ones Zone		
H	T	O	H	T	O	H	T	O
	6	4	9	3	5	7	3	4

Word Name: Sixty-four million nine hundred and thirty-five thousand seven hundred and thirty four.

Standard Form: 64 935 734

Expanded Form: $60\,000\,000 + 4\,000\,000 + 900\,000 + 30\,000 + 5\,000 + 700 + 30 + 4$

Representation of Decimal Numbers

Thousands	Hundreds	Tens	Ones	-	Tenths	Hundredths	Thousandths
2	1	9	2	-	1	6	7

Standard Form: 2 192.167

Expanded Form: 2 000 + 100 + 90 + 2 + 0.1 + 0.06 + 0.007

Estimation of Decimal Numbers

Estimate: $3.78 + 5.97$ round to the nearest whole number

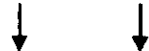
$$3.78 + 5.97$$



$$4 + 6 = 10$$

Estimate: $6.249 - 0.819$

$$6.249 - 0.819$$



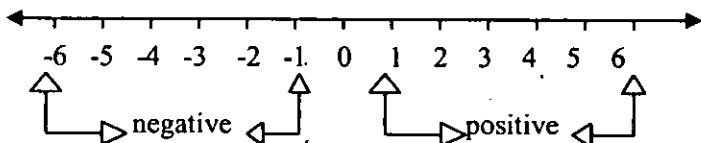
$$6 - 1 = 5$$

Integers

All the integers can be written as a set of $\{\dots, -4, -3, -2, -1, 0, 1, 2, 3, 4, \dots\}$

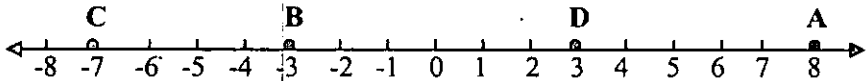
The \dots , called ellipses, means that the set continues without end, following the same pattern.

The positive integers are often written without + sign. So +2 and 2 are the same. On the number line, 0, is considered the starting point with the positive numbers to the right and negative numbers to the left. Zero is neither negative nor positive.



The arrows show that the numbers continue without end. -4 is read “negative 4” and +2 is read “positive 2”. To graph an integer, you locate the number and draw as a dot at that point on the line. Letters are sometimes used to name points on a number line. The integers that correspond to the letter is called the ordinates of that particular point.

Example: Graph points A, B, C and D on a number line. Their corresponding ordinates are 8, -3, -7 and 3 respectively.



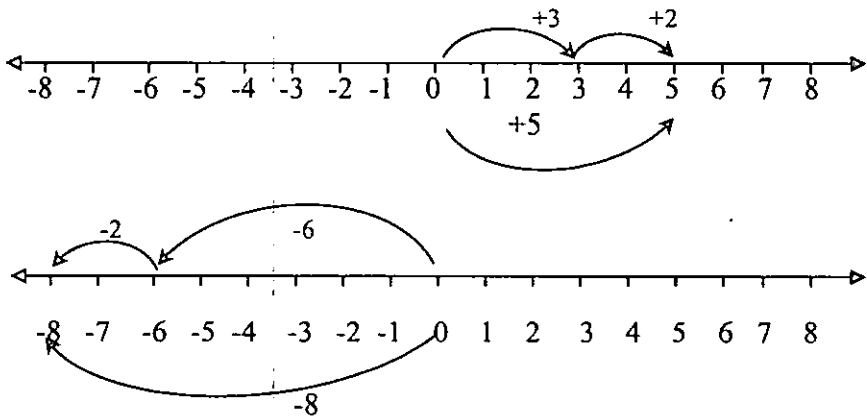
Adding integers with same sign:

The sum of two positive integers is positive

The sum of two negative integers is negative

Example: i) $3 + 2 = 5$ ii) $(-6) + (-2) = (-8)$

Representing the above two examples on a number line



Subtracting integers

The opposite of an integer is called its **additive inverse**

Example: If a number is 6, its additive inverse is (-6).

If a number is -7 its additive inverse is +7.

Property of integers and additive inverse:

The sum of an integer and its additive inverse is 0.

Arithmetic

$$6 + (-6) = 0$$

Algebra

$$X + (-X) = 0$$

Some Pattern of Properties

$$7 \times 2 = 14$$

$$1 \times 3.5 = 3.5$$

$$1 \times 0.004 = 0.004$$

$$7 \times 20 = 140$$

$$10 \times 3.5 = 35$$

$$10 \times 0.004 = 0.04$$

$$7 \times 200 = 1400$$

$$100 \times 3.5 = 350$$

$$100 \times 0.004 = 0.4$$

$$7 \times 2000 = 14000$$

$$1000 \times 3.5 = 3500$$

$$1000 \times 0.004 = 4$$

Some Properties of Addition

Commutative property of addition: The order of Addends does not change the sum

$$3 + 4 = 4 + 3$$

Associative Property of addition: The ways the Addends are grouped does not change the sum.

$$(2 + 1) + 5 = 2 + (1 + 5)$$

Identity Property: The sum of any number and zero equals the number.

$$5 + 0 = 5 \text{ and } 0 + 5 = 5$$

Example: Solve $12 + (48 + 8)$

$$12 + (48 + 8) = 12 + (8 + 48)$$

Commutative Prop. $= (12 + 8) + 48$

Associative Prop. $= 20 + 48$

$$= 68$$

Some Properties of Multiplication

Commutative Property of Multiplication

The order of the factors does not change the Product

$$6 \times 8 = 8 \times 6$$

Associative Property of Multiplication

The way the factors are grouped does not change the product

$$5 \times (8 \times 7) = (5 \times 8) \times 7$$

Zero Property of Multiplication

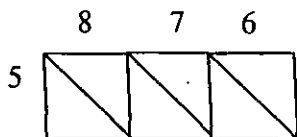
The product of any factor and zero equals zero. $49 \times 0 = 0$

Hindu Lattice Multiplication

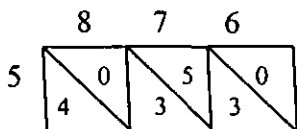
In the 12th century, mathematicians in India used a lattice method to multiply.

This is the lattice method for $5 \times 876 = 4380$

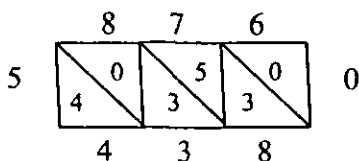
Step 1. Place the factors outside the grid



Step 2. Find the products of 5×8 , 5×7 , 5×6

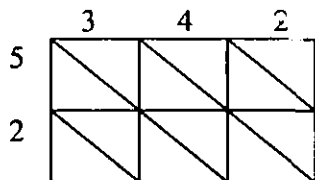


Step 3. Write the sum of the diagonals. Start from right.

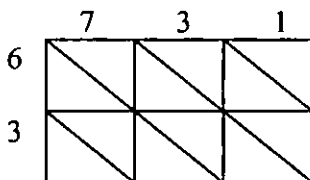


Therefore the answer is 4380

Solve: 342×25



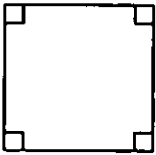
731×36



Classification of Quadrilaterals

Quadrilaterals: a four sided closed plane figure bounded by straight lines.

square



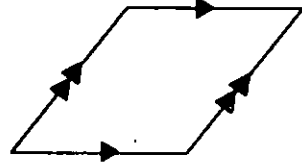
4 right angles
4 equal sides
in length

rectangle



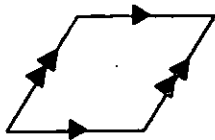
4 right angles
opposite side equal
in length

parallelogram.



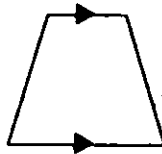
opposite side equal
in length
opposite sides parallel

rhombus



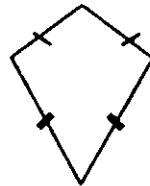
All sides equal in
length
opposite sides parallel

trapezium (trapezoid)



only one pair of
parallel sides

kite



2 pairs of equal
adjacent sides

Application of BODMAS sequence in mathematical calculation

To accurately solve mathematical problems with multiple operations a specific sequence is being followed. This process is called BODMAS sequence.

B	-	Bracket
O	-	Of
D	-	Division
M	-	Multiplication
A	-	Addition
S	-	Subtraction

Example: solve $3 \times 60/4 + 1/3 \text{ of } (25 - 10) - 5$

Step 1: do the operations given within the brackets

$$3 \times 60/4 + 1/3 \text{ of } \boxed{(25 - 10)} - 5$$

Step 1

$$3 \times 60/4 + \boxed{1/3 \text{ of } 15} - 5$$

Step 2

$$3 \times \boxed{60/4} + 5 - 5$$

Step 3

$$\boxed{3 \times 15} + 5 - 5$$

Step 4

Step 5: do the addition $\boxed{45 + 5} - 5$ ← Step 5

Step 6: do the subtractions $\boxed{50 - 5}$ ← Step 6

Therefore the answer is 45

Powers and Exponents

<u>Generation</u>	<u>family tree</u>	<u>number</u>
Person	P	1
Parents	FM	$1 \times 2 = 2$
Grand parents	FM FM	$2 \times 2 = 4$
Great-grand parents	FM FM FM FM	$2 \times 2 \times 2 = 8$
Great-great-grand Parents	FM FM FM FM FM FM FM FM	?

Study the pattern in the number column of the table. What is the next value would be? When two or more numbers are multiplied, these numbers are called **factors** of the product. When the same factor is repeated, you may use an **exponent** to simplify the notation.

$16 = 2 \times 2 \times 2 \times 2 \longrightarrow 2^4$ four is the exponent

An expression like 2^4 is called a **power** and is read; '2 to the power 4' or '2 to the fourth power'. The 2 in this expression is the **base**.

Powers are often used to write a product in a shorter form.

Example: $3 \times 4 \times 4 \times 3 \times 4 \times 3 \times 3 = 4^3 \times 3^4$

Variables and Expressions

In mathematics we also use substitution. Let us consider the **numerical expression**

$5 + 6$. it has a value of 11. how ever the expression $x + 4$ does not have a value until a value for x is given. But when you substitute the value $x = 10$ or put 10 in place of x in the expression, it becomes $10 + 4$, which is equal to 14.

In order to **evaluate**, or find the value of a numerical expression, we need to follow an **order of operations**. That is you need to know which operation to do first when there is more than one operation in the expression.

Order of operations:

1. Do all operations within grouping symbols first; start with innermost grouping symbols.
2. Do all powers before other operations.
3. Next, do all multiplications and division in order from left to right
4. Then do all addition and subtraction.

Example: evaluate $(4 + 8) / 3 \times 5 + (2^2 + 7)$

You may have to follow the order of operations to do this step.
Do operations in the parentheses first.

$$\begin{aligned}
 (4 \times 8) / 3 \times 5 + (2^2 + 7) &= 12 / 3 \times 5 + 11 \\
 &= 4 \times 5 + 11 \\
 &= 20 + 11 \\
 &= 31
 \end{aligned}$$

Algebra is a language of symbols. In algebra, we use letters, called **variables** to represent unknown quantities. In the expression $x + 4$, x is a variable.

Expressions that contain variables are called **algebraic expressions**.

In order to evaluate algebraic expressions, you must know how to read expressions.

$3a$	means	\longrightarrow	$3 \times a$
ab	means	\longrightarrow	$a \times b$
$5 \times 2y$	means	\longrightarrow	$5 \times 2 \times y$
$a [b (cd)]$	means	\longrightarrow	$a \times (b \times c \times d)$
$t / 3b$	means	\longrightarrow	$t / (3 \times b)$

Substitution

Algebraic Expressions: Expressions involving algebraic symbols.

$2x + 3$ \longleftarrow an expression with one variable.

$5x + 2y + 1$ \longleftarrow an expression with two variables.

Solving expressions with one variable

Example: find the value of $2x + 1$, when $x = 3$

Substitute the numerical values 3 for the algebraic symbol x or variable.

$$\begin{aligned} 2x + 1 &= 2 \times 3 + 1 \\ &= 6 + 1 \\ &= 7 \end{aligned}$$

Solving expressions in two variables

Example: find the value of $3a - 2b$, when $a = 5$ and $b = 3$
 Let us substitute the values of a and b
 Then $3a - 2b = 3 \times 5 - 2 \times 3$
 $= 15 - 6$
 $= 9$

Substitution related to equations

Example: in the equation $y = 6m - 2$ find the value of y
 when $m = \frac{1}{2}$. Let us substitute the value $m = \frac{1}{2}$ in the equation
 Then $y = 6m - 2$
 $= 6 \times \frac{1}{2} - 2$
 $= 3 - 2$
 $= 1$

Example: Evaluate $x + y - 4$ if $x = 5$ and $y = 3$
 First replace each variable in the expression with its value.
 Then use the order of operations.

$$\begin{aligned} x + y - 4 &= 5 + 3 - 4 \\ &= 8 - 4 \\ &= 4 \end{aligned}$$

Example: Evaluate $2a + 3b$ if $a = 4$ and $b = 12$
 $2a + 3b = 2(4) + 3(12)$
 $= 8 + 36$
 $= 44$

Example: Evaluate $b^2 / 3a$ if $b = 6$ and $a = 3$
 The bar, which means division, is also a grouping symbol.
 Evaluate the expressions in the numerator and denominator
 separately before dividing.

$$\begin{aligned} b^2 / 3a &= 6^2 / 3 \times 3 \\ &= 36 / 9 \\ &= 4 \end{aligned}$$

Equations

A situation that can be represented by a mathematical sentence with an equal sign is called an **equation**.

Equation $50 - 30 = y$

The value that makes sentence (statement) true is called the **solution** of that equation. In the above equation $50 - 30 = y$, 20 is the solution of that equation. The process of finding the solution is called **solving the equation**.

Some equations do not have the variable alone on one side of the equal sign. For example, let us look at the equation $45 + a = 64$

Try 19 for value of a

Then you get $45 + 19 = 64$

$$64 = 64 \text{ true}$$

Addition Property of Equality:

If you add the same number to each side of an equation, then the sides remain equal.

Arithmetic

$$\begin{aligned} 5 &= 5 \\ 5 + 2 &= 5 + 2 \\ 7 &= 7 \end{aligned}$$

Algebra

$$\begin{aligned} a &= b \\ a + c &= b + c \end{aligned}$$

Subtraction Property of Equality:

If you subtract the same number from each side of an equation, then the sides remain equal.

Arithmetic	Algebra
$5 = 5$	$a = b$
$5 - 2 = 5 - 2$	$a - c = b - c$
$3 = 3$	

Examples:

1. solve $y - 34 = 15$
 $y - 34 + 34 = 15 + 34$
 $y = 49$

2. solve $p + 17 = 48$
 $p + 17 - 17 = 48 - 17$
 $p = 31$

Solving statement problems

Kanthis is thinking of a number. She divides her number by 4 and subtract 6. The result is 3. What number Kanthis is thinking of?

Let us think \longrightarrow divided by 4 \longrightarrow subtract 6 \longrightarrow result is 3.
 Kanthis number as y

Now let us write the equation:

$$y / 4 - 6 = 3$$

$$y / 4 - 6 + 6 = 3 + 6$$

$$y / 4 = 9$$

$$4 \times y / 4 = 9 \times 4$$

$$y = 36$$

Writing Expressions and Equations

Verbal Phrase	Algebraic Expression
8 more than a number	$n + 8$
A number decreased by 10	$m - 10$
The sum of twice a number and four	$2y + 4$
A number divided into 5 groups	$m / 5$

Verbal statements may be translated into equations. The equations can often be used to solve a problem.

Verbal Statement	Algebraic Equation
Three is five more than a number	$3 = a + 5$
Four times a number is one hundred	$4n = 100$

Example:

Ravi has Rs.5 more than the twice the amount Kapila has. Ravi has Rs.15. Write an equation to represent this problem.

Let y = the amount Kapila has

Twice the amount Kapila has $\longrightarrow 2y$

Rs.5 more than that $\longrightarrow 2y + 5$

Ravi's amount, Rs.15, equal this $\longrightarrow 2y + 5 = 15$

How to find the value of y

$$\begin{array}{ll}
 2y + 5 = 15 & \longleftarrow \text{equation} \\
 2y + 5 - 5 = 15 - 5 & \text{subtract 5 from each side} \\
 2y / 2 = 10 / 2 & \text{divide each side by 2} \\
 y = 5 &
 \end{array}$$

Prime Factorization

In mathematics, we use factoring to separate a number into smaller parts. The basic elements of a number are its factors. When a whole number greater than 1 has exactly two factors, 1 and itself, it is called a **prime number**. For example, 5 is a prime number since it has two factors, 1 and 5.

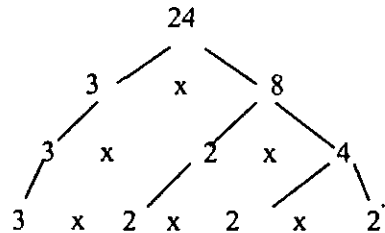
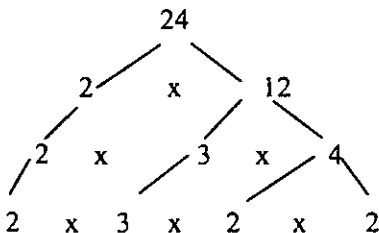
Any whole number, except 0 and 1, that is not prime can be written as a product of prime numbers. When a whole number greater than 1 has more than two factors, it is called a **composite number**. For example 6 is a composite number since it has four factors, 1, 2, 3 and 6.

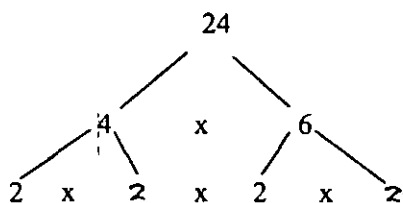
The numbers 0 and 1 are neither prime nor composite. Notice that 0 has an endless number of factors and that 1 has only one factor, itself.

To find the prime factors of any composite numbers begin by expressing number as a product of two factors. Then continue to factorize until all the factors are prime. When a number is expressed as a product of factors that are all prime. The expression is called the **prime factorization** of the number.

Example: $84 = 2 \times 2 \times 3 \times 7$
 $90 = 2 \times 3 \times 3 \times 5$

The diagrams below each show a different way to find the prime factorization of 24. These diagrams are called **factor trees**.

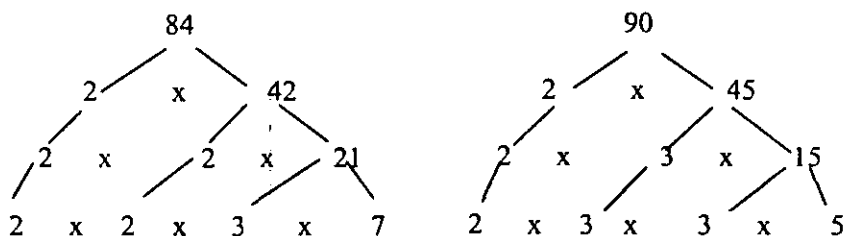




Every number has a unique set of prime factors. Notice that the bottom row of “branches” in each factor tree is the same except for the order in which the factors are written.

Greatest Common Factor

The greatest of the factors common to two numbers is called the **greatest common factor (GCF)** of the numbers. You can use prime factorization to find the GCF. Consider the prime factorization of 84 and 90 below.



The integers 84 and 90 have 2 and 3 as common factors. The product of these prime factors, 2×3 or 6 is the GCF of 84 and 90.

Example: Use prime factorization to find the GCF of 84, 126 and 210.

Write each number as a product of prime factors.

$$84 = 2 \times 2 \times 3 \times 7$$

$$126 = 2 \times 3 \times 3 \times 7$$

$$210 = 2 \times 3 \times 5 \times 7 \text{ the common factors } 2, 3, \text{ and } 7$$

Thus, the GCF is $2 \times 3 \times 7$ or 42.

Least Common Multiple (LCM)

The least of the common multiple of two or more numbers is called the **least common multiple (LCM)**

Example: Find the LCM of 2, 4 and 6

Method 1: Multiples of 2 = 0, 2, 4, 6, 8, 10, 12

Multiples of 4 = 0, 4, 8, 12, 16, 20,

Multiples of 6 = 0, 6, 12, 18, 24, 30,

Common multiples are 12, 24, 36, 48,

There fore LCM is 12

Method 2: Prime factorization can be used to find the LCM of a set of numbers.

A common multiple contains all the factors of each number in the set. The LCM contains each factor the greatest number of times it appears in the set.

$$2 = \boxed{2} \times 1 \qquad 21 = 3 \times 7$$

$$4 = \boxed{2} \times 2 \qquad 25 = 5 \times 5$$

$$6 = \boxed{2} \times \quad 3 \qquad 9 = 3 \times 3$$

$$\begin{array}{ccc} \downarrow & & \downarrow \\ 2 & \times & 2 \times 3 = 12 \end{array}$$

The greatest power of 3 is 3^2
 The greatest power of 5 is 5^2
 The greatest power of 7 is 7^1

Therefore the LCM of 21,25,9 is $3^2 \times 5^2 \times 7^1 = 1\ 575$

Method 3: find the LCM of 6, 8, and 12

$$2 \overline{) 6, 8, 12}$$

$$2 \overline{) 3, 4, 6}$$

$$3 \overline{) 3, 2, 3}$$

$$2 \overline{) 1, 2, 1}$$

$$1, 1, 1$$

Go on dividing the set of numbers

by prime factors

Then you get $2 \times 2 \times 2 \times 3$

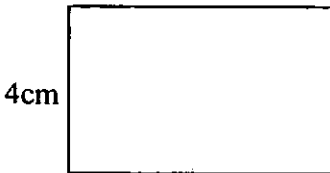
Therefore the LCM is 24

Perimeter and Area

The perimeter of a geometric plane figure is the sum of the measures of all sides. To find the perimeter of the rectangular piece of glass you can add up the length of all the sides or you can use an equation. The equation for the perimeter of any rectangle is $P = 2a + 2b$ where 'a' represents the length and 'b' represents the width.

Example:

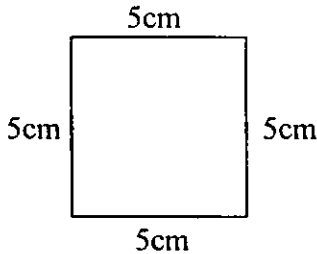
11cm



$$\begin{aligned} P &= 2a + 2b \\ &= 2(11) + 2(4) \\ &= 22 + 8 \\ &= 30\text{cm} \end{aligned}$$

A square is a special rectangle in which the lengths of all sides are equal. The values for a and b in the perimeter equation are the same number. For this reason, the perimeter equation for a square is often written as $P = 4s$, where 's' is the length of a side.

Example:

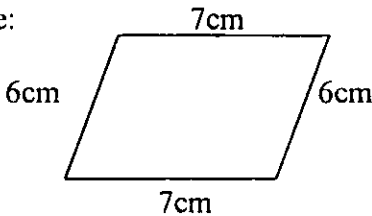


$$\begin{aligned} P &= 4s \\ &= 4(5) \\ &= 20\text{cm} \end{aligned}$$

Squares and rectangles are special types of parallelograms. Each pair of opposite sides of a parallelogram are parallel and have the same length.

To find the perimeter of a parallelogram, you add the length of the sides.

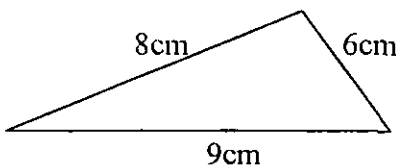
Example:



$$\begin{aligned} P &= 2a + 2b \\ &= 2(7) + 2(6) \\ &= 14 + 12 \\ &= 26\text{cm}. \end{aligned}$$

To find the perimeter of a triangle, you add the length of all 3 sides.

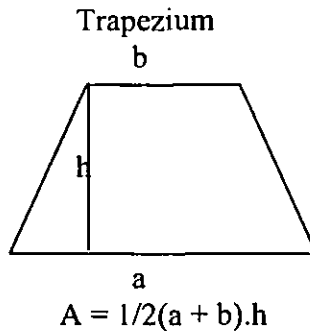
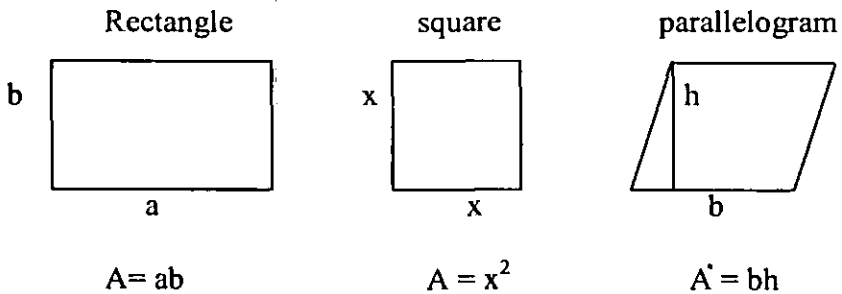
Example:



$$P = 8 + 9 + 6 = 23\text{cm}$$

Area

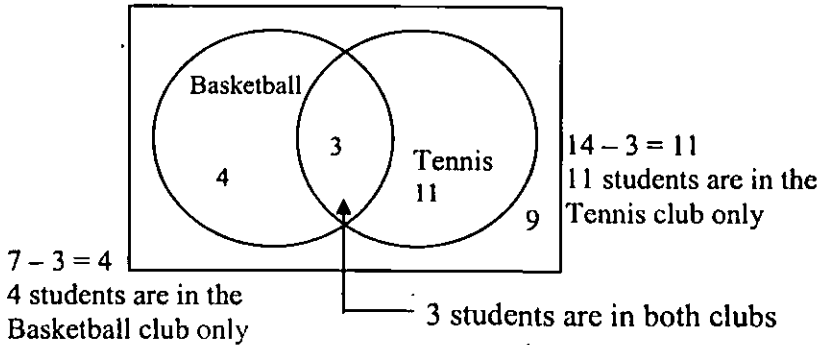
The area of a geometric plane figure is the measure of the surface enclosed by the figure. The area of any rectangle can be found by multiplying the length and width.



Use of Venn Diagrams to Solve Problems.

Example: There are 27 students in a class. 14 of them are members of the Tennis Club, 7 are members of the Basketball Club. 3 of them are members of the both the Tennis Club and Basketball Club. How many students are not in either Club.

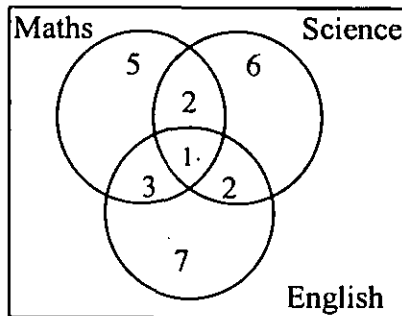
To solve the above problem you can use a Venn Diagram to show the above information as follows.



Add to find the number of students in either Clubs or in both Clubs. $4 + 3 + 11 = 18$

subtract to find the total number of students who are not in either Club. $27 - 18 = 9$

Now try this problem



Number of students passed in Maths, Science ,and English is represented in the above Venn Diagram. Find the following data by using the above diagram.

1. Number of students passed in Maths?
2. Number of students passed in all 3 subjects?
3. Numbers of students passed in Maths and English?
4. Number of students passed in Science and Maths only?

Main Representational Values in Statistics

Example: Grade nine students were asked how many times they have eaten ice-cream lastweek.

the results were 3, 0, 1, 1, 5, 2, 0, 1, 8

Write the numbers in order from the least to the gratest.

0, 0, 1, 1, 1, 2, 3, 5, 8

the **Range** is the difference between the greatest and the least number.

$$8 - 0 = 8$$

the **Mode** is the number that occurs most often.

There fore the mode is 1

The **Median** is the middle number,if they are arranged in ascending (increasing) or discending (decreasing) order.since the data has a nine numbers the middle number is the fifth one.therefore the median also one here.

0, 0, 1, 1, ① 2, 3, 5, 8

if there are two middle numbers in a group of data.to find the median of

0, 1, 2, 3, 5, 6, 7, 7, 8, 9 add the two middle numbers and divide the number by 2.

Hence $5 + 6 = 11$ $11 / 2 = 5.5$ therefore the median is 5.5

Mean : the sum of data divided by the number of data. When we consider the above example the mean = $(0+1+2+3+5+6+7+7+8+9)$ divided by 10 = $48 / 10$ Hence the answer is 4.8

Representation of Data in a Frequency Table

These are often used in statistics. Statistics is a branch of mathematics that deals with collecting, organizing and analyzing data.

One type of table used in statistics is a **frequency table**.

A frequency table tells how many times each piece of data occurs in a set of information.

The table below shows the result of a survey done by a sports club regarding some games

Game	Tally	Frequency
Soccer		21
Hockey		22
Cricket		18
Tennis		19

When statisticians study the data and make conclusions from the numbers they are observing, we call it **data analysis**. Some times when there is a wide range of data, statisticians will group the data into intervals.

In a large set of data, such as exam results, it is helpful to separate the data into four equal parts called **quartiles**.

Interquartile Range:

The inter quartile range is the range of the middle half of data.

Example:

Step 1. Find the median of the data since the median separate the data into halves.

3, 3, 5, 6, 6, 7, 10, 10, 10, 12, 12, 14, 16, 17, 20



Median

Step 2. Find the median of the upper half. This number is called **Upper Quartile**, indicated by UQ.

Step 3. Find the median of the lower half. This number is called the **Lower Quartile**, indicated by LQ.

3, 3, 5, 6, 6, 7, 10, 10, 10, 12, 12, 14, 16, 17, 20



LQ



median



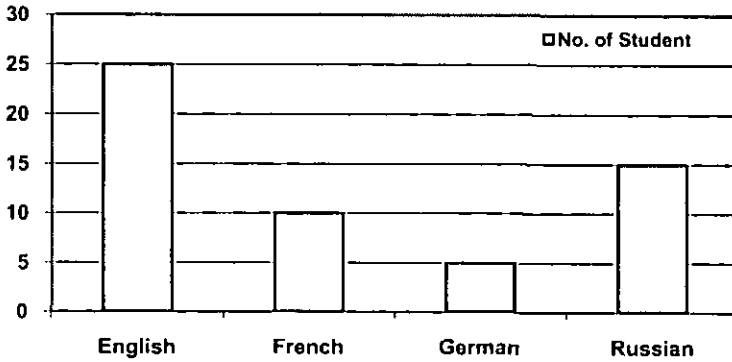
UQ

Therefore the interquartile Range = $UQ - LQ = 14 - 6 = 8$

According to the above data the interquartile Range is 8.

Construction of Bar Graphs

In a bar graph the data are represented in the form of bars.



Horizontal Axis represents the languages chosen
Vertical Axis represents the number of students

Use the above graph to answer the following questions.

1. What language is mostly spoken by the six graders?
2. How many students have chosen French?
3. How many students have chosen Russian?
4. How many students are in grade six?
5. What is the difference between the number of students who have chosen English and the number of students who have chosen German?

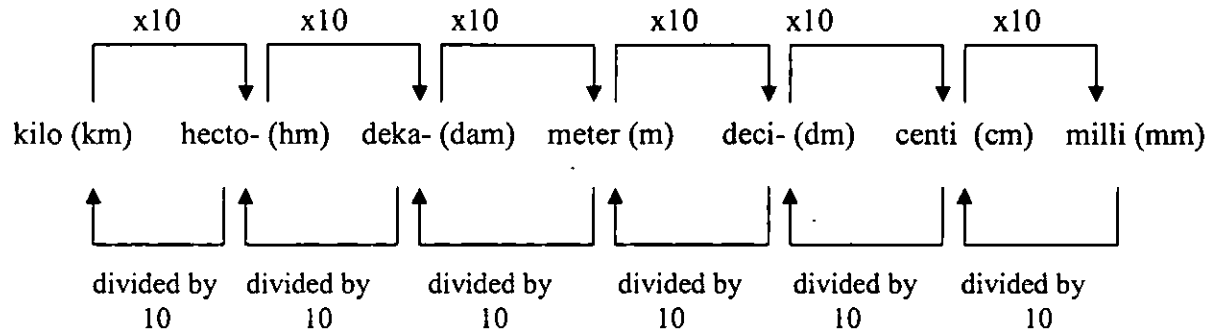
The Metric System

The metric system was created by a French scientist in the late 18th century as a standard Measurement. The United State is the only large nation of the world that does not commonly use this system. the Metric system is a decimal system. that means it is based on 10.

The standard unit of length in the Metric system is the meter(m).the standard of capacity is the liter (L) and the standard unit of mass is the gram (g).

<u>Prefix</u>	<u>Symbol</u>	<u>Meaning</u>	<u>Example</u>
kilo-	k	1000	1km = 1000m
hecto-	h	100	1hL = 100L
deca-	da	10	1dag = 10g
deci-	d	0.1	1dg = 0.1g
centi-	c	0.01	1cm = 0.01m
milli-	m	0.001	1mL = 0.001L

The diagram bellow shows how you change one unit to another by multiplying or by dividing.



Relationship between units of measurement in the metric system

When you multiply by 10, 100 and 1000 you can determine the answer by moving the decimal point right as many places as there are zeros in the multiplier.

$$100 \times 6.54 = 654. = 654$$

$$1000 \times 6.54 = 6540. = 6540$$

When you divide by 10, 100, and 1000 you move the decimal point left as many places as you have zeros in the divisor.

$$78 / 1 = 78$$

$$78 / 10 = 7.8 = 7.8$$

$$78 / 100 = 0.78 = 0.78$$

$$78 / 1000 = 0.078 = 0.078$$

Common Terminology used in Mathematics

Absolute	නිරපේක්ෂ	Base	ආධාරකය/පාදය
Adjacent	බද්ධ	Basis	පදනම
Addition	එකතු කිරීම	Basic	මූලික
Adjustment	සීරුමාරුව	Bearing	දිශංශය
Additive Bond	ආකල බන්ධනය	Bisector	සමඵච්ඡේදකය
Additive Inverse	ආකල ප්‍රතිලෝමය	Bisection	සමඵච්ඡේදනය
Algebraic	වීජීය	Binary	ද්විමය
Algebraic Expression	වීජීය ප්‍රකාශන	Bilateral	ද්විපාර්ශ්වික
Algebraic Function	වීජීය ශ්‍රිතය	Bar Graph	නීර (ස්තම්භ) ප්‍රස්තාරය
Allied Angles	මිත්‍ර කෝණ	Binomial	ද්විපද
Alternate Angle	ඒකාන්තර කෝණය	Capacity	ධාරිතාව
Altitude	උච්ඡය	Circle	වෘත්තය
Angle of Depression	අවරෝහණ කෝණය	Circumference	පරිධිය
Angle of Elevation	ආරෝහණ කෝණය	Corresponding Angle	අනුරූප කෝණය
Anti-clockwise (Counter Clockwise)	වාමාවර්ත	Congruent	අංගසම
Approximate	ආසන්න	Curve	වක්‍රය
Axioms	ප්‍රත්‍යක්ෂ	Curvature	වක්‍රතාව
Axis	අක්ෂය	Chord	ජ්‍යාය
Axis of Symmetry	සමමිතික අක්ෂය	Component	සංරචකය
Axis of Rotation	භ්‍රමණ අක්ෂය	Composite	සංයුත
Arithmetic	අංක ගණිතය	Co-ordinate	බි-ස්වංකය
Arithmetic Progression	සමාන්තර ශ්‍රේණිය	Concave	අවතල
Arms of an Angle	කෝණයක බාහු	Convex	උත්තල
Arc	වාපය		

Complex
Complementary
Coefficient
Constant
Conclusion
Concept
Consequent
Consecutive
Construction
Direct Numbers
Division
Dividend
Divisor
Denominator
Digit
Direction
Discount
Distribution
Distributive Law
Domain
Decimal
Diameter
Graph
Graphical

සංකීර්ණ
අනුසූරක
සංගුණකය
නියතය
නිගමනය
සංකල්පය
පසුපදය
අනුගාමී
නිර්මාණය
සදිශ සංඛ්‍යා
බෙදීම
භාජකය
භාජකය
හරය
ඉලක්කම්
දිශාව
වට්ටම
ව්‍යාප්තිය
විඝටන න්‍යාය
විෂම
දශම
විෂ්කම්භය
ප්‍රස්තාරය
ප්‍රස්තාරික

Equal
Equality
Equilibrium
Equivalent
Equilateral
Equation
Element
Estimation
Exterior
Factor
Factorization
Fraction
Formula
Frequency
Fixed
Flow Chart
Function
Geometry
Geometrical
Geometrical Progression
Geoboard

සමාන
සමානතාව
සමතුලිතතාව
තුල්‍ය
සමපාද
සමීකරණය
අවයවය
නිමානය
බාහිර
සාධකය
සාධක සෙවීම
භාගය
සූත්‍රය
සංඛ්‍යාතය
අවල
ගැලීම් සටහන
ශ්‍රිතය
ජ්‍යාමිතිය
ජ්‍යාමිතික
ගුණෝත්තර ශ්‍රේඪිය
ඇණ සහිත පුවරුව

Height	උස	Lamina	ආස්තරය
Hemisphere	අර්ධ ගෝලය	Linear	රේඛීය
Hexagon	ඡඩ්‍රය	Least Common Multiple	කුඩා පොදු ගුණාකාරය
Histogram	ඡාල රේඛය	Logarithm	ලඝුගණක
Homogeneous	සමජාතිය	Locus	පථය
Horizontal	තිරස්	Lattice	දැලිස
Hypothesis	කල්පිතය	Linear	රේඛීය/ඒකජ
Index	දර්ශකය	Line	රේඛාව
Integers	නිඛිල	Mean	මධ්‍යන්‍යය
Infinity	අන්තක්‍ය	Median	මධ්‍යස්ථය
Intersection	ඡේදනය	Mode	මාතය
Inverse	ප්‍රතිලෝමය	Maximum	උපරිම
Inequality	අසමානතාව	Minimum	අවම
Irrational Numbers	අපරිමේය සංඛ්‍යා	Monomial	ඒකපද
Isosceles Triangle	සමද්විපාද ත්‍රිකෝණය	Multiple	ගුණාකාරය
Improper Fraction	විෂම භාග	Matrix	තාසය
Interior Angle	බාහිර කෝණය	Magnitude	විශාලත්වය
Intercept	අන්තඃ ඛණ්ඩය	Numerator	ලභය
Interest	පොලිය	Numerical	සංඛ්‍යාත්මක
Intermediate	අතරමැදි	Negative	සෘණ
Inter - Quartile Range	අන්තශ්චතුර්තක පරාසය	Notation	අංකනය
Irregular	අවිධි	Nomenclature	නාමකරණය
Grid	ඡාලකය/වගුව		
Gradient	අනුක්‍රමණය		

Octagon
 Opposite Angle
 Ordered Pair
 Origin
 Obtuse Angle
 Obtuse Angled Triangle
 Octahedron
 Odd Numbers
 Parallel
 Parallelogram
 Percentage
 Perfect
 Pentagon
 Perimeter
 Perpendicular
 Pictogram
 Probability
 Product
 Process
 Place Value
 Profit
 Progression
 Proportion

අෂ්ටාස්‍රය
 ප්‍රතිච්ඡිද කෝණ
 පටිපාටිගත යුගලය
 මූල ලක්ෂ්‍යය
 මහා කෝණය
 මහා කෝණික ත්‍රිකෝණය
 අෂ්ට කලය
 ඔත්තේ සංඛ්‍යා
 සමාන්තර
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 පරිපූර්ණ
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 පරිමිතිය
 ලම්භ/ලම්භය
 සිතිලිය
 සම්භාවිතාව
 ගුණිතය
 ක්‍රියාවලිය
 ස්ථානීය අගය
 ලාභය
 ශ්‍රේණිය
 සමානුපාතය

Proportional
 Property
 Proper Fraction
 Principle
 Plane
 Positive
 Quality
 Qualitative
 Quantity
 Quantitative
 Quadrilateral
 Quadrant of Circle
 Quadratic Equation
 Quartile
 Quotient
 Radius
 Random
 Rate
 Ratio
 Range
 Real
 Reciprocal

සමානුපාතික
 ගුණය
 සාමාන්‍ය භාග
 මූලධර්මය
 තලය
 ධන
 ගුණය
 ගුණාත්මක
 ප්‍රමාණය
 ප්‍රමාණාත්මක
 චතුරස්‍රය
 වෘත්ත පාදකය
 වර්ගජ සමීකරණය
 චතුර්තකය
 ලබ්ධිය
 අරය
 අහඹු/සසම්භාවී
 අනුපාතිකය
 අනුපාතය
 පරාසය
 තාත්වික
 පරස්පරය

Rectangle
 Rectangular
 Rectilinear
 Recurring
 Reflex Angle
 Regular
 Relation
 Relationship
 Relative
 Representation
 Representative Value
 Right Angle
 Right Angled Triangle
 Rotation
 Rhombus
 Rhomboid
 Rounding Off Numbers
 Remainder
 Scale
 Scalene Triangle
 Sector
 Sequence
 Similar Triangle
 Similarity

සෘජුකෝණාස්‍රය
 සෘජුකෝණාස්‍රාකාර
 සරල රේඛීය
 සමාවර්ත
 පරාවර්ත කෝණය
 සවිධි
 සම්බන්ධය
 සම්බන්ධතාව
 සාපේක්ෂ
 නිරූපණය
 නිරූපය අගය
 සෘජුකෝණය
 සෘජුකෝණික ත්‍රිකෝණය
 භ්‍රමණය
 රොම්බසය
 රොම්බොනය
 සංඛ්‍යා වැටපීම
 ශේෂය
 පරිමාණය
 විෂම පාද ත්‍රිකෝණය
 කේන්ද්‍රික ඛණ්ඩය
 අනුක්‍රමය
 සමරූපි ත්‍රිකෝණය
 සමරූපීතාව

Simultaneous
 Simplification
 Statement
 Statistics
 Set
 Straight Line
 Surface
 Square
 Substitution
 Successive
 Symmetry
 Systematic
 Tally
 Tetrahedron
 Theory
 Theorem
 Term
 Triangle
 Triangular
 Transversal
 Transformation
 Translation
 Tessellation

සමගාමී
 සුළුකිරීම
 ප්‍රකාශය
 සංඛ්‍යානය
 කුලකය
 සරල රේඛාව
 පෘෂ්ඨය
 සමචතුරස්‍රය
 ආදේශ කිරීම
 අනුයාත
 සමමිතිය
 ක්‍රමවත්
 ප්‍රගණන ලකුණ
 චතුස්තලය
 සිද්ධාන්තය
 ප්‍රමේයය
 පදය
 ත්‍රිකෝණය
 ත්‍රිකෝණික
 නිරයක් රේඛාව
 පරිණාමනය
 උත්තාරණය
 වෙසලාකරණය

Unit
Unit Fraction
Universal
Unitary
Unequal
Uniform
Unknown
Unlike

ඒකකය
ඒකක භාගය
සර්වත්‍ර
ඒකීය
අසමාන
ඒකාකාර
අඥාත
විභාකීය

Value
Variable
Variation
Vertex
Vertical
Vertically Opposite Angle
Vector
Volume
අගය
විචලනය
විචලනය
ශීර්ශය
සිරස්
ප්‍රතිමුඛ කෝණය
දෛශිකය
පරිමාව

SOLIDS

Cube
Cuboid
Cone
Cylinder
Prism
Pyramid
Tetrahedron
Sphere
Complex

ඝනකය
ඝනකාභය
කේතුව
සිලින්ඩරය
ප්‍රිස්මය
පිරමිඩය
චතුස්කලය
ගෝලය
සංකීර්ණ

About the author



Mr. M.S.M. Dahlan

Mr. M.S.M. Dahlan is a veteran teacher in mathematics who has almost 35-year experience in teaching mathematics in government schools. And also he has taught in an atoll school in the Republic of Maldives for two years.

Mr. Dahlan has served as a Project Officer attached to the Matara District Educational Development Project (MEDP) funded by SIDA, from 1993 to 1995.

He has served in the Subject Specialist Panel of the Text Books Evaluation Committee of the Educational Publication Department, Isurupaya, Battaramulla. In addition to that he was a resource person attached to the Bilingual Education Programme of the National Institute of Maharagama.

He retired from government service in 2008 after a commendable service at St. Thomas' College Matara for over fifteen years and presently attached to the Academic Staff of Ceylinco-Sussex College, Matara.

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National Science Foundation
47/5, Maitland Place
Colombo 07

Tele: 011-2696771-3

Fax: 011-2694754

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