P.4 MATHEMATICS LESSON NOTES

TERM 1 - 3

THEME: SETS
TOPIC: SET CONCEPT

What is a set?

- A set is a collection of well-defined members put together.

Note:

- A member is an object that belongs to the given set.
- An element is another name to be a member.

DRAWING SET SYMBOLS AND NAMING THEM

Symbols	Name	Symbols	Name
$\varnothing$	Empty /null/void set	$\subset$	subset of
$\leftrightarrow$ $\equiv$ $\Leftrightarrow$	Equivalent to	$\not\subset$	not subset of
$=$	Equal to	$\cap$	Intersection of
$\neq$	Not equal to	$\cup$	Union set
$\sum$	Universal set	B^1	Complement of set B/Set B complement
$\not\leftrightarrow$ $\equiv$ / $\Leftrightarrow$	Not equivalent to	n(A)	Number of elements of set A.

Activity:

1. Name the symbols below.

a) $\subset$ _____ b) $\equiv$ _____

c) $\sum$ _____ d) $\cup$ _____

e) n(K) _____

2. Draw the symbols for the sets below.

   i) Set P complement _____

   ii) Intersection of _____

   iii) Empty set _____

   iv) Equal to _____

   v) Subset of _____

3. List down any four examples of sets.

Empty sets

Qn. What are empty sets?

These are sets without members or elements

Note: The symbol for empty set is { } or $\varnothing$

Examples

i) Set P = { P.4 girls without heads}

Set P is an empty set { }

ii) Set B = {A car with four legs}

Set B is { }

iii) Set X = {glass that cannot break}

Set X is { }

iv) Set K = {rabbit without hair and fur}

Set K is { }

DESCRIPTION OF SETS

Describing and naming sets

Examples: Describe the following sets

a) Set A = {a, e, i, o, u}

Set A is a set of vowel letters.

b) Set K = {January, February, March, April}

Set K is a set of the first four months of the year.

c) Set H = {first six odd numbers}

List down the element of set H

Set H = {1, 3, 5, 7, 9, 11}

ACTIVITY:

1. Use empty or not empty set to complete the statement below.

i) Set F = {daughters who are as old as their mothers}

ii) Set Q = {cars which can fly like helicopters}

iii) Set K = {bulls which produce milk}

iv) Set A {birds without wings}

2. Describe the following sets.

i) Set Y = {October, November, December}

3. List down the elements between zero and ten}

i) Set K = {even numbers between zero and ten}

ii) Set M = {counting numbers less than five}

iii) Set V = {multiples of 3 less than 20}

TOPIC: SET CONCEPT

Equivalent sets and non-equivalent sets.

Equivalent sets

These are sets with the same number of members.

Symbol " ↔ "

Examples

a) A = { ☆ , ▭ , ⬭ } B = { ,  , ⊠ }

Set A has 3 members and B has 3 members

Set R ↔ set R

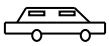
b) R = { ,  ,  ,  } S = { m, n, t, p, q}

Set R has 4 members and set S has 5 members.

Set R ↮ set R

Exercise

Use equivalent sets or non-equivalent sets

1. A = {  ,  ,  } B= {  , , }

Set A has _____ members and set B has _____ members.

Set A and B are _____ sets.

2. D = {  ,  ,  } M = { }

Set D has _____ members but set M has ___ members.

Set D is _____ to set K.

3. L = {  ,  ,  } M = {  ,  ,  }

Set L has ___ members and set M has _____ members.

Set L is ____ to set M.

4. N = {  ,  } K = { , }

Set N has ___ members and set K has ____ members

Set N is _____ to set K.

Use ↔ or ↮ to describe the sets below.

5. A = (a, e, i, o, u} B= {1, 2, 3, 4, 5}
Set A has ____ members and set B has ___ members.
Set A is ____ to set B.

6. D = {P, Q, R} E = {X, Y, Z}
Set D has ___ members and set E has ____ members.
Set D is ____ to set G.

7. F = {0, 2, 4, 6, 8} G = {x, y, x}
Set F has ___ members and set G has _____ members.
Set F is _____ to set G.

8. P ={1, 2, 3, 4, 5} T = {b, e, d, f}
Set P has ____ members and set T has ___ members
Set P is ____ to set T

Equivalent and equal

Equal sets

Equal sets are sets with the same number of members which are exactly the same.

Equivalent sets

Equivalent sets have the same number of objects.

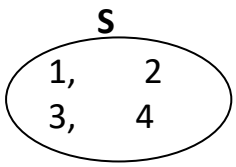
Examples

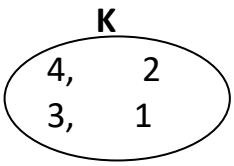
a) If set A = {a, e, i, o, u} and B= {1, 2, 3, 4, 5}
Set A is ↔ set B

b) C = {T, O, P} and D = {P, O, T}
Set C is = set D

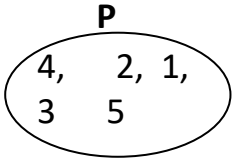
Activity

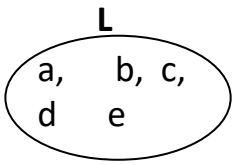
Write equal or equivalent sets

a) 

b) 

Set S and set K are _____ sets.

b) 



Set P and set L are ____ sets.

c) K = {boy, girl} L = {m, n} Set K is _____ to set L.

d) P = {s, u, n, a} F = {e, v, i, l} Set P is _____ to set F.

Intersection of sets

Intersection sets are sets with common members

Symbol is " ∩ "

Joint sets are also called intersection sets.

Examples

a) Set P = {a, b, c, d, e} Q = {a, e, i, o, u}

Find P ∩ Q = {a, e}

b) A = {▭, ◯, △} B = { ✸, △, ▭, ◎

A ∩ B {▭, △}

c) D = { X, Y, Z, W} Q = {4, 5, 6, 7}

D ∩ K = ∅

ACTIVITY

Write intersection sets of these sets.

Find:

a) Set A= {a, b, c} B = {b, d, e, f} (A∩B) =

b) P = {a, e, i, o, u} Q = {a, b, c, d, e, f} (P∩Q)

c) M = {1, 2, 3, 4, 5} Q = {3, 4, 7} (M∩N) =

d) L = {0, 1, 2, 3, 6, 8} K = {6, 8, 7, 5} (L∩K) =

e) X = { △ , ◯, ▭ } Y = { □ , Ⓜ , ▭, } (X∩Y) =

Intersection and union of sets

Examples

1. Set P = { a , b , c , d , e } and Set Q = { a , e , i , o , u }
   Find (P ∩ Q)

Solution

P = { a , b , c , d , e }
Q = { a , e , i , o , u }

(P ∩ Q) = { a , e }

Find (P n Q)
P = { a , b , c , d , e }
Q = { d , e , i , o , u }

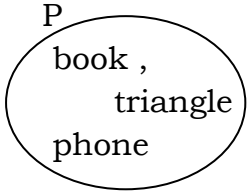
(P U Q) = { a , b , c , d , e , i , o , u }

2. Given that set A = { , , } and set B = { , , , }
   i) Find (A ∩ B)
   A = { , , , }
   B = { , , , }
   (A ∩ B) = { , }

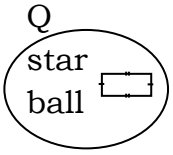
   ii) What is (A U B)?
   A = { , , , }
   B = { , , , }
   (A U B) = { , , , , , , }

Exercise

1. P



Q



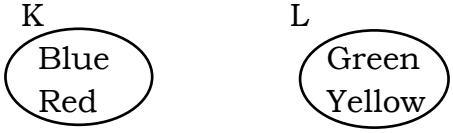
What is (P ∩ Q)?

2. F = { Teddy , Kapere , Okello , Teo }
   M = { Teo , Lumonde , Okello)
   a) Find (F ∩ M)
   b) What is (F U M)

3. Given M = {x , y , z , w , v}
   N = { r , s , t , u , v , w }
   Find; i) (M U N)
   ii) (M ∩ N)

4. Given that set R = {all vowels} and S = { first 6 alphabetical letters}
   a) List down members of set R and set S
   b) Find (R ∩ S)
   c) What is n(R ∩ S)?
   d) Find (R U S)

5. K L



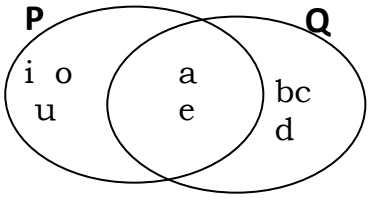
a) Find; i) (K ∩ L)
ii)(K U L)

6. If P = { 1 , m , n , q , r } and Q = { m , p , x , r }
   a) List members of (P U Q)
   b) List members of (P ∩ Q)

Finding intersection and union sets using a venn diagram

Examples

a) If P = {a, e, i, o, u} and Q {a, b, c, d, e}

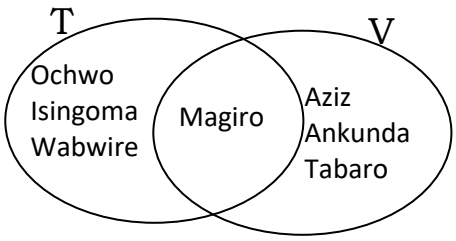


P∩Q = {a, e}

PUQ ={o, i, u, a, e, b, c,d}

b) Given T = {Wanwire, magino, Isingoma, ochwo}

V = {Aziz, Nankunda, Tabaro, Majorie}

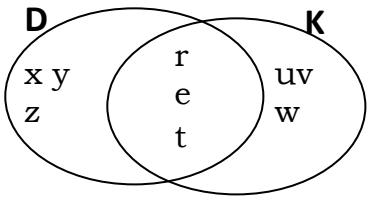


What is TUV?
TUV = {Ochowo, Isingoma, Wabwire, Magiro, Aziz, Ankunda, Tabaro}
TnV = {Magiro}

Activity

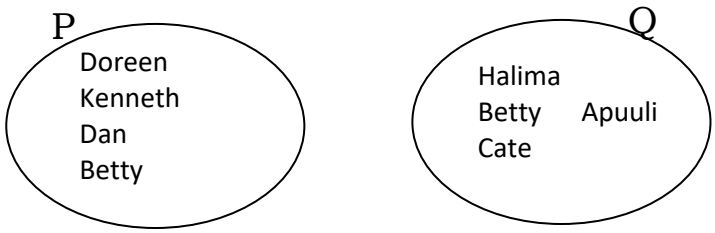
1. Given {1, 2, 3, 4, 5} B = {3, 4, 6, 8, 9}
   a) Use a venn diagram to show the sets above.
   b) Find i) A∩B ii) AUB

2. Use the venn diagram below to answer questions.



a) Find DUK b) Work out D∩K

3.



a) Show the set P and Q on a venn diagram.

b) Find P∩Q c) Find PUQ

4. A = {p, q, r, s, t} B = {p, q, r, s, t, u, v, x}

a) Show sets A and B on a venn diagram.

c) What is AUB?

5. P = {0, 1, 2, 3, 4} Q = {2, 4, 6, 8}

a) Show sets P and Q on a venn diagram.

b) What is P∩Q?

c) Find PUQ?

Finding number of elements in the union and intersection sets

1. Given P = {a, e, i, o, u} and Q = a, b, c, d, e}

i) Find n(P∩Q}

ii) P∩Q = {a, e}

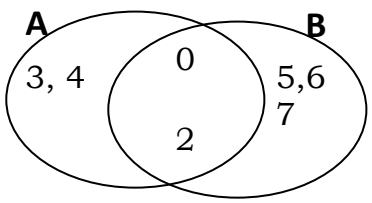
iii) n{P∩Q} = 2

b) n(PUQ)

PUQ = {i, o, u, a, e, b, c, d}

n(PUQ) = 8

2.



a) How many members are in set A n B?

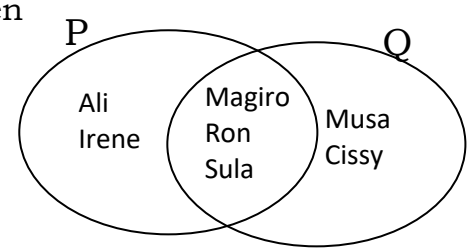
AnB = {0,2}

n(AnB) = 2

b) How many elements are in set AUB?
AUB = {3, 4, 0, 2, 5, 6, 7}
n(AUB) =7

Activity

a) Given



Find i) PnQ ii) n(PUQ) iii) n(PnQ)

b) Set K = {x, y, z, t} and Z = {a, e, I, o, u}

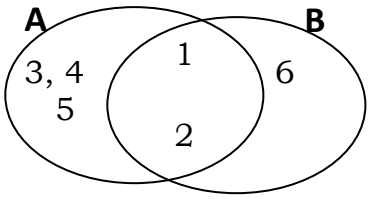
Find n(KnZ) n(KUZ)

c) P = {1, 2, 3, 4} Q = {2, 4, 6, 8}

i) How many elements are in set P?
ii) How many elements are in set Q?

iii) How many elements are in set PnQ?
iv) How many elements are in set PUQ?

d)



i) Find the number of members in set A.

ii) Find the number of members in set B.

iii) Find n(AnB)

iv) Find n(AUB)

Difference of sets

Examples

a) Given A = {a, b, c, d, e} B = {d, e, h,i, f,g}
Find A – B = {a, b, c}
B – A {h, i, f, g}

b) P ={1, 2, 3, 4, 5} Q = {7, 5, 1, 2, 9}
Find i) Q –P ii) P – Q
Q – P = {7, 9} P – Q {3, 4}

Activity

a) A = {a, b, c, d, e} B = {a, e, i, o, u}
Find i) Q – P
ii) B – A

b) P = {x, w, y, z} Q = {w, z, p}
Find i) P– Q ii) Q – P

c) M = {1, 3, 5, 9} N = {3, 2, 0, 7, 9}

Find: i) M – N ii) N –M

d) K = {Alex, Musa, Ali, Kigonza} L = {Mao, Musa, Ali}

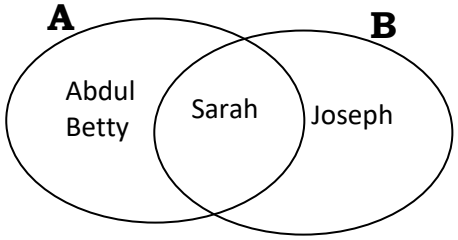
Find: i) L – K ii) K – L iii) n(L – K)

e) F = {a, b, c, d, e} R = {a, e, i o, u}

Find: i) R –F ii) F – R

Using a venn – diagram

Examples

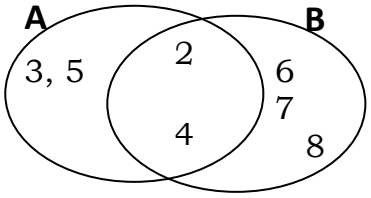


Find i) A – B
A = {Abdul, Betty}
ii) n(B– A}
B – A = {Joseph)
n(B –A) = 1

iii) How many elements are in A –B
A – B = { Abdul, Betty}
n(A – B) = 2

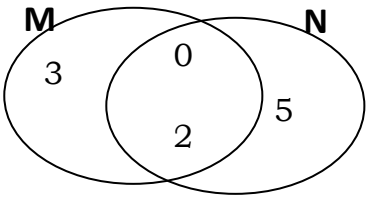
<u>Exercise</u>

a)



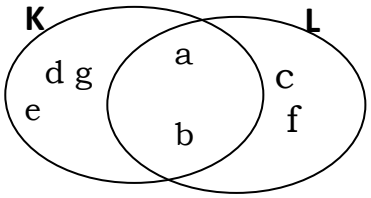
Find i) n(A –B) ii) B- A

b)

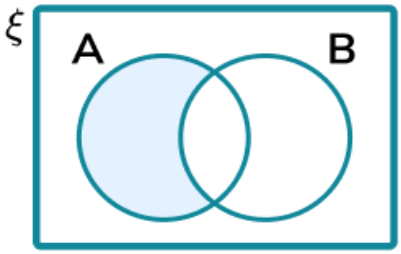
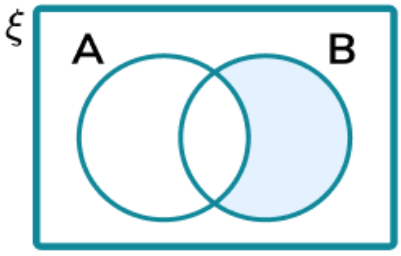
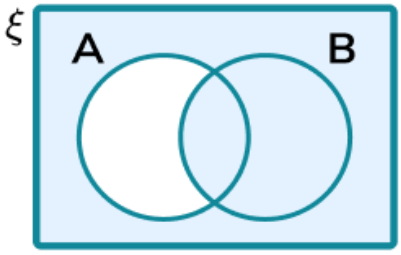
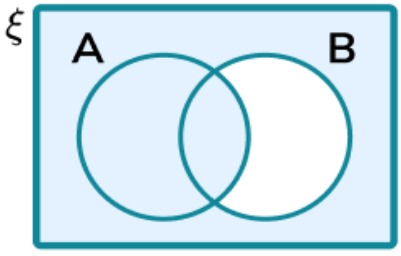


Find i) n(M–N) ii) N – M

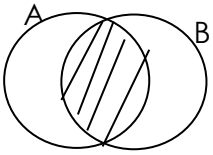
c) Find: i) L- K ii) n(K – L)



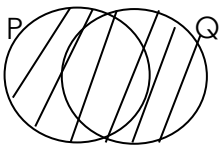
Describe shaded regions of a venn diagram in set form

Shaded Region	Set Notation	Description
	A∩B'	Just A (A intersection B') A and not B
	B∩A'	Just B (B intersection A') B and not A
	A'∪B	Not A, or B (the complement of A, union B) Not A, union B
	A∪B'	A, or Not B (A union the complement of B) A union Not B

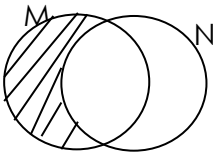
Examples



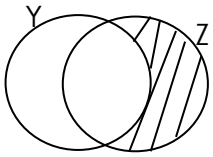
A∩B



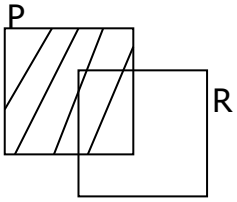
PUQ



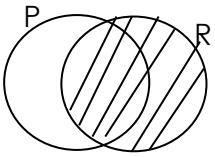
M –N



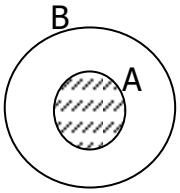
Z – Y



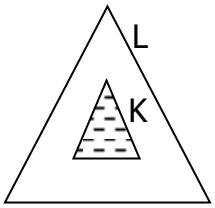
Set P



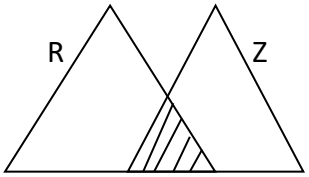
Set R



A∩B



K∩L



R∩N

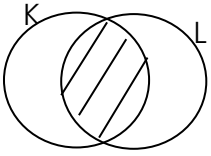
Exercise

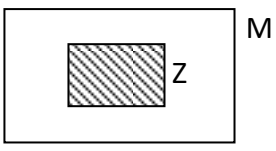
Draw and shade the following Regions describe below on a venn diagram.

a) K-L b) L - K c) Set M∩Z d) A∩P

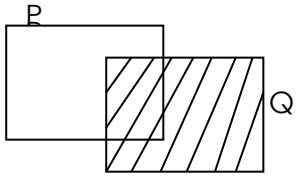
e) Set NUM

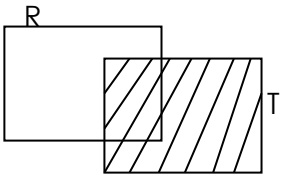
Describe the Shaded regions below.





_____ _____





THEME: NUMERACY

TOPIC: ***Numeration System and Place values***

Forming numerals from digits

Examples

a) Write any 3 digit figure formed by the digits 3, 7, 5

375, 753, 573

b) Write the smallest number or numeral that can be formed using digits 7, 2, 3, 6

Smallest = 2, 3, 6, 7

= 2, 367

c) What is the biggest number or numeral that can be formed from the following:

digits = 1, 5, 2, 8, 3?

biggest = 8, 5, 3, 2, 1

= 85, 321

d) Find the difference between the largest and smallest numeral got from 3, 7, 5

Smallest numeral 3, 5, 7 largest numeral 7, 5, 3

3 5 7 7 5 3

Difference = 7 5 3

= - 3 5 7

3 9 6

Sum = 7 5 3

+ 3 5 7

1110

Exercise

a) Form two numerals from the digits 3, 9, 2

b) Form the largest numeral got from the digit 3, 1, 5

c) Form the smallest numeral got from 4, 5, 1, 8

d) Find the sum of the largest and the smallest numeral got from 1, 7, 2

e) What is the difference between the largest and smallest numeral got from digits 3, 5, 2.

f) Give any two numbers that can be formed using the digits below.

i) 2, 5, 3, 7 ii) 9, 2, 6, 7, 8

g) What is the difference between the smallest and the largest number that can be formed using the digits below?

i) 2, 7 5

ii) Find the sum of the largest and the smallest number that can be formed from the above digits.

TOPIC: ***Numeration System and Place values***
Subtopic: ***Forming numerals from digits***

Examples

Qn. Given the digit 9, 3, 8.

i) List down all the possible 3 digit numbers that can be got by using the above digit.

Soln: 9, 3,8. First re-arrange the digits in order of their size i.e

3,8,9./

The numbers are : 389 839 938

398 893 983

ii) find the difference between the largest and the smallest numbers formed in i) above.

soln: Difference = $\begin{array}{r} {\scriptstyle 81713} \\ 9\not{8}\ 3 \\ -\ 3\ 8\ 9 \\ \hline 5\ 9\ 4 \end{array}$

iii) What is the sum of the largest and the smallest numbers formed above?

soln: Sum $\begin{array}{rl} = & 9\ 8\ 3 \\ + & 3\ 8\ 9 \\ \hline & 1372 \end{array}$

Activity:

1. Given the digits 7, 2, 5.

a) List down all possible 3 digit numerals that can be formed using the digits above.

b) Find the sum of the largest and the smallest numbers formed in a) above.

c) Workout the difference between the largest and smallest numbers formed in a) above.

2. Use the digits 4, 7, 8 and 2 to answer questions that follow.

a) Write down the largest numeral that can be formed using the above digits.

b) Find the place value of the largest digit.

c) What is the value of the smallest digit?
d) Write the number formed in a) above in expanded form.

3. Give the digits 5, 1, 3. Write down all the numbers that are greater than 350.

TOPIC: ***Numeration System and Place values***

Place values of numbers

Examples

a) What is the place value of the each digit in the number below?
32065.

T.TH	TH	H	T	O
3	2	0	6	5

Ones
Tens
Hundreds
Thousands
Ten thousands

b) What is the place value of 3 in the number 3 4 9 2?

TH H T O
3 4 9 2
|
Thousands

The place value of 3 is thousands.

Exercise

a) Find the place value of the underlined digits.
i) 40561 ii) 93812
iii) 72554 iv) 34500
iv) 12645 v) 67821

b) In the number 382, what is the place value of?
i) 3 ii) 8 iii) 2

c) Find the place value of each digit in the number.
i) 2483 ii) 403 iii) 67821

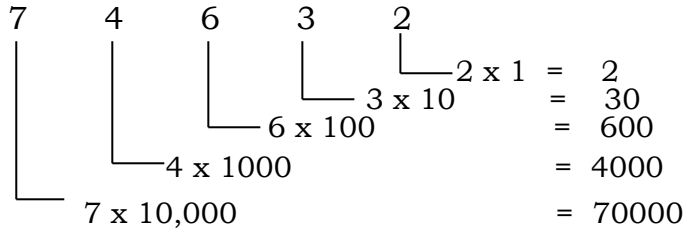
TOPIC: ***Numeration System and Place values***

Values of numbers

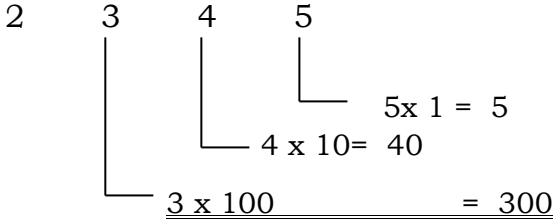
Examples

What is the value of each digit in the number?

a) 7 4 6 3 2



b) What is the value of 3 in the number 2345?



The value of 3 = 300

Examples

1. Find the value of each digit in the number.
   a) 249 b) 2483

2. Find he value of the underlined digits givern below
   a) 5 4 1 b) 7 0 3 2 c) 1 1 9 3 6
   d) 4 0 5 6 1 e) 7 2 5 5 4 f) 3 4 5 0 0
   g) 5 8 0 42 h) 9 3 2

TOPIC: ***Numeration System and Place values***

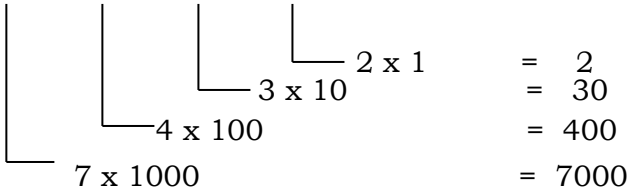
Expanding numbers

a) Using values

Examples

Expand 7, 432 using values

7, 4 3 2 = 7 4 3 2



7, 432 = 7000 + 400 + 30 + 2

b) Expand 93,458 using values

93458 = 9 3 4 5 8

8 x 1 = 8
5 x 10 = 50
4 x 100 = 400
3 x 1000 = 3000
9 x 10,000 = 90,000

93, 458 = 90,000 + 3000 + 400 + 50 + 8

Exercise

Expand the following numbers using values

a) 340 b) 342 c) 1,245 d) 5,347

e) 3,672 f) 235 g) 62,894 h) 7,845

i) 78,764 j) 99,845

Expanding numbers using place values

Examples

1. Expand 7,432 using place values

7432 = 7 4 3 2

(2 x 1)
(3 x 10)
(4 x 100)
(7 x 1000)

7432 = (7 x 1000) + (4 x 100) + (3 x 10) + (2 x 1)

2. Expand 93,458 using place values

93,458 = 9 3 4 5 8

(8 x 10)
(5 x 10)
(4 x 100)
(3 x 1000)
(9 x 10,000)

93,458 = (9 x 10,000) + (3 x 1000) + (4 x 100) + (5 x10) + (8 x 1)

Exercise

Expand the following numbers using place values.

a) 235 b) 677 c) 645 d) 3,786

e) 4,538 f) 6, 781 g) 86,862 h) 78,764

i) 7,845 j) 99,845

TOPIC: NUMERACY SYSTEM AND PLACE VALUES

Writing numbers in short

Examples

1. Write in short

7000 + 400 + 30+ 2

7000
400
30
+ 2
7432

2. (9 x 10,000) + (3 x 1000) + (4 x 100) + (5 x 10) + (8 x 1)

90,000 + 3000 + 400 + 50 + 8

90,000
3,000
400
50
+ 8
93,458

3. $(7 \times 10^3) + (4 \times 10^2) + (3 \times 10^1) + (2 \times 10^0)$

7 x 10 x 10 x 10 + 4 x 10 x 10 + 3 x 10 + 2 x 1

7000 + 400 + 30 + 2

7000
400
30
+ 2
7432

Exercise

Write the following as single numbers

1. (4 x 100) + (8 x 10) + (6 x 1)
2. (3 x 1000) + (0 x 100) + (7 x 10) + (5 x 1)
3. (8 x 100) + (6 x 10) + (3 x 1)
4. 500 + 90 + 1
5. 20,000 + 4000 + 800 + 10 + 5
6. 90,000 + 600 + 4
7. 6000 + 5
8. (9 x 1000) + (3 x 100) + (2 x 10) + (1 x 1)

9. (7 x 10000) + (4 x 1000) + (3 x 100) + (2 x 10)
10. (2 x 1000) (3 x 1)

TOPIC: NUMERATION SYSTEM AND PLACE VALUE

Write figures in words

1. Write in words 841

841 800 Eighty hundred
41 Forty one
841**Eight hundred forty one**

2. 2, 841

2841 2000 Two thousand
800 Eight hundred
41 Forty one
2841***Two thousand eight hundred forty one***

2. 45,617

45,617 45,000 Forty five thousand
600 Six hundred
17 Seventeen
45,617***Forty five thousand six hundred seventeen***

Exercise

Write the following in words

a) 364	b) 3, 528	c) 7,801
d) 12,214	e) 18,146	f) 23, 113
67, 678	h) 99, 466	i) 9,999

Writing numbers in figures

Examples

1. Write "Twelve thousand eight hundred thirty two" in figures.
Twelve thousand = 12, 000
Eight hundred = + 800
Thirty two = 12,832
Twelve thousand eight hundred thirty two = 12,832

2. Write eight hundred fifty two in figures
Eight hundred 800
Fight hundred + 52
Eighty hundred fifty two **852**

3. Nine thousand six

Nine thousand	=	9000
Six		+ 6
Nine thousand six		**9006**

Exercise

Write the following in figures.

1. Fourteen thousand, eight hundred sixty two.
2. Seventeen thousand, eight hundred forty nine.
3. Twenty thousand, eight hundred fifteen.
4. Twenty six thousand, three hundred eight.
5. Nineteen thousand, four hundred eighty.
6. Nineteen thousand, four hundred thirty three.
7. Thirty four thousand, two hundred seventy one.
8. Thirty six thousand, ninety eight.
9. Forty nine thousand, four hundred.
10. Forty four thousand, four.

Writing decimals in words

Examples

1. Write 7.5 in words

   7.5 = Seven point five

   = **Seven and five tenths**

2. Write 27.24 in words

   27. 24 = Twenty seven point two four

   = Twenty-seven and twenty-four hundredths

3. Write 107. 2 in words

   107.2 = **One hundred seven point two**

   OR

   = **One hundred seven and two tenths**

4. 2381. 9 = Two thousand three hundred eight one point nine

OR

Two thousand three hundred eighty one and nine tenths.

Exercise

Write the following in words

a) 3.9 b) 73.5 c) 506. 3

d) 813. 2 e) 62.4 f) 91.72

g) 5.32 h) 121.5 i) 813.2

j) 1468.3

Writing the following in words

Examples

1. Twenty five and three tenths

   Twenty five 25.

   Three tenths 0.3

   Twenty five and three tenths = 275.1

2. Write two hundred seventy five and one tenths in figures

   Two hundred 200.
   Seventy five 75.
   One tenth 0.1
   Two hundred seventy five and one tenths = 275. 1

Exercise

Write the following in figures

1. Thirty four and three tenths
2. Sixty two and one tenths
3. Eighty one and seven tenths
4. One hundred eleven and four tenths
5. Nine and six tenths.
6. Two hundred sixty two and five tenths
7. One hundred sixty two and five tenths.
8. Three hundred eighty and fifteen hundredths
9. Two hundred seventy one and nineteen hundredths
10. Six thousand three hundred twelve and six tenths.

TOPIC: NUMERACY SYSTEM AND PLACE VALUES

Roman numerals

1	I	80	LXXX
5	V	90	XC
10	X	100	C
40	XL	200	CC
50	L	300	CCC
60	LX	400	CD
70	LXX	500	D

Roman numerals got by adding to 5.

6	= 5 + 1	7	= 5 + 2	8	= 5 + 3
C	= V + I		= V + II		= V + III
	= VI		= VII		= VIII

The roman numerals got by subtracting from 5 or from 50

4 = 1 subtracted from 5	40 = 10 subtracted from 50
4 = IV	40 = XL

The Roman numerals got by subtracting from 10

9 = 1 subtracted from 10
9 = IX

Changing Hindu –Arabic to roman numerals

a) 19 = 10 + 9
= X + IX
= **XIX**

b) 36 = 30 + 6
= XXX + VI
= **XXXVI**

c) 192 = 100 + 90 + 2
= C + XC + II
= **CXCII**

Exercise

Change the following in roman numerals.

a) 11	b) 15	c) 63	d) 12
e) 20	f) 72	g) 19	h) 41
i) 87	j) 25	k) 50	l) 93
m) 30	n) 35		

Changing roman numerals to Hindu Arabic

Examples

1. Write XIV in Hindu - Arabic

   XIV = X + IV

   = 10+ 4

   = **14**

2. Change XXXIX to Hindu – Arabic

   XXXIX = XXX + IX

   = 30 + 9

   = **39**

3. Change CI to Hindu –Arabic

   CI = 100 + 1

   = **101**

Exercise

1. X	2.	XXVI	3.	XXXI	4.	XLVII
5. XIII	6.	XXIX	7.	XLIV	8.	LV
9. XXIX	10.	XLVII	11.	LX	12.	LXIII
13. LXXXI	14.	LXXXVII	15.	CXV		

Application of Roman Numerals

Examples

1. James is 20 years old. What is James' age in Roman numerals?

   20 = 20

   = XX

22. Namwenika is 11 years. What is her ager in Roman numerals?

   11 years = 10 + 1

   = X + I

   Namwnika = XI

3. Daddy is XLVI years. What is his years in Hindu Arabic?

   XLVI = XL + VI

   = 40 + 6

   Daddy is = 46 years

Exercise

1. Apire is 13 years old. Change her age in Roman numerals.
2. Babirye is 12 years. Change her age to Roman numerals.
3. Achen is 20 years. Change her age to Roman numerals.

4. Nakintu is 14 years. What is her age in Roman numerals?
5. There are 74 pupils in Aduku Primary 5. Write the number of pupils in Roman numerals.
6. Nakazzi had goats. Write this number in Roman numerals.
7. Mummy is XL years old. Write mummy's age in Hindu Arabic.
8. Mugwanya has XXIX chicken. Write this number in Hindu Arabic numerals.

9. Opio harvested XV bags of rice last season. Express his harvest in Hindu Arabic numerals.
10. Kizito planted 34 trees last year. Write the number of trees he planted in Roman numerals.
11. Express LXXIII in Arabic numerals.

Roman Numbers from 1 to 100

1	I	21	XXI	41	XLI	61	LXI	81	LXXXI
2	II	22	XXII	42	XLII	62	LXII	82	LXXXII
3	III	23	XXIII	43	XLIII	63	LXIII	83	LXXXIII
4	IV	24	XXIV	44	XLIV	64	LXIV	84	LXXXIV
5	V	25	XXV	45	XLV	65	LXV	85	LXXXV
6	VI	26	XXVI	46	XLVI	66	LXVI	86	LXXXVI
7	VII	27	XXVII	47	XLVII	67	LXVII	87	LXXXVII
8	VIII	28	XXVIII	48	XLVIII	68	LXVIII	88	LXXXVIII
9	IX	29	XXIX	49	XLIX	69	LXIX	89	LXXXIX
10	X	30	XXX	50	L	70	LXX	90	XC
11	XI	31	XXXI	51	LI	71	LXXI	91	XCI
12	XII	32	XXXII	52	LII	72	LXXII	92	XCII
13	XIII	33	XXXIII	53	LIII	73	LXXIII	93	XCIII
14	XIV	34	XXXIV	54	LIV	74	LXXIV	94	XCIV
15	XV	35	XXXV	55	LV	75	LXXV	95	XCV
16	XVI	36	XXXVI	56	LVI	76	LXXVI	96	XCVI
17	XVII	37	XXXVII	57	LVII	77	LXXVII	97	XCVII
18	XVIII	38	XXXVIII	58	LVIII	78	LXXVIII	98	XCVIII
19	XIX	39	XXXIX	59	LIX	79	LXXIX	99	XCIX
20	XX	40	XL	60	LX	80	LXXX	100	C

TOPIC: WHOLE NUMBERS (ROUNDING OFF)

Rounding off whole numbers

Examples: Round off 268 to the nearest tens.

Solution: 268

\+ 1 ↵

270

268 approximately 270

2. Round of 623 to the nearest tens.

623 /

\+ 0 ↵

6 2 0

623 approximately 620

3. Round of 1356 to the nearest tens.

1356 /

\+ 1 ↵

1 3 6 0

1356 approximately 1360

4. Round off 1999 to the nearest tens.

1999 /

+1 ↵

2000

1999 approximately 2000

Activity

Round off the following numbers as instructed in brackets.

1. 2240 (to the nearest tens)
2. 5286 (to the nearest tens)
3. 7628 (to the nearest tens)
4. 2995 (to the nearest tens)
5. 47 (to the nearest tens)
6. 1879 (to the nearest tens)
7. 159 (to the nearest tens)
8. 967 (to the nearest tens)
9. 3193 (to the nearest tens)
10. 4999 (to the nearest tens)
11. 5087 (to the nearest tens)
12. 3346 (to the nearest tens)

Operation on numbers
Addition

Examples

1. Add 7464 + 4425

	TH	H	T	O
	7	4	6	4
+	4	4	2	5
	11	8	8	9

2. Add: 4622 + 5043 + 6237

	TH	H	T	O
	4	6	2	2
	5	0	4	3
+	6	2	3	7
	15	9	0	2

Activity

Add the following

1) Add: 4622 + 5043 + 6237

	TH	**H**	**T**	**O**
	1	4	2	6
+	2	3	5	3

2)

TH	**H**	**T**	**O**
1	1	2	4
+ 7	3	2	1

3)

H	**T**	**O**
4	2	6
+ 3	5	3

4)

TH	**H**	**T**	**O**
9	8	8	7
+ 1	1	1	3

5)

TH	**H**	**T**	**O**
6	0	4	9
+ 4	9	6	3

6)

TH	**H**	**T**	**O**
2	0	4	9
+ 1	7	7	9
3	6	4	8

7)

TH	**H**	**T**	**O**
1	4	5	6
+	8	6	5

8)

H	**T**	**O**
4	9	7
+ 2	3	5

More about addition

What is the sum of 4,234 and 204

	TH	H	T	O
	4	2	3	4
+		2	0	4
	4	4	3	8

2. Amos carried 359 books, his brother carried 578 books. How many books were carried altogether.

	3	4	9	books
+	5	7	8	books
	9	2	7	books

Exercise

1. A boy counted 268 cans on Monday and 454 cans the next day. How many cans did he count in the two days?
2. What is the sum of 13696 and 5345?
3. Kangi earns 1928/= a day and sinabulya earns 11,345/=. How much money do Kangi and Sinabulya earn altogether?
4. At a petrol station one can was filled with fuel of sh.11,600/= and another of sh. 4860. How much money did both drivers pay?
5. Maria bought suager at 1200/=, soap at 800/= and matooke at 3000/=. What was her total expenditure?
6. A school has 440 boys and 839 girls. How many pupils are there altogether?
7. In a village there are 804 men and 1011 women. What is the total number of men and women in the village?
8. Musa had sh. 12,500/=, he got shs. 6800/= more, how much money does he have now?
9. A farmer had 1475 cows, he later bought 867 more. How many cows has he got altogether?

SUBTRACTION

Examples

a) Subtract: 246 - 192

	H	**T**	**O**
2	4	6	
-	1	9	2
	0	5	4

b) Subtract 500 - 254

	H	**T**	**O**
	5	0	0
-	2	5	4
	2	4	6

Exercise

Subtract the following

1.

	T	**O**
	3	9
-	2	5

2.

	H	**T**	**O**
	1	3	2
-		2	9

3.

	H	T	O
	1	2	0
-		2	3

4.

	H	T	O
	3	6	1
-	1	7	3

5.

	H	T	O
	3	7	2
-	1	2	3

	H	T	O
	3	8	4
-		7	3

7.

	TH	H	T	O
	3	4	6	5
-	2	3	4	3

	TH	H	T	O
	7	8	9	2
-	1	2	1	3

More about subtraction
Examples

1. Muguni had 2,570/=, he brought a book for 843/=. What was his balance?

   2 5 7 0/=
   - 3 4 4/=
   2 2 2 7/=

2. What is the difference between 243 and 37?

   2 4 3=
   - 3 7/=
   2 0 6/=

Activity

1. Juma had 630/= he brought a toy car 56/=. How much money was he left with?
2. Take away 53 from 111.
4. What number must you add 36 to get 176?
5. A man earns 4,380/= and spends 1,830/=, how much does he save?
6. Subtract 678 from 3,456.
7. A man had 8,790 heads of cattle, 3,021 died, how many remained?
8. By how much is 1653/= smaller than 2,040/=.
9. Find the difference between 13,850 and 4,040/=
10. Out of a man's salary of 12,500/=, 8,075/= was spent on school fees, how much money remained?

Multiplication

Examples

1. Multiply 135 by 2

$$\begin{array}{r} 135 \\ \times\ 2 \\ \hline 270 \end{array}$$

2. What is the product of 148 and 4?

$$\begin{array}{r} 148 \\ \times\ 4 \\ \hline 592 \end{array}$$

Activity

Multiply the following numbers

a) $\begin{array}{r} 314 \\ \times\ 5 \\ \hline \end{array}$ b) $\begin{array}{r} 624 \\ \times\ 5 \\ \hline \end{array}$ c) $\begin{array}{r} 425 \\ \times\ 6 \\ \hline \end{array}$

d) $\begin{array}{r} 736 \\ \times\ 6 \\ \hline \end{array}$ e) $\begin{array}{r} 730 \\ \times\ 4 \\ \hline \end{array}$ f) $\begin{array}{r} 654 \\ \times\ 9 \\ \hline \end{array}$

d) $\begin{array}{r} 510 \\ \times\ 7 \\ \hline \end{array}$ e) $\begin{array}{r} 321 \\ \times\ 8 \\ \hline \end{array}$ f) $\begin{array}{r} 745 \\ \times\ 7 \\ \hline \end{array}$

1. Find the product of 12 and 4.

$$\begin{array}{r} 12 \\ \times\ 4 \\ \hline 48 \end{array}$$

2. A loaf of bread costs 900/=, if 1 buys 8 loaves of bread, how much money shall I pay?

$$\begin{array}{r} 900/= \\ \times\ 8 \\ \hline 7200 \end{array}$$

Exercise

a) Multiply 14 by 3
b) What is the product of 16 and 15?
c) What is the product of 20 and 8?
d) Multiply 128 by 6
e) I bought 4 books at 150 each, how much did I pay?
f) Each of the 7 classes in a school has 110 pupils. How many pupils are in the school?
g) A worker is paid 960 a day. How much will he collect if he works for 7 days?
h) 5 classes are contributing money to buy a ball. If each class is to contribute 876, how much does the ball cost?
i) A box contains 196 oranges, how many oranges can 9 boxes carry?
j) Nambole stadium has 4 gates. If 436 people enter through each gate, how many people will enter in the stadium?

More about multiplication
Examples

1. Multiply 18 by 12.

```
   1  8        18 x  2  = 35
 x  1  2       18  x 1 =  18
   3  6
+ 2 8 0
  2 1 6
```

2.

```
   20  x  36
    2  0
  x 3  6
  1 2  0
    +6 0
  7 2 0
```

Exercise
Multiply the following numbers

a) 12 by 11
b) 15 by 11
c) 13 by 12
d) 16 by 12
e) 28 by 11
f)
```
  2  2
x 1  5
```
g)
```
  7  7
x 1  2
```
h)
```
  5  6
x 2  3
```
i) Workout

```
  2 4
x 1 3
```

j) 28 by 20

Division
Examples

1. Divide 125 by 5

```
        0 2 5
    5 | 125
0 x 5 = - 0
        1 2     = 25
2 x 5 = - 1 0
      2 5
5 x 5 = -   2 5
            0
```

2. Divide 7760 by 2

```
          3 8 8 0
      2 | 7 7 6 0
2 x 3 =  -6
1 7      = 3880
8 x 2 =  - 1 6
       1 6
8 x 2 =    -1 6
           0
0 x 2 =      - 0
```

Activity

Divide the following numbers.

a) $2\overline{)130}$ b) $5\overline{)365}$ c) $2\overline{)148}$

d) $5\overline{)380}$ e) $3\overline{)150}$ f) $6\overline{)666}$

g) $4\overline{)264}$ h) $3\overline{)174}$ i) $4\overline{)268}$

j) $4\overline{)256}$ k) $3\overline{)159}$ l) $7\overline{)721}$

Word problem

1. Share 120 oranges among 2 girls.

```
        0 6 0
     2 | 120
0 x 2 = - 0 |
          1 2 |   = each will get 60 mangoes
6 x 2 = -  1 2 |
             0 |
0 x 2 = -    0 |
```

2. A man had 392 goats, he shared them equally among 7 sons. How many goats did each son get?

```
        0 5 6
     7 | 3 9 2
0 x 7 = - 0 |
          3 9 |        56 goats each.
5 x 7 =  -3 5 |
           4  2 |
6 x 7 =    4 2 |
```

Activity

a) Divide 124 by 4
b) Share 346 books among 6 pupils.
c) I shared 1440/= among 8 children. How much did each get?
d) A man had 9 workers, he pays tham at total of 3,645/= aday. How much does each worker get?

e) A total of 1344 books were given to Mpumudde Primary School wihci has 6 classes? How many books did each get?
f) 8 cars used 728 litres of petrol equally. How many litres did each can use?
g) A school bursar collected a total of 46,249 from 7 pupils. How much did each pupil pay?
h) A district officer paid 7,200/= to 100 workers, how much did each get?
i) After 7 minutes, Kyagaba had typed 5649 words. How many words did she type?
j) Share 232 sweets among 8 boys.

Comparing numbers using is less than, is greater than or equals to (<, > or =)

Examples

Replace the star with the correct symbol.

1. 2 + 3 * 3 + 2
   5 is equal to 5
   5 = 5
   Therefore 2 + 3 = 3 + 2

2. 5 x 5 * 5 x 2
   25 is greater than 10
   25 > 10
   Therefore 5 x 5 > 5 x 2

3. 269 * 962
   269 is less than 962
   269 < 962

Activity

Replace the star (*) with a correct symbol >, < or =

a) 2 x 2 ..... 2 + 2
b) 4 + 2 ..... 4 x 2
c) 378 872
d) XXIX 29

e) 3 weeks ..... 14 days
f) 1 kg of stones * 1 kg of feather
g) 3 x 3 x 3 * 3 + 3 + 3
h) 2m * 100 cm
i) 14 days * fortnight
j) 20 4 * 20 - 4

Number patterns and sequences

Whole numbers

These are numbers that begin with zero.
e.g 1, 2, 3, 4, 5, 6, ……

Even numbers

These are numbers that are exactly divisible by 2.
e.g.0, 2, 4, 6, 8, 10, 12, 14, 16, etc.

Odd numbers

these are numbers that are not exactly divisible by 2
e.g 0,1, 3, 5, 7, 9, 11, 13, 15, etc.

Prime numbers

Numbers with two factors one and its self.
e.g 2,3,5,7,11,13,17,19,23,29, etc.

Examples

a) Find the sum of the first two composite numbers
1st two composite numbers = 4, 6
Sum = 4 + 6
= 10

b) Find the difference between the 4th whole number and the 2nd whole number
2nd number = 1 and 4th number = 3
Difference = 3 – 1
= 2

c) Find the sum of the first five counting numbers
Counting numbers 1, 2, 3, 4, 5
Sum = 1 + 2 + 3 + 4 + 5
= 15

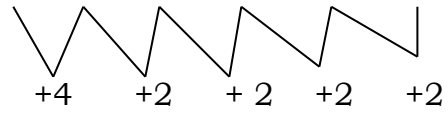
Activity

1. List the first whole numbers.
2. Write the first five even numbers
3. Work out the sum of first five whole numbers
4. List down the first ten counting numbers.
5. List all the counting numbers less than 10
6. List all the whole numbers less than 10.
7. Write all the even numbers between 10 and 20
8. List all the whole numbers between 5 and 15.
9. List the first five composite numbers.
10. Write all the prime numbers less than 20.
11. Find the sum of the first two composite numbers.
12. Work out the first five prime numbers.

Sequences
Examples

1. Find the next two numbers in the sequence given below.

2, 6, 8, 10, **12**, **14**

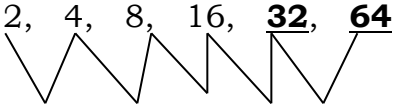


+4 +2 + 2 +2 +2

10 + 2 = 12

12 + 2 = 14

2. 2, 4, 8, 16, **32**, **64**



x 2 x 2 x 2 x 2 x 2

2 x 2 = 4
4 x 2 = 8
8 x 2 = 16
16 x 2 = 32
23 x 2 = 36

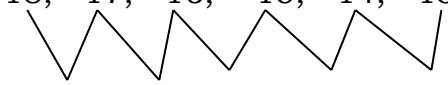
3. 5, 10, 15, **20**, **25**



+ 5 +5 +5 +5

15 + 5 = 20
20 + 5 = 25

4. 18, 17, 16, 15, 14, 13



- 1 - 1 - 1 -1 -1

14 - 13
15 - 14

Exercise
Fill in the missing numbers in the sequence given below.

a) 1, 2, 3, __, 5, ___, 7, __, 9, 10

b) 5, 10, __, 20, 25, __, 35

c) 0, 1, 3, 4, 6, 7, 9, ___, ___

d) 18, 15, 12, 9, ___, ___, ___

e) 30, 28, 26, ___, ___

f) 11, 22, 33, 44, ___, ___

g) 0, 2, 4, 6, ___, ___, ___, ___, 16

h) 32, 16, 8, 4, ___

i) 10, 20, 30, ___, ___

j) 1, 3, 6, 10, ___, 21, ___, 36

k) 30, 25, 20, 15, ____, ____

l) 1, ,3 9, 27, ___, ___

Multiples of numbers

Examples

1. List down all the multiples of 2 less than 12.

   M_2 1 x 2 = 2
   2 x 2 = 4
   2 x 3 = 6
   2 x 4 = 8
   2 x 2 = 10
   2 x 6 = 12

   M_2 less than 12 = {2, 4, 6, 8, 10}

2. List the multiples of 2 between 10 and 20

   6 x 2 = 12
   7 x 2 = 14
   8 x 3 = 16
   9 x 4 = 18

   M_2 between 10 and 20 = {12, 14, 16, 18}

3. List multiples of 9 less than 40.

   1 x 9 = 9
   2 x 9 = 18
   3 x 9 = 27
   4 x 9 = 36

   = {9, 18, 27, 36}

Activity

List the multiples of the following.

1. Multiples of 2 less than 10
2. Multiples of 8 less than 30
3. Multiples of 3 between 20 and 30
4. Multiples of 8 between 10 and 20
5. Multiples of 6 less than 25
6. Multiples of 5 less than 40
7. Multiples of 7 between 30 and 50
8. Multiples of 10 less than 80
9. List all the odd multiples of 5 less than 50
10. List all the even multiples of 3 less than 50.

Common Multiples

Examples

1. Find the common multiples of 3 and 6.

   M_3 = {3, (6), 9, (12), 16, (18), 21, (24), 27, (30), ……..}

   M_6 = {(6), (12), (18), (24), (30), 36, 42, …..}

   C.M = {6, 12, 18, 24, 30, ……..}

2. Find the common multiples of 5 and 10.

   M_5 = {5, (10), 15, (20), 25, 30, ……..}

   M_{10} = {(10), (20), (30), (40), 50, 60, …..}

   C.M = { 10, 20, 30, ……..}

Activity

Find the common multiples of the following numbers.

a) 2 and 4 b) 2 and 6 c) 4 and 8

d) 5 and 10 e) 4 and 12 f) 6 and 12

g) 3 and 9 h) 2 and 8 i) 3 and 15

Finding LCM (Lowest Common Multiple)

Examples

1. Find the LCM of 2 and 4.

   M2 = {(2), (4), 6, (8), (10), (12), 14 …}

   M4 = { 4, (8), (12), 16, …}

   C.M 4, 8, 12

   LCM = 4

The LCM of 2 and 4 is 4.

2. Find the LCM of 4 and 12

   M_4 = {(4), 8, (12), 16, 20, (24), 28, 32, (36)}

   M_{12} = { (12), (24), (36), 48 …}

   C.m = (12, 24, 36, 48, …}

   LCM = 12

Exercise

Find the LCM of the following numbers.

a) 3 and 6 b) 5 and 10 c) 3 and 9

d) 2 and 8 e) 4 and 8 f) 2 and 6

g) 4 and 3 h) 3 and 5 i) 6 and 12

Finding factors of numbers

Examples

1. List all the factors of 6.

   F_6 1 x 6 = 6

   2 x 6 = 12

   = {1, 2, 3, 6}

2. List all the factors of 18.

   F_{18} 1 x 18 = 18

   2 x 9 = 18

   3 x 6 = 18

   = {1, 2, 3, 6, 7, 18}

3. List all the factors of 30.

   F_{30} 1 x 30 = 30

   2 x 15 = 30

   3 x 10 = 30

   5 x 6 = 30

   = { 1, 2, 3, 5, 6, 10, 15, 30}

Exercise

List all the factors of the following numbers

a) 2 b) 3 c) 8 d) 10 e) 4

f) 9 g) 12 h) 14 i) 15 j) 20

k) 24 l) 28 m) 32 n) 40 o) 48

Finding common factors

Examples

Find the common factor of 2 and 4

1. F_2 1 x 2 = 2

   =(~~1~~, ~~2~~)

   F_4 1 x 4 = 4

   2 x 2 = 4

   = {~~1~~, ~~2~~, 4 }

   C.F of 2 and 4 = {1, 2}

2. Find the common factors of 12 and 24

F_{12} 1 x 12 = 12 F_{24} 1 x 24 = 24

2 x 6 = 12 2 x 12 = 24

3 x 4 = 12 3 x 18 = 24

4 x 6 = 24

={ ~~1~~, ~~2~~, ~~3~~, ~~4~~, ~~6~~, ~~12~~} = { ~~1~~, ~~2~~, ~~3~~, ~~4~~, ~~6~~, 8, ~~12~~, 24}

C.F of 12 and 24 = { 1, 2, 3, 4, 6, 12}

Exercise

Find the common factor of the following numbers

a) 3 and 9 b) 2 and 6 c) 3 and 6 d) 5 and 10

e) 6 and 12 f) 4 and 8 g) 2 and 8 h) 10 and 20

i) 6 and 8

Finding H.C.F of 6 and 9

(Highest Common Factor or Greatest Common Factor)

Examples

1. Find the HCF of 6 and 9

F6 F9

1 x 6 = 6 1 x 9 = 9

2 x 3 = 6 3 x 3 = 9

= {1, 2, 3, 6} = {1, 3, 9}

CF = {1, 3} = {1, 3, 9}

H.C.F of 6 and 9 = 3

2. Find the GCF of 7 and 14

F_7 1 x 7 = 7 F_{14} 1 x 4 = 14

= {1, 7} 2 x 7 = 14

= {1, 2, 7, 14}

C.F = {1, 7}

H.C.F of 7 and 14 = 7

Exercise

Find the H.C.F of the following numbers

a) 3 and 9 b) 2 and 6 c) 3 and 6 d) 5 and 10

e) 6 and 12 f) 4 and 8 g) 2 and 8 10 and 20

i) 6 and 8 j) 12 and 24 k) 9 and 18 l) 12 and 18

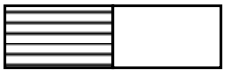
TERM II

FRACTIONS

Definitions

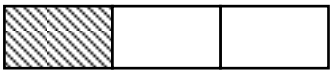
A fraction is part of a whole.

Naming fractions



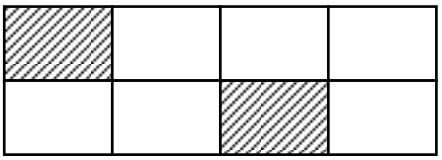
A half

$\frac{1}{2}$ $\frac{1}{2}$



A third

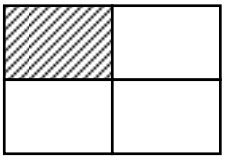
$^1/_3 {}^1/_3 {}^1/_3$



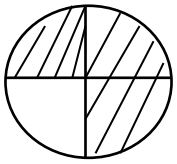
$\frac{2}{8}$ Two eighths

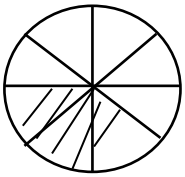
Activity

Describe the shaded fractions

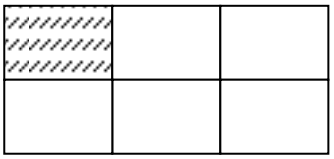
1. 

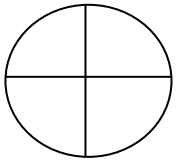
2. 

3. 

4. 

Describe the un-shaded fractions

1. 

2. 

Types of fractions

1. ***Proper fractions***

   These are fractions with numerators smaller than denominators

   $\frac{1}{2}$, $\frac{3}{7}$, $\frac{4}{10}$, $\frac{12}{27}$, etc

2. **Improper fraction**
   A fraction with a numerator greater than a denominator.
   e.g $\frac{5}{2}$, $\frac{9}{4}$, $\frac{15}{3}$, etc
3. Mixed fractions (mixed numbers)
   A fraction with a whole number together with proper fraction.

   e.g $2\frac{1}{2}$, $9\frac{3}{4}$, $4\frac{7}{10}$, etc

NOTE

Given the fraction 5 ¾

5 is a whole number

3 is a numerator

4 is a denominator

Activity

Write proper, improper or mixed fraction in each of the following,

a) $4\frac{1}{2}$ b) $\frac{6}{8}$ c) $^{9}/_{4}$ d) $7\frac{3}{2}$

e) $9\frac{1}{2}$ f) $\frac{6}{2}$ g) $6\frac{1}{2}$ h) $\frac{3}{4}$

i) $4\frac{1}{6}$ j) $\frac{51}{2}$

k) $5\frac{14}{2}$ l) $\frac{7}{2}$ m) $\frac{1}{9}$ n) $8\frac{5}{6}$ o) $\frac{8}{7}$

Equivalent fractions

Examples

1. Find the equivalent fractions for ½ .

$$\frac{1}{2} = \frac{1 \times 2}{2 \times 2}, \quad \frac{1 \times 3}{2 \times 3}, \quad \frac{1 \times 4}{2 \times 4}, \quad \frac{1 \times 5}{2 \times 5}$$

$$\frac{1}{2} = {}^{2}/_{3}\ , \quad {}^{3}/_{6}, \quad {}^{4}/_{8}\ , \quad {}^{5}/_{10}, \text{ etc}$$

2. Find the equivalent fractions for $^{2}/_{5}$

1. Find the equivalent fractions for $^{2}/_{5}$.

$$^{2}/_{5} = \frac{2 \times 2}{5 \times 2}, \quad \frac{2 \times 3}{5 \times 3}, \quad \frac{2 \times 4}{5 \times 4}, \quad \frac{2 \times 5}{5 \times 5}, \quad \frac{2 \times 6}{5 \times 6}$$

$$^{2}/_{5} = {}^{4}/_{10}\ , \quad {}^{6}/_{15}, \quad {}^{8}/_{20}\ , \quad {}^{10}/_{25}, \quad {}^{12}/_{30}\ , \text{etc}$$

Activity

Write the next four equivalent fractions for:

1. $^{2}/_{3}$, ___, ___, ___, ____
2. ¼ , ___, ___, ___, ____
3. $^{3}/_{8}$ ___, ___, ___, ___
4. $^{1}/_{3}$, ___, ___, ___, ___
5. $^{2}/_{11}$, ___, ___, ___, ____
6. $^{1}/_{6}$, ___, ___, ___, ____
7. $^{2}/_{9}$ ___, ___, ___, ___
8. $^{3}/_{7}$, ___, ___, ___, ___

Finding unknown is equivalent fractions
Examples

1. Find the missing number in;

$\frac{1}{2} = \frac{\square}{6}$

$\frac{1}{2} = \frac{2}{4}, \boxed{\frac{3}{6}}, \frac{4}{8}, \frac{5}{10}, \frac{6}{12}$

$\frac{1}{2} = \frac{3}{6}$

$\square = 3$

2. $\frac{3}{7} = \frac{9}{\square}$

$\frac{3}{7} = \frac{6}{14}, \boxed{\frac{9}{21}}, \frac{12}{28}, \frac{15}{35}$

$\frac{3}{7} = \frac{9}{21}$

$\square = 21$

Activity
Find the missing numbers

a) $\frac{1}{7} = \frac{\square}{28}$ b) $\frac{1}{2} = \frac{5}{\square}$ c) $\frac{3}{8} = \frac{15}{\square}$

d) $\frac{1}{3} = \frac{\square}{9}$ e) $\frac{2}{3} = \frac{8}{\square}$ f) $\frac{3}{4} = \frac{\square}{16}$

Reducing fractions
Examples

1. Reduce $\frac{8}{16}$ to its lowest terms

F8 = {1, 2, 4, 8}

F16 = {1, 2, 4, 8 16}

GCF of 8 and 16 = 8

$\frac{8}{16} \div \frac{8}{8} = \frac{1}{2}$

$\frac{8}{16} = \frac{1}{2}$

2. Reduce $\frac{10}{25}$ to its lowest terms

F10 = {1, 2, 5, 10}
F25 = {1, 5, 25}
GCF of 10 and 25 = 5
$\frac{10}{25} \div 5 = \frac{2}{5}$
$\frac{10}{25} = \frac{2}{5}$

Activity

Write the following fractions in their lowest terms.

a) $\frac{2}{6}$ b) $\frac{6}{10}$ c) $\frac{10}{30}$ d) $\frac{10}{16}$

e) $\frac{8}{10}$ f) $\frac{8}{18}$ g) $\frac{6}{18}$ h) $\frac{15}{21}$

f) $\frac{4}{12}$ j) $\frac{15}{18}$ k) $\frac{4}{16}$ l) $\frac{25}{75}$

Ordering fractions
Examples

1. Arrange ¼ , $^1/_3$, ½ in ascending order
LCM of 4, 3 and 2 = 12
¼ x 12, $^1/_3$ x 12 , ½ x 12
1 x 3 1 x 4 1 x 6
3 4 6
Ascending order; ¼ , $^1/_3$, $^1/_2$

2. Arrange $^5/_6$, ½, ¾ in descending order
LCM of 6, 2 and 4 = 12
$\frac{5}{6}$ x 12 , $\frac{1}{2}$ x 12, $\frac{3}{4}$ x 12

5 x 2 1 x 6 3 x 3
10 6 9

Descending order; $^5/_6$, ¾ , ½

Activity

Arrange the following fractions in descending order

a) $^1/_3$, ½ , $^1/_5$ b) $^3/_8$, $^{15}/_{16}$, ¼

c) $^3/_5$, $^5/_{10}$, ¾

Arrange the following fractions in descending order.

a) $^3/_8$, ½ , $^5/_6$ b) ½ , $^2/_3$, $^1/_6$

c) $^2/_3$, $^5/_6$, ½ , $^7/_8$

Changing mixed numbers to improper fractions
Examples

1. Change 1 ½ to improper fractions

$$1\ ½ = \frac{(D \times W) + N}{D}$$
$$= \frac{(2 \times 1) + 1}{2}$$
$$= \frac{2 + 1}{2}$$
$$= \frac{3}{2}$$

2. Express $2^3/_5$ as improper fraction

$$2^3/_3 = \frac{(D \times W) + N}{D}$$
$$= \frac{(5 \times 2) + 3}{5}$$
$$= \frac{10 + 3}{5}$$
$$= \frac{13}{5}$$

Activity
Write the following fractions as improper fractions

a) $1^1/_5$ b) $3^2/_3$ c) $13½$ d) $2^2/_3$

e) $4¾$ f) $10^3/_{10}$ g) $4^1/_3$ h) $1^5/_7$

i) $3^4/_5$ j) $12\ ¼$

Changing improper fractions to mixed fractions/numbers
Examples

1. Change 5/2 to a mixed number

$$5/2 = 2\overline{)5}$$
$$2\ x = -\frac{4}{1}$$
$$5/2 = 2\ ½$$

2. Change $^7/_3$ as a mixed number

$$^5/_3 = 3\overline{)7}$$
$$2 \times 3 = \frac{-6}{1}$$
$$^7/_3 = 20\ ^1/_3$$

Activity
Change the following improper fractions to mixed fractions (number)

a) $^{7}/_{5}$ b) $^{17}/_{5}$ c) $^{7}/_{2}$ d) $^{21}/_{5}$

e) $^{10}/_{3}$ f) $^{13}/_{7}$ g) $^{17}/_{3}$ i) $^{14}/_{5}$

j) $^{12}/_{7}$

Addition of fractions with same denominations
Examples

1. Add: $\frac{1}{5} + \frac{2}{5}$

$$\frac{1}{5} + \frac{2}{5} = \frac{1 + 2}{5}$$

$$= \frac{3}{5}$$

2. Add: $\frac{5}{8} + \frac{1}{8}$

$$\frac{5}{8} + \frac{1}{8} = \frac{5}{8} + \frac{1}{8}$$

$$= \frac{6}{8} \div \frac{2}{2} \quad \text{G.C.F of 6 and 8 = 2}$$

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

Activity
Add the following fractions

a) $\frac{1}{6} + \frac{4}{6}$ b) $\frac{4}{9} + \frac{1}{9}$ c) $\frac{3}{7} + \frac{4}{7}$

d) $\frac{3}{20} + \frac{5}{20}$ e) $\frac{1}{15} + \frac{4}{15}$ f) $\frac{1}{8} + \frac{6}{8}$

Word problems in addition
Examples

1. John dug $^{1}/_{6}$ of the garden and Mary dug $^{4}/_{6}$ of the garden. What part of the garden was dug?

Joan and Mary dug $\frac{1}{6} + \frac{4}{6}$

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

$$= \frac{5}{6}$$

Activity

1. Kadodi ate $^1/_3$ of fish for lunch and another $^1/_3$ of the fish for supper. What fraction of the fish did Kadodi?

2. What is the sum of $^2/_3$ and $^3/_8$?

3. Magogo read $^4/_7$ of a book on Monday and $^2/_7$ of it on Tuesday. What fraction of the book did he read altogether?

4. In a box of chocolates, 2/3 are dark chocolate, and the rest are milk chocolate. If there are 15 chocolates in the box, how many are milk chocolates?
5. If Malaika spends 1/5 of her day doing homework and 2/7 of her day playing outside, what fraction of the day is left for other activities?
6. If Sara has 3 1/4 yards of fabric and uses 2 3/8 yards to make a dress, how much fabric does she have left?
7. If Jackson eats 2/5 of a pizza, and each slice is 1/8 of the pizza, how many slices does he eat?

Subtraction of fractions with the same denominators

Examples

1. Subtract: $\frac{7}{12} - \frac{1}{12}$

$$\frac{7}{12} - \frac{1}{12} = \frac{7 - 1}{12}$$

$$= 6 \div 6$$
$$12 \div 6$$
$$= \frac{1}{2}$$

Activity

Subtract the following fractions

a) $\frac{4}{4} - \frac{1}{4}$ b) $\frac{8}{9} - \frac{3}{9}$ c) $\frac{9}{13} - \frac{5}{13}$

Word problems

Examples

1. Subtract $\frac{2}{5}$ from $\frac{4}{5}$

$$\frac{4}{5} - \frac{2}{5} = \frac{4 - 2}{2}$$

$$= \frac{2}{5}$$

2. Andrew had $^7/_9$ of a cake. He ate $^5/_9$ of it. What fraction remained?

$$\frac{7}{9} - \frac{5}{9} = \frac{7 - 5}{9}$$

$$= \frac{2}{9}$$

Activity

1. Subtract $^2/_7$ from $^5/_7$
2. What must be added to 5/11 to make $^9/_{11}$?
3. What remains if $^7/_{15}$ is subtracted from $^{13}/_{15}$?
4. I read $^2/_5$ of a mathematics book. What fraction was left?
5. A water tank was $^7/_8$ full. He used $^4/_8$ of the water. What fraction was left?
6. What remains if 3/5 is subtracted from 4/5?
7. A recipe calls for 2/3 cup of flour. If you want to make half of the recipe, how much flour do you need?
8. If you have 1/2 of a pizza and want to share it equally among 3 friends, what fraction of the pizza will each friend get?

Mixed numbers (Addition & subtraction)
Examples

1. Add: $2^1/_7 + 3\ ^5/_7 = (2 + 3) + {}^1/_7 + {}^5/_7$

$$= 5 + \frac{(1 + 5)}{7}$$

$$= 5 + \frac{6}{7}$$

$$= 5\frac{6}{7}$$

OR $2^1/_7 + 3^5/_7 = {}^{15}/_7 + {}^{26}/_7$

$$= \frac{15 + 26}{7}$$

$$= \frac{41}{7}$$

$$= 5\frac{6}{7}$$

2. Subtract: $4\ ¾ - 1\ ¼$

$$= (4 - 1) + ({}^3/_4 - ¼)$$

$$= 3 + \frac{(3 - 1)}{4}$$

$$= 3 + \frac{2}{4}$$

$$= 3 + ½$$

$$= 3\ ½$$

OR $4\frac{3}{4} - 1\frac{1}{4}$

$= {}^{19}/_{4} - {}^{5}/_{4}$

$= \frac{19 - 5}{4}$

$= \frac{14}{4}$

$= 3{}^{2}/_{4}$

$= 3\frac{1}{2}$

Activity

Work out the following:

a) $2\,{}^{2}/_{3} + 1\,{}^{1}/_{3}$ b) $3\,{}^{1}/_{3} + 4\,{}^{1}/_{3}$ c) $2\frac{1}{2} - 1\frac{1}{2}$

d) $6\,{}^{3}/_{5} - 3\,{}^{1}/_{5}$ e) $4\,{}^{2}/_{3} - 1\,{}^{1}/_{3}$

f) Lydia had $8\,{}^{1}/_{8}$ kg of beans and brought $7\,{}^{4}/_{9}$ kg more. How many kg of beans does she have altogether?

g) The length of a rope was $9\,{}^{4}/_{5}$ m. If the rat ate $3\,{}^{1}/_{5}$ m, what was the length of the rope that remained?

h) If Alex has a rectangular garden that is 7 1/2 meters long and 4 2/3 meters wide, what is the area of the garden?

i) The length of a piece of ribbon was 12 3/4 meters. If 4 2/3 meters were used for a craft project, what is the length of the ribbon that remains?

j) Emma had 2/3 of a pizza and shared it equally among 4 friends. How much pizza did each friend receive?

k) Express 3/4 as an equivalent fraction with a denominator of 12.

Multiplication of a fraction by a fraction

Examples

$\frac{1}{5} \times \frac{2}{3} = \frac{1}{5} \times \frac{2}{3}$

$= \frac{2}{15}$

$\frac{3}{4} \times \frac{2}{9} = 3 \times 2$

$= 4 \times 9$

$= \frac{6}{36} \div \frac{6}{6}$

$= \frac{1}{6}$

Activity
Multiply the following fractions

a) $\frac{2}{3} \times \frac{1}{2}$ b) $\frac{2}{5} \times \frac{5}{6}$ c) $\frac{1}{2} \times \frac{1}{2}$

d) $\frac{3}{7} \times \frac{2}{3}$ e) $\frac{1}{3} \times \frac{1}{2}$ f) $\frac{3}{4} \times \frac{2}{5}$

Multiplication of a fraction by a whole number
Examples

1. Multiply: $\frac{1}{2} \times 12$

$$\frac{1}{2} \times \frac{12}{1} = \frac{1}{2} \times \frac{12}{1}$$
$$= \frac{12}{2} \div 2$$
$$= \frac{6}{1}$$
$$= \mathbf{6}$$

OR $\frac{1}{2} \times 12$

$= \frac{1}{6} \times 6$

$\frac{1}{2} \times \frac{12}{1}$ (6)

1×6

6

2. Multiply: $\frac{2}{3} \times 15$

$$\frac{2}{3} \times \frac{15}{1} = \frac{2 \times 15}{3 \times 1}$$
$$= \frac{30}{3} \div 3$$
$$= \frac{10}{1}$$
$$= 10$$

OR $\frac{2}{3} \times 15$

$= 2 \times 5$

$= 10$

Activity
Work out the following:

a) $\frac{2}{5} \times 18$ b) $\frac{4}{5} \times 25$ c) $\frac{1}{2} \times 10$

d) $3 \times 15/4$

e) $5 \times 12/3$

f) $2 \times 7/2$

Application of fraction
Examples

1. What is $^2/_3$ of 36 oranges
   = $^2/_3$ x 36 oranges
   = 2 x 12 oranges
   = 24 oranges.

2. In a class of 40 pupils, ¼ were boys and the rest were girls.
   a) Find the fraction of girls.

$$\text{Fraction of girls} = 1 - \frac{1}{4}$$
$$= \frac{4}{4} - \frac{1}{4}$$
$$= \frac{4 - 1}{4}$$
$$= \frac{\mathbf{3}}{\mathbf{4}}$$

   b) How many boys were in the class?

Fraction of boys = ¼
Number of boys = ¼ x 40 pupils
= 10 pupils

   c) Find the number of girls in the class.
Fraction of girls = ¾
Number of girls = ¾ x 40 pupils
= 3 x 10
= 30 girls

Activity
1. What is $^1/_3$ of 12?
2. Find ¾ of 16 hens
3. In a class of 336 pupils, $^1/_3$ were absent and the rest were present.
   a) What fraction of the class were present?
   b) How many pupils were absent?
   c) Find the number of pupils present.
   d) How many more pupils were present than absent?

Place Values of Decimals

Examples

1. What is the place value of each digit in the number 5.63?

Ones	Tenths	Hundredths
5	6	3

Ones Tenths Hundredths

2. What is the place value of 5 in the number 17.35?

1 7. 3 5

Hundredths

Tenths

Activity

1. Find the place value of each digit in the number.

a) 0.2 b) 6.38 c) 49.15 d) 30.248

2. Find the place value of the underlined digits in the number.

a) 45.0<u>1</u> b) 4. <u>5</u>6 c) 2<u>4</u>6.8 d) <u>6</u>39.25

e) 1<u>5</u>.37

3. a) Find the place value of 3 in the number 2.03.

b) What is the place value of 8 in the number 6.8.

Values of Decimals

Examples

1. What is the value of each digit in the number 18.36?

Soln:

Tens	Ones	Tenths	Hundredths
1	8	3	6

1 tens
1 x 10
10

8 ones
8 x 1
8

3 tenths
3 x 1/10
3x 0.1
0.3

6 Hundredths
6x 1/100
6 x 0.01
0.06

2. What is the value of 8 in the number 23.58?

Soln:

Tens	Ones	Tenths	Hundredths
2	3	5	8

8 hundredths

8 x 1/100
8 x 0.01
0.08

3. Find the value of the underlined digit in the number 8̲4.9.
Soln

Tens	Ones	Tenths
8	4	9

8 tens
8 x 10
80

Activity:

1. Find the place value of each digit number.
   a) 3.28 b) 27.56 c) 209.76

2. What is the value of the underlined digit in the numbers below.
   a) 2.8̲6 ii) 4̲5.9 iii) 74. 0̲6

3. Work out the value of 2 in the number 10.52.

4. What is the value of 9 in the number 6.29?

5. Find the value of 4 in the number 2.46.

6. Find the value of 3 in the number 17.83.
7. In the number 10.52, what is the value of the digit 2?
8. In the number 6.29, what is the value of the digit 9?
9. In the number 2.46, what is the value of the digit 4?

Writing decimals in words.

Examples

1. Write 0.3 in words
   Soln: 0.3 = Zero point three
   = Three tenths

2. Write 4. 8 in words.
   Soln: 4.8 = Four point eight
   = Four and eight tenths

3. Write 12.5 in words.
   Soln: 12.5 = Twelve point five
   = Twelve and five tenths.

4. What is 102. 48 in words?
   Soln: 102.48 = One hundred two point four eight.
   = One hundred two and forty eight hundredths.

Activity
Write the following decimals in words.

a) 2.3	b) 34.9	c) 217.5	d) 6.87	e) 48.93
f) 0.8	g) 14. 4	h) 23.56	i) 5.01	j)7.14
k)80.69	l) 47.9	m) 3.3	n) 1.43	o) 0.08

Writing decimals in figures.
Examples

1. Write four and three tenths in figures.
   Soln: Four = 4
   Three tenths = 0.3
   Four and three tenths 4.3

2. Write nine hundredths in figures.
   Soln: Nine hundredths = 9 x 0.01
   = 0.09
3. Write twenty seven and six tenths in figures.
   Soln: Twenty seven = 27
   Six tenths = 0.6
   Twenty seven and six tenths = 27.6

Activity:
Write the following in figures.
a) Eighteen and six tenths
b) Thirteen and four tenths.
c) Five and twelve hundredths.
d) One and fourteen hundredths
c) Six and nine tenths.
e) Thirty three and three tenths.
f) Twenty and five hundredths.
g) Two hundred ten and one tenths.
h) Eleven and eleven hundredths.
i) Sixteen point zero seven.

Changing /converting vulgar/common fractions to decimal fractions.

Examples

1. Write $^{8}/_{10}$ as a decimal fraction.
   Soln:
   $^{8}/_{10}$ = 10 ⟌ 0.8
   - 0 ↓
   8 0
   - 8 0
   0 0
   $\therefore {}^{8}/_{10} = 0.8$

2. What is ½ as a decimal fraction?

Soln:

$^1/_2$ =

```
      0.5
   2 | 1.0
   - 0 ↓
     1 0
   - 1 0
     0 0
```

$\therefore {}^1/_2 = \mathbf{0.5}$

3. Change ¼ to a decimal fraction.

Soln:

$^1/_4$ =

```
      0.25
   2 | 1.00
   - 0 ↓
     1 0
   -  8 ↓
      20
     -20
      00
```

$\therefore {}^1/_4 = \mathbf{0.25}$

Activity

Change the following fractionsf to decimals.

a) $\frac{2}{5}$ b) $\frac{3}{4}$ c) $\frac{4}{10}$ d) $\frac{3}{8}$ e) $\frac{2}{4}$ f) $\frac{3}{10}$ g) $\frac{1}{5}$

h) $\frac{25}{10}$ i) $\frac{55}{100}$ j) $\frac{7}{10}$ k) $\frac{11}{10}$ l) $\frac{5}{8}$ m) $\frac{1}{8}$

Changing /converting mixed fractions to decimal fractions.

Examples

1. Express $3\,^2/_{10}$ as a decimal fraction.

Soln: $3\,^2/_{10} = 3 + \frac{2}{10}$

```
      0.2
   10 | 2.0
   -0 ↓
     2 0
   -2 0
     0 0
```

$= 3 + 0.2$

$= \underline{\underline{3.2}}$

sw

```
   3.
+ 0.2
  3.2
```

Activity:

Change the following fractions to decimal fractions.

a) $4^6/_{10}$ b) $12^4/_{10}$ c) $4^4/_{10}$

d) $4^{15}/_{100}$ e) $5\,^3/_{100}$ f) $3^3/_{10}$

g) $2^1/_{10}$ h) $11^9/_1$ i) $6^5/_{100}$

Changing decimal fractions to common fraction

Examples

1. Express 0.6 as a vulgar fraction.

Soln: $0.6 = \frac{0.6}{1} \times \frac{10}{10}$

$= \frac{6}{10}$ **OR** $\frac{6}{10} \div \frac{2}{2}$

$= \frac{3}{5}$

2. Convert 1.2 to a common fraction.

Soln: $1.2 = \frac{1.2}{1} \times \frac{10}{10}$

$= \frac{12}{10} \div \frac{2}{2}$

$= 10 \div 2$

$= 6$ (5 goes into 6 once, remainder 1)

$\therefore \frac{6}{5} = 1\frac{1}{5}$

Activity

Change the following decimals to fractions

a) 0.2 b) 1.3 c) 1.4 d) 0.5 e) 0.25

f) 1.8 g) 0.75 h) 0.6 i) 0.7 j)1.1 k) 0.8

Addition of decimals

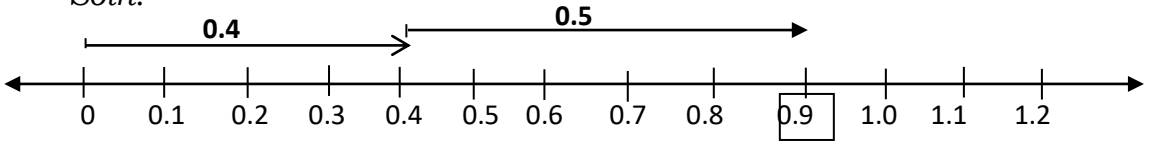
Examples

1. Add 0.5 + 0.7

Soln:
$$\begin{array}{r} 0.5 \\ +\ 0.7 \\ \hline 1.2 \end{array}$$

2. Add: 0.4 + 0.5 using a number line.

Soln:



$\therefore 0.4 + 0.5 = 0.9$

3. A baby drank 1.4 litres of milk on Monday and 1.6 litres on Tuesday. How many litres of milk did the baby drink altogether?

Soln:
$$\begin{array}{r} 1.4 \text{ litres} \\ +\ 1.6 \text{ litres} \\ \hline 3.0 \text{ litres} \end{array}$$

Exercise

1. Add the following decimals without using a number line.
   a) 0.2 + 0.6 b) 1.4 + 2.8 c) 4.3 + 2.5 + 0.9

2. Add the following using a number line.

   a) 0.3 + 0.4 b) 0.1 + 0.5 c) 0.6 + 0.2

3. a) What is the sum of 2.3 and 4.8?

   b) Cathy was given 2.6kg of sugar and Mercy was given 1.7 kg of sugar. How much sugar did they get altogether?

   c) Max bought 3.8 metres of ribbon. Mark bought 4.7 metres of ribbon. What length of ribbon do they have altogether?

   d) A rectangular flower garden measures 7.3 metres by 4.7 metres. What is the distance round it altogether?

SUBTRACTION OF DECIMALS

Examples

1. Subtract: 2.3 - 0. 9

Soln:
$$\begin{array}{r} {}^{1}\cancel{2}.\,{}^{13}\cancel{3} \\ -\ 0.\ 9 \\ \hline 1.\ 4 \end{array}$$

2. Leticia had 19.2 metres of cloth, she sold 13. 5 metres, what length of cloth did she remain with?

Soln:
$$\begin{array}{r} {}^{8}\cancel{19}.\,{}^{12}2\ \text{metres} \\ -\ 13.\ 5\ \text{metres} \\ \hline 5\ .\ 7\ \text{metres} \end{array}$$

Exercise

1. Work out the following.
   a) 3.4 - 1 .5 b) 7.8 - 3.8 c) 6.4 – 2.9

   d) 6. 3 - 1.9 e) 2. 7 - 1.3

2. a) Derrick bought 12 litres of milk, he gave away 5.5 litres, how many litres of milk did he remain with?

   b) A boy cycles 8.2 km from his home to school. If he cycles 4.7km and then rests. How many km remained to reach school?

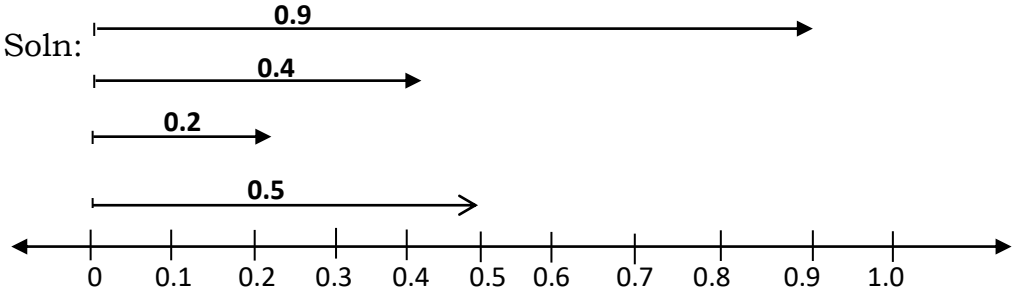
   c) A maid made 5.2 litres of juice, she served 2.8 litres, how much litres of juice remained?
   d) What is the difference between 14.3 and 6.9?

ORDERING DECIMAL FRACTIONS (Arranging fraction according to their size)

Examples

1. Arrange 0.6 , 0.2 and 0.4 in ascending order (starting with the smallest)

Soln:



The order is 0.9, 0.5, 0.4, 0.2

Exercise

1. Arrange the following in ascending order.
   a) 0.7, 0.3, 0.4, 0.5
   b) 0.3, 0.8, 0.5, 0.2
   c) 0.2, 2, 0.02, 2.2
   d) 0.3, 0.7, 0.6, and 0.9

2. Arrange the following decimals in descending order.
   a) 0.4, 0.1, 0.7, 0.6
   b) 1.2 , 2.3, 1.8 and 2.0
   c) 0.8, 0.3, 0.5, 0.2
   d) 0.5, 0.8, 0.2, 0.4

GRAPHS AND INTERPRETATION OF DATA

Pictographs are also called picture-graphs.

Pictographs are graphs which show number or amount of different things for people, classes, animals e.t.c

On pictographs we usually use symbols to represent the data on the graph.

Example

The pictograph below shows the number of trees each farmer has.

Okullo	
Kambe	
Kizito	
Mulabi	

Scale

 = 10 trees

Questions

a) How many trees does Kizito have?

Number of trees = 6 x 10 trees

= 60 trees

b) Find the sum of Kizito's trees and Kambe's trees

Kizito = 6 x 10trees = 60 trees

Kambe = 3 x 10 trees = + 30 trees

90 trees

c) Who has the biggest number of trees?

Kizito

d) Find the difference between Mulabi's trees and Okullo's trees.

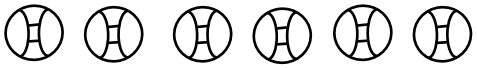
Mulabi = 5 x 10 trees = 50 trees

Okullo = 2 x 10 trees = - 20 trees

30 trees

Exercise

1. The graph below shows the number of balls picked by four sisters from a shop.

Doreen	
Diana	
Daphine	
Daizy	

Scale

 Represents 5 balls

Questions

a) Which two sisters picked the same number of balls?

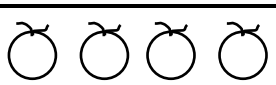
b) Who picked the largest number of balls?

c) How many balls did Doreen pick?

d) How many balls did Diana & Daphine pick?

e) Find the difference between Daphine's balls and Daizy's balls.
f) Find the sum of the highest number of balls picked and the lowest number of balls picked.
g) Work out the total number of balls that were picked by the four girls.

2. The pictograph below shows the apples imported from South Africa. Study and answer the questions that follows.

Mon	
Tue	
Wed	
Thur	
Fri	

Scale:  represents 20 apples

Questions

a) How many apples were imported on Monday?
b) How many apples were imported on Wednesday and Thursday?
c) How many more apples were imported on Friday than Tuesday?
d) How many apples were imported on Monday, Tuesday and Friday?
e) On which days were the same number of apples imported?
f) On which day were the highest number of apples imported.
g) On which day were the least number of apples imported?

TALLIES & BAR GRAPHS

To draw graphs we first collect information.
We may draw tally marks and use them to count and group things in fives.

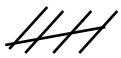
Example:

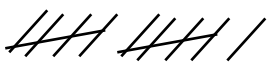
/ One // two /// three 𝍸 five

N.B:

For each fifth item that we count we make a line across the first four.

Example:

 Five

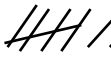
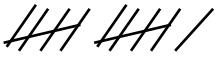
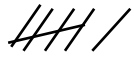
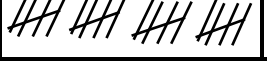
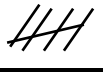
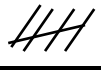
 Eleven

 Fifteen

TALLY GRAPHS

Example III

Pupils were told to count the number of cars of different colours which passed by their school during break time for 5 days. The information is shown below.

Days of the week	**White**	**Red**	**Black**	**Maroon**
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				

Questions:

a) How many cars were seen on Monday?

17 cars

b) How many white cars were seen on Thursday and Friday?

Thursday: 6 cars

Friday: + 20 cars

26 cars

c) Which colour appeared most?

White

d) What is the sum of all white cars?

48 cars

e) How many maroon cars were seen on Wednesday?

5cars.

Exercise

A school boy recorded the number of white cars that passed near his home in one week.

Days of the week	Number of white cars
Monday	𝍸 𝍸 𝍸
Tuesday	𝍸 𝍸 𝍸 𝍸
Wednesday	𝍸 𝍸
Thursday	𝍸 𝍸 𝍸 𝍸 //
Friday	𝍸 𝍸
Saturday	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸
Sunday	𝍸 //

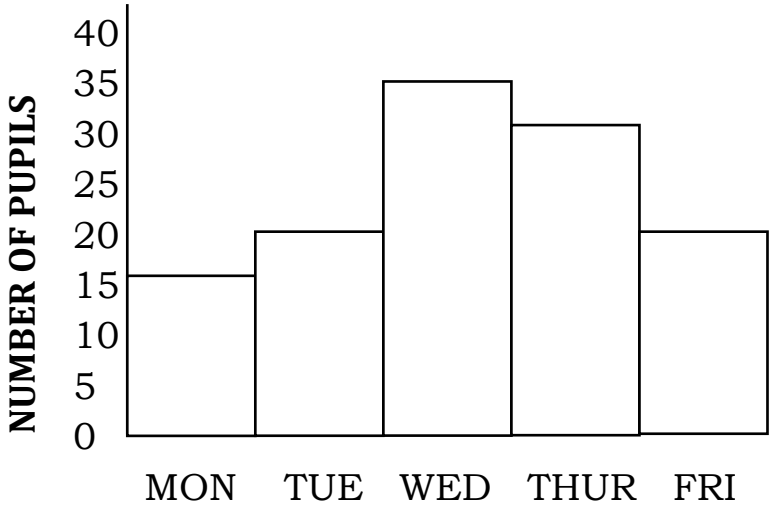
Questions

a) How many cars were recorded in the first two days of the week?
b) Which day did he record the largest number of cars?
c) How many cars were recorded on Friday, Saturday and Sunday?
d) What is the different between the largest and the smallest number of cars recorded that week?
e) On which days were the same number of cars recorded?
f) What is the total number of cars for the first three days?
g) What is the total number of cars for the last three days of the week?
h) What was the most common number of cars?

BAR GRAPHS

Example

The graph below shows the daily attendance of P.4 pupils for a week.



a) How many pupils were present on Thursday?

30 pupils

b) On which day were the same number of pupils present?
Tuesday and Friday

c) Find the difference between the highest and the lowest number of pupils in the class.

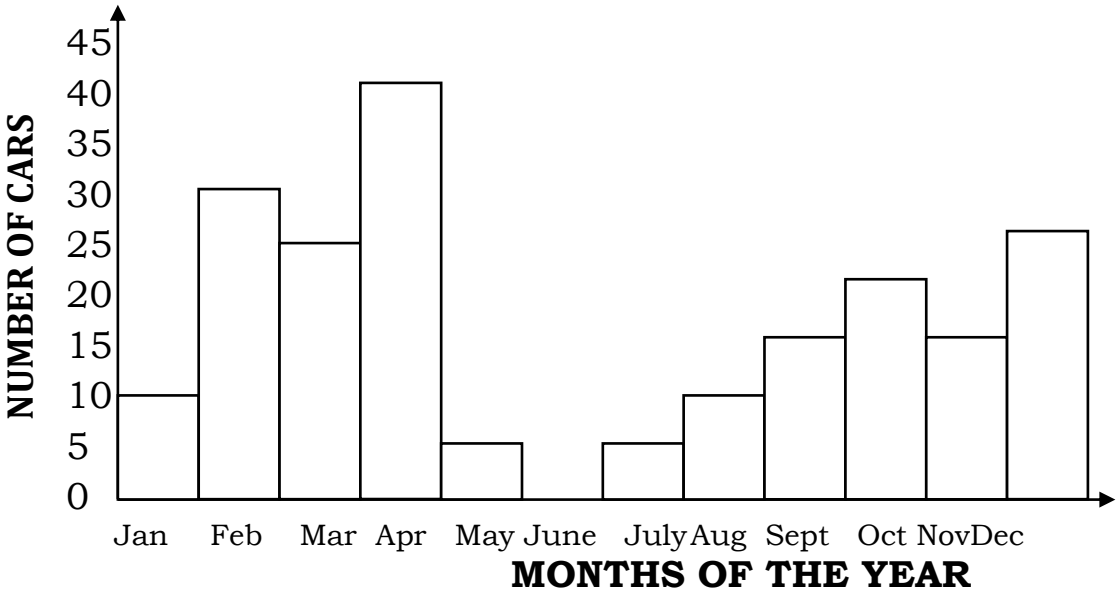
3 5 pupils
- 1 5 pupils
2 0 pupils

d) How many pupils came on the first 3 days?

Mon	15
Tue	20
Wed	+35
	70 pupils

Exercise:

1. The graph below shows the number of cars sold by Mr. Nyonjo at his garage.



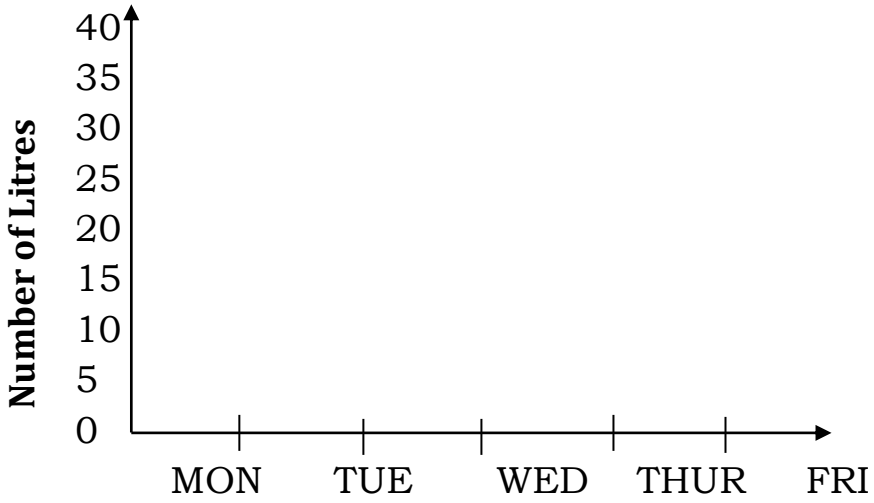
Questions:

a) How many cars were sold in March?
b) In which month did Nyonjo sell no car?
c) Which month had the highest number of cars sold?
d) How many more cars were sold in January than in May?
e) How many cars were sold in the first six months of the year?
f) How many cars were sold in the twelve months?

2. A school gives out milk to children as shown below.

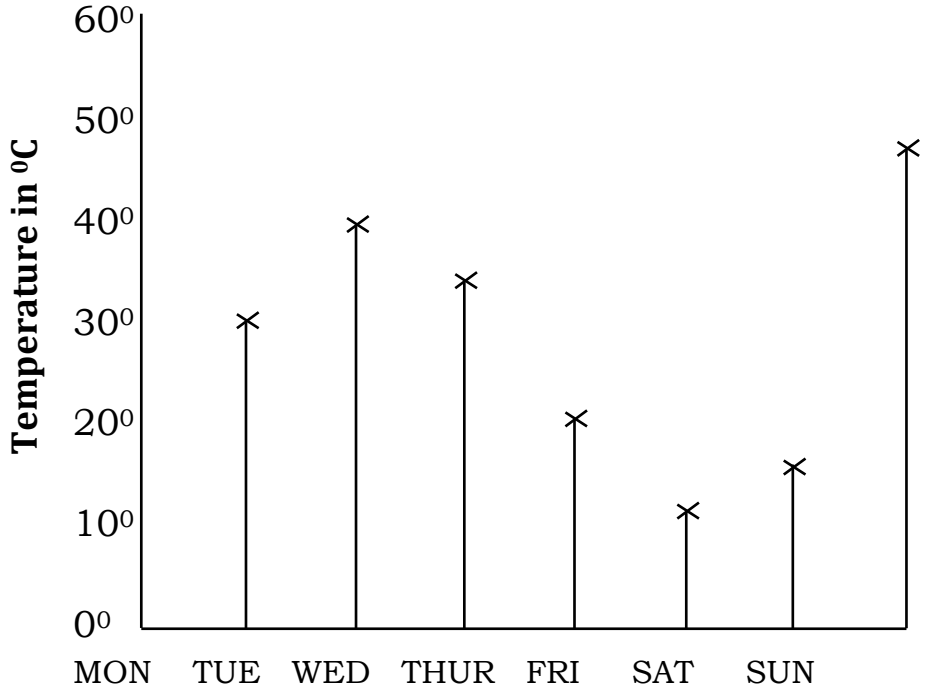
Day	MON	TUE	WED	THUR	FRI
Number of litres	20	15	40	10	25

Use the table above to complete the graph below.



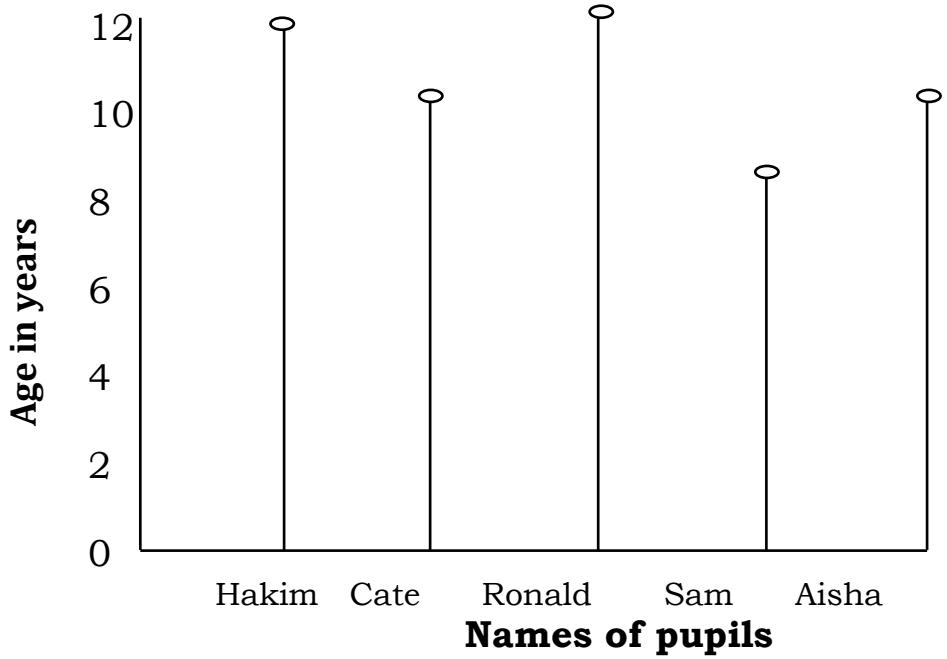
LINE GRAPH

1. The graph below shows the temperature on different days of the week.



a) Which was the hottest day of the month?
b) What was the temperature on Tuesday?
c) What is the total temperature on the first three days of the week?
d) What was the maximum temperature during the week?
e) What was the minimum temperature during the week?

2. The graph below represent the age of 5 pupils. Study it and answer the questions that follow.



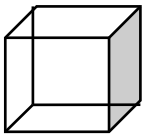
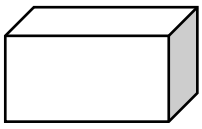
Questions

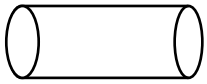
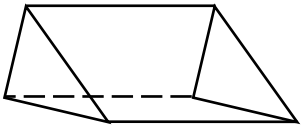
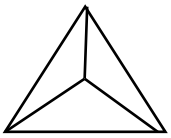
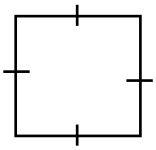
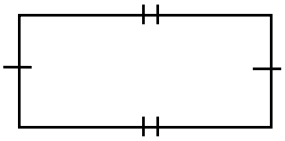
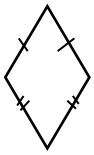
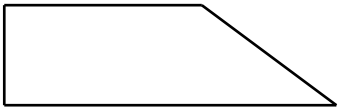
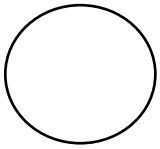
a) Name the pupils with the same age.
b) How old is the youngest pupil?
c) How old is Aisha?
d) Who is 10 years old?
e) How old is Ronald than Sam?

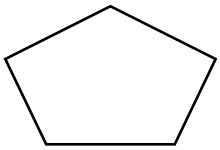
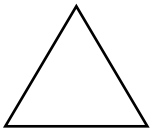
GEOMETRY

Solid shapes

These are shapes which have faces, edges, vertices (corners). These include; cone, cubes, cuboids, cylinder, triangular pyramid (tetrahedron), square or rectangular pyramid.

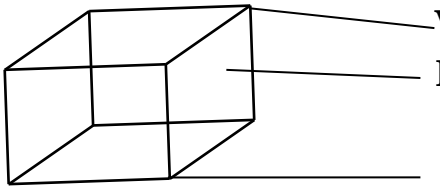
Geometric solid shapes	**Name**
	Cone / circular pyramid
	Cube / square prism
	Cuboid / rectangular prism
	Cylinder / circular prism

	
	Triangular prism
	Triangular pyramid /tetrahedron
	Rectangular and square pyramid
Other shapes	**Name**
	Square
	Rectangle
	Kite
	Rhombus
	Parallelogram
	Trapezium
	Circle

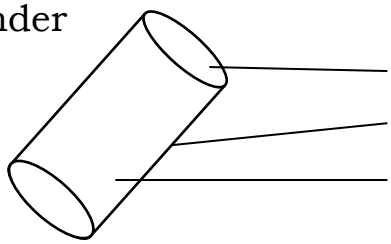
	Pentagon
	Hexagon
	Triangle

Naming parts of solid figures

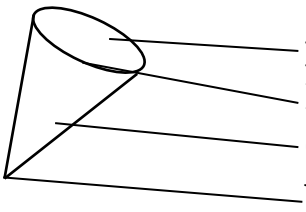
Cube



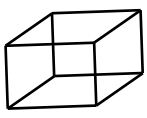
Cylinder

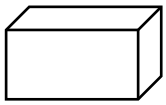
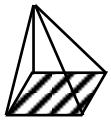


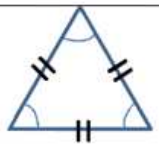
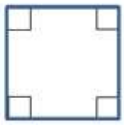
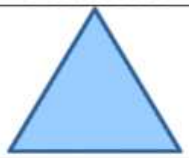
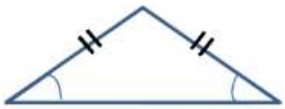
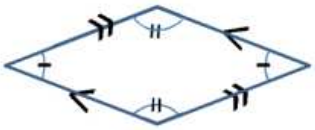
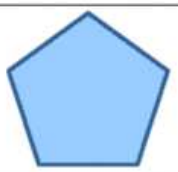
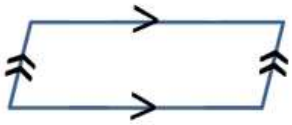
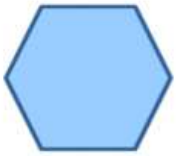
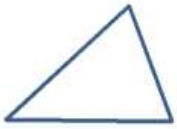
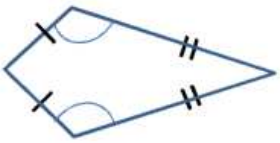
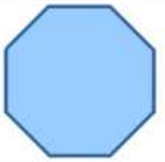
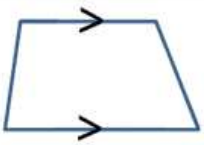
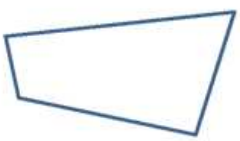
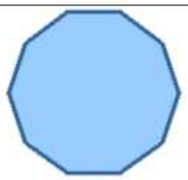
Cone



Activity

Solid shape	Name	No. of faces	No of vertices	No of edges
				
				

TRIANGLES	QUADRILATERALS		REGULAR POLYGONS
			
Equilateral triangle	Square		Equilateral triangle
			
Isosceles triangle	Rectangle		Square
			
Scalene triangle	Rhombus		Regular Pentagon
			
Right triangle	Parallelogram		Regular Hexagon
			
Acute triangle	Kite		Regular Octagon
			
Obtuse triangle	Trapezoid	Trapezium	Regular Decagon

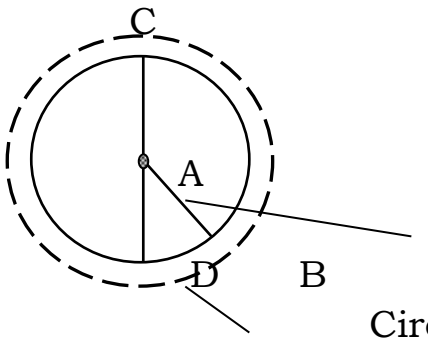
CIRCLE

Making a circle

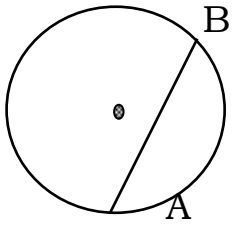
Bending the stick

Fibre
By turning round a big toe
A pair of compasses

Parts of a circle
Naming diameter, radius and circumference.



AB is the radius
CD is the diameter

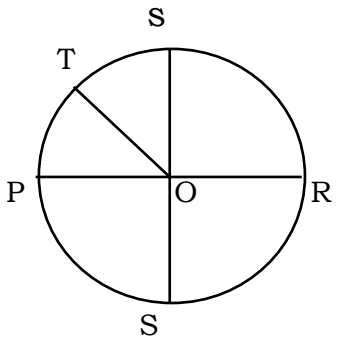


AB is not the diameter because it doesn't pass through the centre.
AB is called a chord.

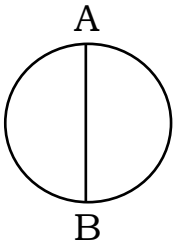
Circumference
Is the distance around the circle.
A radius
Is a line which starts from the centre to the edge of the circle.
Diameter
Is a straight line from one side of a circle to the other passing through the centre.
A chord
Is any straight line drawn across a circle.

Activity

1. Study the circle below.



a) Name the part of a circle marked O.
b) Name all the radius shown on the circle,
c) Name all the diameter you can see on the circle.

2. 

From the circle above line AB is called a diameter or a __

FINDING DIAMETER WHEN RADIUS IS GIVEN

Examples

1. Find the diameter of a circle whose radius is 5cm.

   Diameter = Twice the radius

   D = 2 r, where r = 5am

   = 2 x r

   = 2 x 5

   D = 10cm

2. Complete the table below.

Radius (cm	6cm	4cm	1cm	12cm
Diameter (cm)	_____	_____	_____	_____

Where r = 6cm

D = 2r

D = 2 x r

D = 2 x 6 cm

D = 12 cm

Where r = 1 cm

D = 2r

D = 2 x r

D = 2 x 1cm

D = 2cm

Activity

1. Find the diameter of a circle whose radius is;
   a) 5cm
   b) 8cm
   c) 11cm
2. **Study and complete the table below**.

Radius	2cm	6cm	7cm	9cm	10cm	14cm	10cm
Diameter	____	____	____	_____	_____	_____	_____

FINDING RADIUS OF A CIRCLE WHEN DIAMETER IS GIVEN

Examples

1. Find the radius of a circle whose diameter is 8cm.

Radius = $\frac{\text{Diameter}}{2}$ or D ÷ 2

When d = 8cm

$r = \frac{d}{2}$

$r = \frac{8\text{cm}}{2}$

r = 4cm

2. Study the table below and answer the questions that follow.

Radius	____	___	___
Diameter	10cm	6cm	12cm

When Diameter is 12cm

$r = \frac{\text{diameter}}{2}$

$r = \frac{12\text{cm}}{2}$

r = 6cm

When Diameter is 6cm

$r = \frac{d}{2}$

$r = \frac{6\text{ cm}}{2}$

r = 3cm

Activity

1. Find the radius of a circle whose diameter is;
   a) 4cm
   b) 6cm
   c) 10cm
   d) 14cm
2. Study and complete the table below.

Radius	___	____	____	____	____
Diameter	8cm	16cm	20cm	24cm	30cm

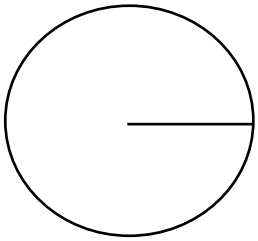
3. Study and complete the table below carefully.

Radius	2cm	___	6cm	_____	10cm
Diameter	____	4cm	_____	8cm	____

DRAWING CIRCLES

With different radii

Example:



Activity

Draw circles of the following radii.

a) 2cm b) 5cm c) 3cm d) 1.5cm

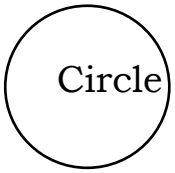
e) 2.5cm f) 2.5 cm g) 1cm h) 4cm

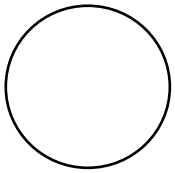
i) 3.5cm

N.B:

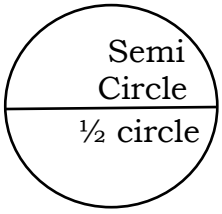
They will also measure the radii of circles given.

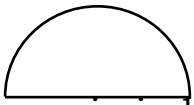
PARTS OF A CIRCLE





circular region

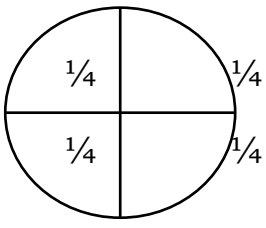


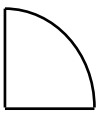


semi-circle

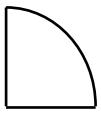


semi circular region

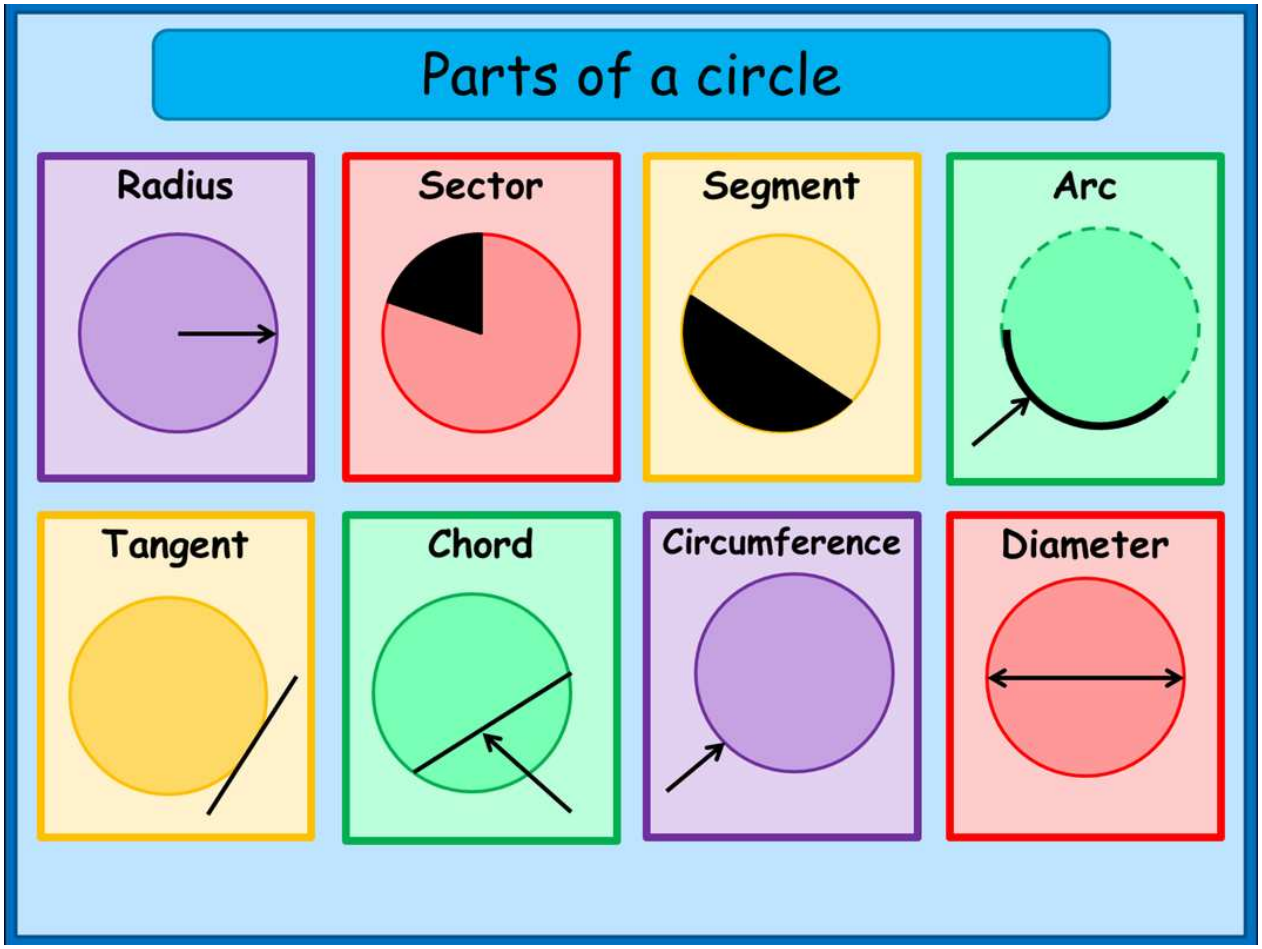




quarter circle
Quadrant



quarter



LINE SEGMENT

A line segment has two end points. E.g: ⊢——————⊣

MEASURING LINE SEGMENTS

a) ⊢————⊣

b) ⊢——————⊣

c) ⊢————————⊣

d) ⊢——————⊣

e) ⊢————————————⊣

f) ⊢————⊣

g) ⊢——⊣

DRAWING LINE SEGMENTS WITH DIFFERENT LENGTH

Draw a line of;

a) 4cm b) 6cm c) 8cm d) 5cm

e) 4.5cm f) 12cm g) 2cm h) 7.5cm

Naming lines and Angels

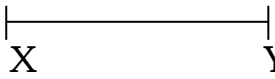
Lines are named according to the points through which they pass.



This is line PQ or $\overleftrightarrow{PQ}$

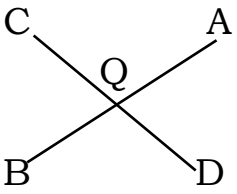


This is line AB or $\overleftrightarrow{AB}$



This is line XY or $\overleftrightarrow{XY}$

Study the angles formed below



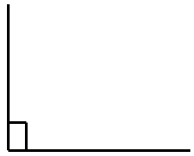
The point of intersection is only one and it is named with letter Q.

The angles formed are;

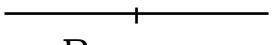
a) CQA or AQC
b) BQD or DQB
c) BQC or CQB
d) DQA or AQD

Naming the marked angles.

a) U

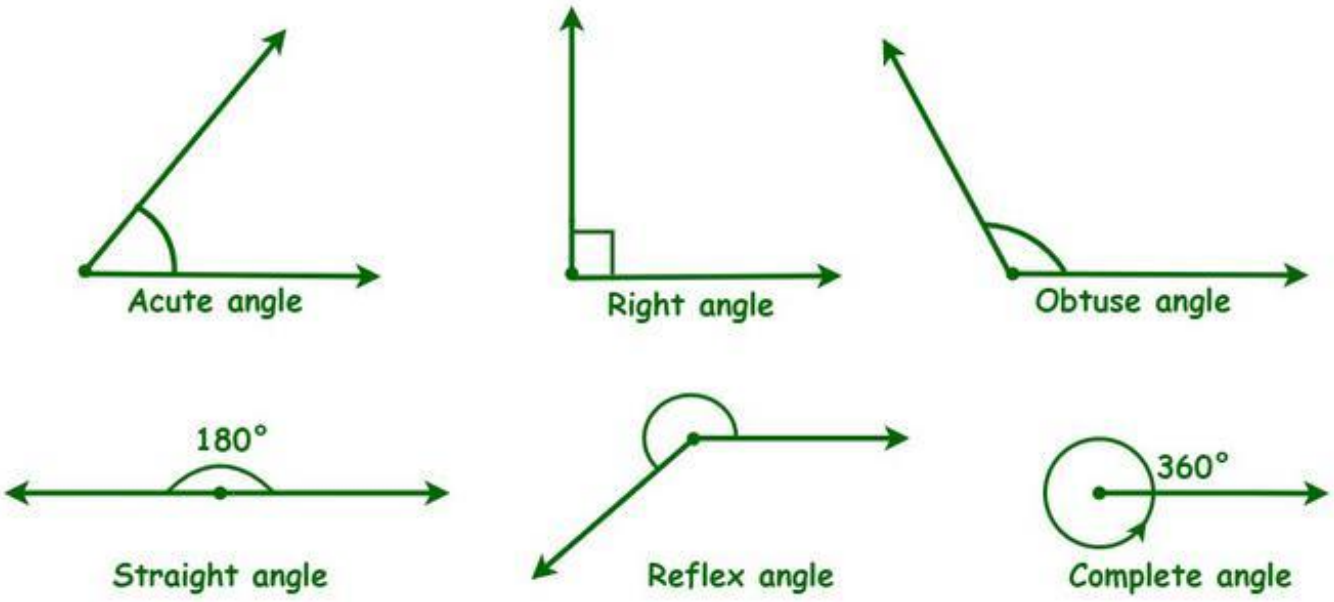


Angle _____



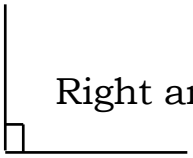
Angle _____

TYPES OF ANGLES

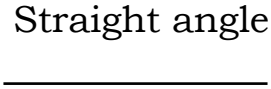


- Right angle
- Straight angle

Right angle add up to 90^0.



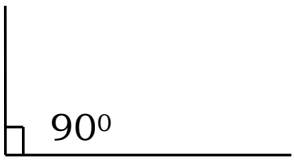
Straight angle add up to 180^0



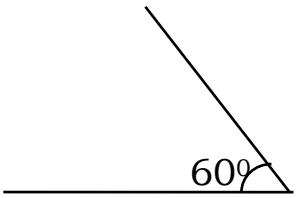
Drawing different angles using a protractor

Draw the following angles using a protractor.

a) 90^0



b) 60^0



Activity

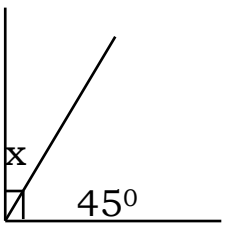
Draw the following angles.

a) 45^0 b) 70^0 c) 60^0 d) 80^0

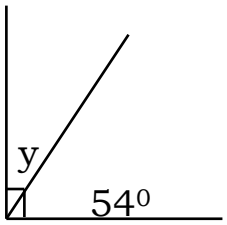
e) 120^0 f) 150^0 g) 30^0 h) 100^0

Finding the unknown angles

Examples



$X + 45^0$	$= 90^0$
$X + 45^0 - 45^0$	$= 90^0 - 45^0$
X	$= 90^0 - 45_0$
X	$= 45^0$

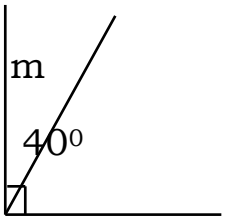


$y + 54^0$	$= 90^0$
$y + 54^0 - 54^0$	$= 90^0 - 54^0$
y	$= 90^0 - 54^0$
y	$= 36^0$

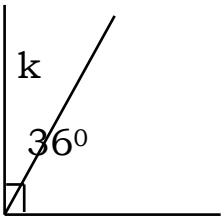
Exercise

Find the value of the missing angles.

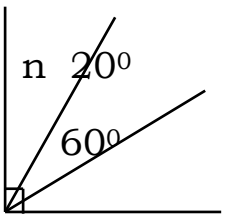
a)



b)



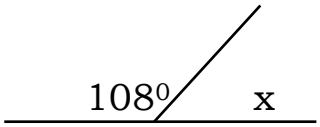
c)



Solving for the unknown angles

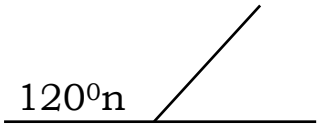
Examples

a)



$x + 108^0$	$= 180^0$
$x + 108^0 - 108^0$	$= 180^0 - 108^0$
x	$= 180^0 - 108^0$
x	$= 72^0$

b)

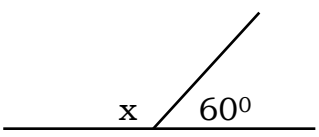


$n + 120^0$	$= 180^0$
$n + 120^0 - 120^0$	$= 180^0 - 120^0$
n	$= 180^0 - 120^0$
n	$= 60^0$

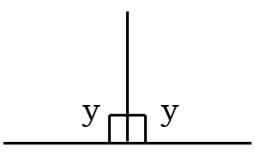
Exercises

Solve for the unknown angles.

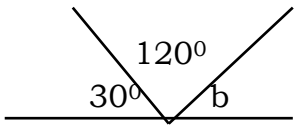
a)



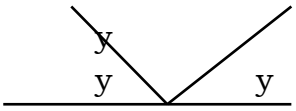
b)



c)

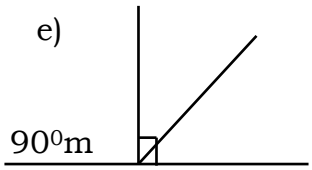


d)



45^0

e)

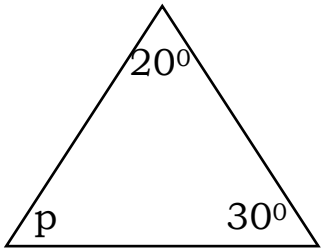


ANGLES ON A TRIANGLE

The sum of angles on a triangle is always 180^0.

Examples

Find angle p.



$p + 20^0 + 30^0 = 180^0$

$p + 50^0 = 180^0$

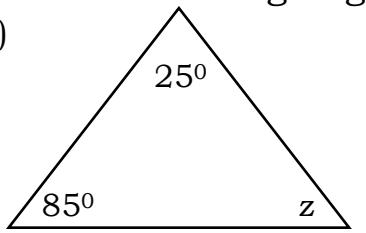
$p + \cancel{50^0} - \cancel{50^0} = 180^0 - 50^0$

$p = 130^0$

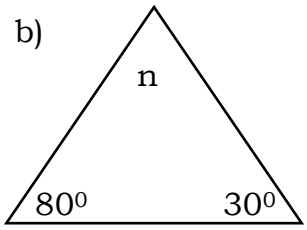
Activity

Find the missing angles.

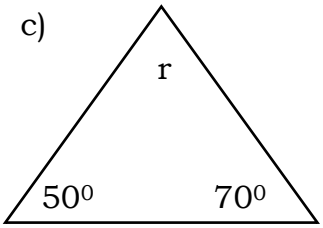
a)



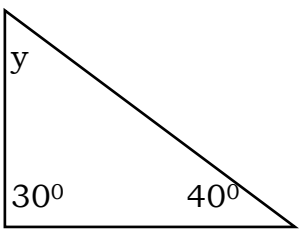
b)



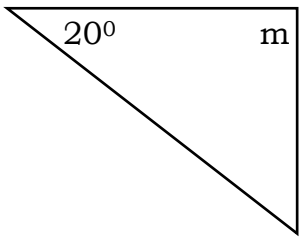
c)



d)



e)



TERM III
ALGEBRA
Writing in short

Examples

1. m + m + m
   = 2m + m
   = 3m
2. t + t + t + t + t
   = 2t + 2t + t
   = 4t + t
   = 5t
3. g + g + g + 2g
   (g +g) + (g + 2g)
   = 2g + 3g
   = 5g

Exercise

Write in short.

1. p + p =
2. l + l + l + l =
3. q + q + q + q =
4. m + m + m + m + m
5. d + d + d
6. w + w + w + w + w + w
7. e + e + e + e + e
8. h + h + h + h
9. y + y + y + y
10. 2y + y
11. z + z + z + z
12. a + a + a + a + a

Using letters for numbers

Examples

1. 2 balls + 2 balls
   = 4 balls

2. 1 pen + 1 pen + 1 pen + pen
   Let each pen be p.
   1p + 1p + 1p + 1p
   = 4p
   = 4pens
3. 3 mangoes + 1 mango + 7 mangoes
   Let m stand for mangoes
   3m + 1 m + 7m
   = 10 m
   = 10 mangoes

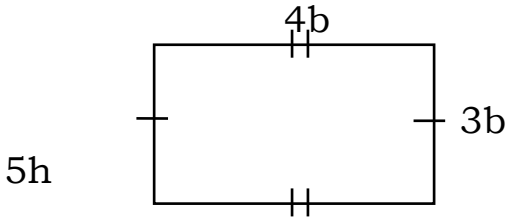
Activity

1. 2 bananas + 2 bananas
2. 4 cows + 10 cows
3. 2 dogs + 5 dogs
4. 9 cats + 5 cats
5. 5 eggs + 5 eggs
6. 12 pots + 8 pots
7. 15 frogs – 5 frogs
8. 1 tree + 2 trees + 1 tree + 6 trees
9. 22 houses – 12 houses
10. 12 ducks + 18 hens

Using letter to find perimeter of different figures

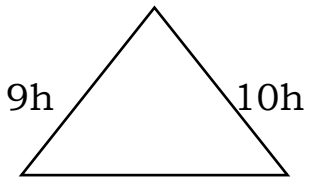
Examples

1.



P = s + s + s + s
= 4b + 3b + 4b + 3b
= 7b + 7b
= 14b

2.



P = s + s + s
= 5h + 9h + 10h
= 14h + 10h
= 24h

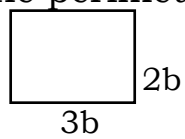
3. Simplify: 5b + 4b
= 5b + 4b
= 9b

4. 3d + 4d + 3d
= 3d + 4d + 3d
= 10d

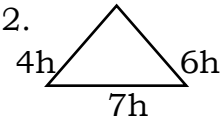
Activity

Find the perimeter of the following figures.

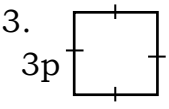
1.



2.



3.



Simplify the following.

4. 10y + 4y
5. 15m + 6m + m
6. 8k + 2k + 3k
7. 10z + 2z + z
8. 3x + 8x
9. m + 2m + m

Collecting like terms

Examples

1. Collect like terms a + a + b + b

   a + a + b + b

   2a + 2b

2. 2a + 2b + a + b

   2a + a + 2b + b

   3a + 3b

3. x + y + x + 3y + x

   x + x + x + y + 3y

   3x + 4y

4. m + 3y + m + k

   m + m + 3y + k

   2m + 3y + k

Activity

1. 2a + 2a + 3b + 3b
2. b + a + b + a
3. 2y + y + y + x
4. 4k + 7h + 3h + 4k
5. 2k + 4m + k + 3d + m
6. b + c + b + d
7. x + 2y + y + 3x
8. 9c + 8c + 2p + p
9. 4z + 4m + z + 6m
10. f + t + f + 3t + f
11. 2x + y + x + y
12. 4z + 8y + 2z + 3x
13. 6p + 5t + 2t + 8t
14. 6x + 2y + 3x + 5y

More about collecting like terms

Examples

1. Simplify: 5m – 3m
   = 2m

2. 4z – z + 3p – p
   3z + 2p

3. 9d + 4c – 3c
   9d + c

4. 5a + a – m
   6a – m

Activity

Simplify the following

a) 7k – 2k
b) 4k – k + n
c) 8d – 4d
d) 6x – 6y + y
e) 10p – p
f) 12p – p + k
g) 6n – 5n
h) 6a + a – m
i) 4f – 2f + k
j) 2y + 3y – z
k) 8p + 2p – p
l) 8t + 4x – 6t + x

Finding unknowns

- Solving equations with one unknown.
- An equation is an algebraic expression with an equal sign between.
  E.g: x + 3 = 5 is an equation and x is unknown.

Examples

X + 3 = 10
X + 3 – 3 = 10 – 3
X = 10 – 3
X = 7

2. 4 + x = 15
   4 – 4 + x = 15 – 4
   x = 15 – 4
   x = 11

Activity

Solve the following equations

a) n + 6 = 13
b) k + 9 = 17
c) n + 8 = 12
d) m + 12 = 18
e) n + 4 = 9
f) d + 7 = 24
g) m + 5 = 10
h) 7 + k = 19
i) x + 7 = 19
j) 10 + x = 36
k) a + a = 16
l) 9 + m = 18

Word problem

Examples

1. I think of a number, add 7 to it and the result is 10. What is the number?
   Let the number be y.
   Add7 to it:y + 7
   The result is 10: y + 7 = 10
   y + 7 = 10
   y + 7 – 7 = 10 – 7
   y = 10 – 7
   y = 3
   The number is 3
2. What number when added to 5 gives 11?
   Let the number be m.
   Add to 5: m + 5
   Gives 11: m + 5 = 11
   m + 5 = 11
   m + 5 – 5 = 11 – 5
   m = 11 – 5
   m = 6
   The number is 6
3. Seven is added to a number and the result is 15. Find the number.
   Let the number be p.
   Seven is added to a number: 7 + p
   The result is 15: 7 + p = 15
   7 + p = 15
   7 – 7 + p = 15 – 7
   p = 15 – 7
   p = 8
   The number is 8

Exercise

1. I have a number, I add 5 to it and the result is 29. What is the number?

2. When I add 5 to a number, the result is 10. What is the number?

3. Think of a number and add 3 to it. The answer is 20. What is the number?
4. I think of a number add 5 to it and the answer is 12. Find the number.
5. What number when added to 16 gives 30?

Subtraction

Examples

1. Solve: x – 9 = 5

   x – 9 = 5

   x – 9 + 9 = 5 + 9 (add 9 to each side)

   x = 5 + 9

   x = 14

2. Work out: q – 20 = 50

   q – 20 + 20 = 50 + 20

   q = 50 + 20

   q = 70

Activity

Solve the following equation.

a) p – 4 = 9	b) p – 8 = 13	c) k – 3 = 12
d) q – 12 = 17	e) d – 8 = 13	f) m – 20 = 30
g) c – 9 = 24	h) z – 45 = 35	i) k – 12 = 21

Word problem

Examples

1. When 3 is subtracted from a number the answer is 10. What is the number?

   Let the number be y.

   3 is subtracted from a number: y – 3

   The answer is 10: y – 3 = 10

   y – 3 = 10

   y – 3 + 3 = 10 + 3

   y = 10 + 3

   y = 13

2. I think of a number, subtract 4 from it and the result is 45. Find the number.
   Let the number be p
   Subtract 4 from it = p – 4
   The results is 45: p – 4 = 45

   p – 4 = 45
   p -4 + 4 = 45 + 4
   p = 45 + 4
   p = 49

Exercise

1. I think of a number, when I take away three, the number is 7. What is the number?
2. When 7 is subtracted from a number, the number is 13. What is the number?
3. I have a number, take away 21 from the number, the result is 6. What is the number?
4. 30 is subtracted from a number and the answer is 25. Find the number.
5. I think of a number, subtract 12 from it and the answer is 2. Find the number.

Multiplication

Examples

1. Solve: 3 x q = 12
   3q = 12
   $\frac{3q}{3} = \frac{12}{3}$
   $\frac{3}{3} \quad \frac{3}{3}1$
   q = 4

2. m x 7 = 14
   $\frac{7m}{7} = \frac{14}{7}$
   $\frac{7}{7} \quad 7$
   $m = \frac{14}{7}2$
   $\frac{7}{7}1$
   m = 2

Exercise

Work out the following.

a) 4 x m = 18 b) k x 7 = 63 c) 6 x t = 24

d) f x 10 = 90 e) 7 x p = 42 f) 5 x c = 65

g) 8 x q = 48 h) 8 x g = 96 i) r x 5 = 30

Word problem

Examples

1. A number is multiplied by 10 and the result is 30. What is the number?
   Let the number be p.
   Multiplied by 10: p x 10
   The result is 30: p x 10 = 30
   p x 10 = 30
   $\frac{10p}{10} = \frac{30}{10}$
   p = 3
   The number is 3

2. 5 is multiplied by a number and the result is 120. What is the number?
   Let the number be m.
   5 multiplied by it: 5 x m
   The result is 120: 5 x m = 120
   5 x m = 120
   5m = 120
   $\frac{\cancel{5}m}{\cancel{5}} = \frac{120}{5}$
   m = 24

Exercise

1. I think of a number multiplied by 3 the result is 9. What is the number?
2. A number is multiplied by 9 and the result is 90. What is the number?
3. A number is multiplied by 6 and the result is 24. Find the number.

4. 8 is multiplied by a number and the result is 48. What is the number?
5. I have a number, when 1 multiply it by 6 the answer is 36. Find the number.
6. 5 is multiplied by a certain number gives 60. Find the number.
7. Sarah is 8 years older than twice the age of her brother. If her brother's age is represented by ***x***, write an expression for Sarah's age and determine her age if her brother is 10 years old.

Division

Examples

1. Solve: $m \div 6 = 8$

$\frac{m}{6} = 8$

$\frac{6 \times m}{6} = 8 \times 6$

m = 48

2. Solve: $36 \div x = 9$

$\frac{x \times 36}{x} = 9 \times x$

$36 = 9 \times x$

$36 = 9x$

$\frac{9x}{9} = \frac{36}{9}$

x = 4

Activity

Solve the following.

a) $m \div 3 = 9$ b) $30 \div m = 5$ c) $h \div 9 = 6$

d) $48 \div y = 6$ e) $m \div 2 = 7$ f) $35 \div y = 5$

g) $d \div 5 = 9$ h) $k \div 8 = 8$ i) $24 \div x = 8$

More about division

Examples

1. Work out: $\frac{m}{6} = 8$

$6 \times \frac{m}{6} = 8 \times 6$

$m = 8 \times 6$

m = 48

2. Solve: $\frac{36}{x} = 9$

$x \times \frac{36}{x} = 9 \times x$

$36 = 9 \times x$

$\frac{36}{9} = \frac{9x}{9}$

$4 = x$

Therefore x = 4

Activity

Work out the following

a) $\frac{t}{2} = 13$ b) $\frac{p}{7} = 7$ c) $\frac{n}{11} = 4$

d) $\frac{k}{7} = 5$ e) $\frac{b}{11} = 10$ f) $\frac{24}{x} = 8$

More about division

Examples

1. Solve: $7x = 35$

$\frac{7x}{7} = \frac{35}{7}$

x = 5

2. Solve: $9z = 72$

$\frac{9z}{9} = \frac{72}{9}$

z = 8

Exercise

Solve the following

a) $3x = 42$ b) $8f = 32$ c) $7p = 14$

d) $4m = 28$ e) $8d = 24$ f) $5k = 25$

g) $6x = 72$ h) $6x = 30$ i) $7p = 63$

j) $3k = 21$ k) $10a = 40$ l) $11k = 66$

m) $13p = 26$ n) $15t = 30$ o) $12d = 108$

Word problem

Examples

1. A number is divided by 3 and the result is 10. Find the number.

   Let the number be p.
   Divided by 3: $p \div 3$

   The result is 10: $p \div 3 = 10$
   $P \div 3 = 10$
   $\frac{p}{3} = 10$
   $3 \times \frac{p}{3} = 10 \times 3$
   $p = 30$
   The number is 30

2. 36 is divided by a number and the result is 18. What is the number?
   Let the number be m.
   36 is divided by it: $2 \div m$
   The result is 18: $36 \div m = 18$
   $36 \div m = 18$
   $36 = 18$
   m
   $m \times \frac{36}{m} = 18 \times m$
   $\frac{\cancel{36}}{18} = \frac{\cancel{18}\, m}{\cancel{18}}$
   $2 = m$
   m = 2

Exercise

1. 21 divided by a number gives 7. What is the number?
2. 1 think of a number divide it by 5 and the result is 2. What is the number?
3. I have a number, when I divide it by 9 the result is 6. What is the number?
4. 30 is divided by a number and the result is 5. Find the number.
5. P is divided by 2 and the result is 7. What is the value of p?

Substitution

Substitution means replacing.

Examples

1. If g = 4, find 3 x g

   3 x g
   = 3 x 4
   = 12

2. If m = 5 , n = 2, find;

   a) m – 2
      5 – 2
      = 3

   b) m + n
      5 + 2
      = 7

   c) 2m
      2 x m 5
      = 2 x 5
      = 10

   d) $\frac{3}{5}$ m
      = $^{3}/_{5}$ x5 /
      = 3 x 1
      = 3

Activity

If b = 8, find the value of;

a) 2b b) 3b c) ½ b d) b + 1
e) 12 – b f) $^{b}/_{2}$ g) $^{3b}/_{2}$ h) 2b + 1
i) b x b

More about substitution

Examples

If m = 2, n = 5 , z = 10, find the value of;

a) m + n + z
   2 + 5 + 10
   = 7 + 10
   = 17

b) z + n – m
   10 + 5 – 2
   = 15 – 2
   = 13

c) m n
   m x n
   = 2 x 5
   = 10

d) ½ z
   ½ x z
   = ½ x 10
   = 5

e) $\frac{2z}{5}$
   = $\frac{2}{5}$ x 10
   = 2 x 2
   = 4

f) $\frac{z}{m}$
   $\frac{10}{2}$
   = 5

Activity

1. Given a = 2 , b = 3 , c = 4, find the value of;

a) a + b + c b) c + a c) a + c – b

d) a + b – c e) a x b f) b c

g) $\frac{c}{a}$

2. Given p = 4 , z = 8 , n = 10, find the value of;

a) P z b) $^{2}/_{5}$ n c) $\frac{p+z}{2}$

d) 2p + 2n e) 3z – 2p f) pz – n

g) $\frac{2n}{p}$

More about unknowns

Examples

1. Solve: 2y + 2 = 20

   2y + 2 – 2 = 20 – 2

   2y = 20 – 2

   2y = 18

   $\frac{2y}{2} = \frac{18}{2}$

   y = 9

2. Solve: 3p – 6 = 9

   3p – 6+6 = 9 + 6

   3p = 15

   $\frac{3p}{3} = \frac{15}{3}$

   p = 5

Activity

Solve the following equations

a) 2y + 4 = 20 b) 2y + 2 = 8 c) 5y + 5 = 20

d) 2y – 2 = 2 e) 6y + 6 = 36 f) 3p – 1 = 5

g) 5m – 2 = 8

MEASURES (MONEY)

Addition of money

Money is a medium of exchange.

Examples of money

Sh. 100, sh. 200 , sh. 300 , sh. 500 , sh. 100o, sh. 5000 e.t.c

Examples

1. Add sh. 170 + sh. 250

```
    Sh. 170
+   sh. 250
    sh. 420
```

2. John had sh. 4500 and Mary had sh. 3750. How much money do the two children have altogether?

```
    Sh. 4500
+   Sh. 3750
    Sh. 8250
```

Activity

1. Add: Sh. 190 + Sh. 260

2. Add: Sh. 380 + Sh. 1490

3. Add: Sh.4540 + Sh. 3680

4. Add: Sh. 1780 + Sh. 2640

5. I had sh. 480 and I was given sh. 1260. How much do I have altogether?
6. A porter earns sh. 1500 in the morning and sh. 2700 in the afternoon. How much does the porter earn altogether?
7. A mother bought meat for sh. 2500 and a bunch of matooke for sh. 4550. How much did she spend altogether?
8. Alice's school fees is sh. 7850 and Jane's school fees is sh. 1890. How much money do the two pupils pay altogether?

Changing shillings to cents

A cent is a small unit of shillings

1 shilling = 100cents

Cents can also be written as "Cts"

Examples

1. Change 3 shilling to cents.

   1 sh = 100cts

   3 sh = (3 x 100)cts

   = 300cts

   3sh = 300 cts

2. Write 250sh in cents.

   1 sh = 100cts

   250sh = (250 x 100)cts

   250sh = 2500cts

Activity

Change the following shillings to cents.

a) Sh. 25 b) sh. 8 c) sh. 60

d) sh. 150 e) sh. 100 f) sh. 36

g) sh. 1700 h) sh. 1256 i) sh. 9900

Changing cents to shillings

Examples

1. Change 400 cents to shilling

   100cents = 1sh

   400cts = (400 ÷ 100)sh

   $= \frac{400}{100}$ sh

   = 4 sh

   Therefore; 400cts = sh.4

2. Change two thousand cents to shillings.

   100cts = 1sh

   2000cts = (2000 ÷ 100)sh

   $= \frac{2000}{100}$ sh

   = 20sh

   Therefore; 2000cts = sh. 20

Activity

Change the following cents to shillings.

a) 200cts b) 655cts c) 1260cts
d) 400cts e) 900cts f) 1780 cts
g) 380 cts h) 770cts i) 1980cts
j) 2500cts

Subtraction of money

Examples

1. Subtract sh. 9000 – sh. 2000

Sh. 9000
\- Sh. 2000
Sh. 7000

2. Agaba had a ten thousand shilling note and he spent sh. 2500 on transport. What was his change?

Sh. 10000
\- Sh. 2500
Sh. 7500

Activity

a) Find how much change

I have the following notes	I spent	My change
Sh. 5000	Sh. 2500	__
Sh. 8000	Sh. 4050	__
Sh. 10,000	Sh. 6550	__
Sh. 10,000	Sh. 8500	__
Sh. 20,000	Sh. 4955	__

b) How much change do I get if I spend 6500 from 20,000/=?

c) Naigino had sh. 5000. If she spends sh. 3750 on Vaseline, what is her change?

Multiplication of money

Examples

1. Multiply: sh. 896

x 6
Sh. 5376

2. Find the cost of 5 books if one book costs sh. 320.

1 book costs 320/=

5 books will cost sh. 320

$$\begin{array}{r} \times\ 5 \\ \hline \text{Sh. } 1600 \end{array}$$

Activity

1. Work out;

a) $\begin{array}{r} \text{Sh. } 945 \\ \times\ 2 \\ \hline \end{array}$

b) $\begin{array}{r} \text{sh. } 1500 \\ \times\ 9 \\ \hline \end{array}$

c) $\begin{array}{r} \text{sh. } 490 \\ \times\ 5 \\ \hline \end{array}$

2. The cost of 1 book is sh. 370. Find the cost of 10 books.
3. How much will you pay for;
   a) 2 packets of wheat flour at sh. 2550 a packet.
   b) 2kg of rice at sh. 950 a kg.
   c) 2 tins of margarine at sh. 2100 a tin.
   d) 4 cartons of soap at sh. 6150 a carton.
   e) 6 tins of kimbo at sh. 2900 a tin
   f) The cost of one loaf of bread is sh. 1600. Find the cost of 3 loaves of bread.

Division of money

Example

A shopkeeper sold 4 crates of soda for sh. 7200. What was the cost of one crate of soda?

Cost of 4 crates = sh. 7200

Cost of 1 crate =

$$\begin{array}{r} 1800 \\ 4\overline{)\ 7200} \\ 1 \times 4 = \ -\ 4 \\ \hline 32 \\ 8 \times 4 = \ -\ 32 \\ \hline 0 \\ 0 \times 4 = \ -\ 0 \\ \hline 0 \\ 0 \times 4 = \ -\ 0 \end{array}$$

The cost of 1 crate of soda is sh. 1800

Activity

1. Divide sh. 128000 among 4 girls. How much will each girl get?
2. A farmer sold 8 bags of coffee for sh. 40000. What was the price of one bag?
3. A shopkeeper sold 4 loaves of bread for sh.7200. What was the cost of one loaf of bread?
4. Agutu bought 9 litres of petrol for sh. 14850. What was the cost of petrol per litre?

PROFIT AND LOSS

Finding profit

What is profit?

Profit is the money you make in a business or by selling things especially after paying the costs involved.

Example:

Abdul bought a shirt at sh. 800. He later sold it at sh. 1000. What is his profit?

Profit = selling price – Buying price (cost price)

= SP- CP

Selling price = sh. 1000

Cost price = - sh. 800

Profit = 200

Activity

1. A man bought a goat at sh. 35000 and sold it at sh. 42000. How much was his gain?
2. Jermaine bought a pen at sh. 500 and sold it at sh. 700. What was his profit?
3. Belle sold a book at sh. 900. She had bought it at sh. 750. What was her profit?
4. Aidah bought a packet of sugar at sh. 1500 and sold it at sh. 20000. What was her gain?
5. The price of a dress was sh. 12000. It was later sold at sh. 15000. What was the profit?

Finding loss

What is a loss?

A loss is money that has been lost by the business or an organization.

Example

David bought a book at sh. 1200 and sold it at sh. 800. What was his loss?

Loss = cost price – selling price

Loss = CP – SP

Buying price = sh. 1200

Selling price = - sh. 800

Loss = sh. 400

Activity

1. Annet bought a geometry set at sh. 2800 and sold it at sh. 220. What was her loss?
2. What was the loss on a commodity bought at sh. 2000 and sold it at 1700/=
3. A box of kimbo is bought at sh.3500 and is sold at sh. 2900. What was the loss?
4. John bough a pen at sh. 1800 and sold it at sh.1300. What was his loss?
5. Dr. Pius bought a tin of panadol at sh. 12000 and sold it at sh. 9500. What was his loss?

POSTAGE RATES

Study the table

Articles	**Destination**	**Charge**
Letter	Uganda East Africa Africa Europe Asia America	Sh. 150 Sh. 400 Sh. 500 Sh. 500 Sh. 500 Sh. 550
Small parcels (air)	Uganda East Africa Africa Europe Asia America	Sh. 1200 Sh. 10,000 Sh. 11000 Sh. 16000 Sh. 22500 Sh.8450
Aerogrammes		Sh. 300@
Post cards		Sh. 300@

Questions about the table

Example

Joseph sends 2 letters to Kenya and 3 letters to Tanzania. How much will he pay altogether?

For 2 letters to Kenya will pay sh. 400 x 2 = 800/=

For 3 letters to Tanzania will pay sh. 400x 3 = + 12000/=

Joseph will pay 2000 shillings 2000/=

Activity

1. Ndugga set 2 letters to Europe and bought 5 post cards. What was his total bill?
2. If a lady sends 4 letters to Asia and a small parcel to America. Calculate her total bill.
3. How much money will Kato pay if he sends 3 letters to Mbarara and 2 letters to Euroope?
4. Atim bought 10 post cards and 15 aerogrammes. How much money did he use?

MEASURES (TIME)

Changing hours to minutes

Examples

1. Change 4 hours to minutes.

   1 hour = 60 minutes

   4 hours = (4 x 60)

   = 240 minutes

2. Change 3 ¼ hours to minutes.

   3 ¼ hours = (3 + ¼)hours

   1 hour = 60mins

   3 hours = 3 x 60 = 180 minutes

   ¼ hours = ¼ x 60 = 15 minutes

   3 ¼ hours = (180 + 15) minutes

   = 195 minutes

Task

Change the following hours to minutes.

a) 2 hours b) 5 hours c) 3 ½ hours

d) ½ an hour e) 16 hours f) 4 ¾ hours

g) 10 hours h) 11 hours i) 1 ¼ hours

j) 30 hours

k) A boy walked for 1 ½ hours. How much time was this in minutes?

Changing minutes to hours

1. Write 60 minutes in hours.

60 min = 1

60 | 60

60

- -

60min = 1 hour

2. Write 70 minutes in hours.

70 min = 1

60 | 70

60

10

70 min = 1 hour 10 minutes

Activity

Write the following in hours and minutes.

a) 120 minutes b) 100 minutes c) 130 minutes

d) 90 minutes e) 80 minutes f) 200 minutes

g) 110 minutes h) 150 minutes

i) a lesson took 140 minutes. How long was the lesson in hours?

j) A machine takes 140 minutes to wash 70 shirts. How long is this in hours?

Addition of time

Examples

1. Work out:

	Hrs	Min	
	3	40	40 + 30 = 70 min
+	4	30	1 hr = 60 min
	8	10	70 ÷ 60 = 1 rem 10

2.

	Hrs	Min	
	1	50	50 + 15 + 30 = 95min
	2	15	1 hr = 60min
+	3	30	95 ÷ 60 = 1 rem 35
	7	35	

Activity

Add the following

a)

Hrs	Min
1	30
+3	35

b)

Hrs	Min
6	35
+7	46

c)

Hrs	Min
4	15
+3	40

d)

Hrs	Min
4	30
+ 3	50

e)

Hrs	Min
2	25
1	35
+ 3	30

f)

Hrs	Min
4	05
5	45
+ 1	30

Subtraction of time

1. Work out the following.

a)

Hrs	Min
18	30
- 6	05
12 hr	25 min

b)

Hrs	Mins
3	25
- 1	45
1 hr	40min

2. Timothy spent a total of 5 hours and 20 minutes at school. He played 1 hour 30 minutes. For how long did he stay in class?

		Hrs	Min
Total time at school		5	20
Time spent playing	-	1	30
Time in class		3hrs	50min

Activity

1. Subtract the following.

a)

Hrs	Min
5	48
- 1	15

b)

Hrs	Min
6	25
- 3	40

2. A party lasted 6hours 30 minutes. If 1 hour 45 minutes were used to secure food, how long did the other events take?

Multiplication of time

Examples

Work out;

a)

Hrs	Min	
2	25	3 x 25 = 75
x	3	75 ÷ 60 = 1 rem 15
7	15	

b)

Hrs	Min	
7	30	5 x 39 = 150
x	5	150 ÷ 60 = 2 rem 30
37	30	

Activity

a)

Hrs	Min
3	10
x	4

b)

Hrs	Min
2	15
x	4

c)

Hrs	Min
3	11
x	5

d)

Hrs	Min
1	45
x	2

Division of time

Examples

1. Divide 9 hours 30 mins by 3

	Hrs	Min
	3	10
3	9	30
	9	30

2. Divide 24 hours 40 min by 8

	Hrs	Min
	3	05
8	24	40
	24	40

Activity

a)

	Hrs	Min
4	12	48

b)

	Hrs	Min
3	6	15

c)

	Hrs	Min
9	9	45

TIME IN A.M AND P.M

a.m means - ant – meridian

Ante – meridian means before midday.

We use "A.M for morning time only.

P.M means post meridian

The time after noon is post meridian or p.m.

A day starts at 12 midday.

Activity

Complete the following tables

After mid night	1 hr	3 hrs	5 hrs	6 hrs	9 hrs	12 hrs
Time as a.m	1:00am	___	___	6:00am	___	___

After noon	1 hr	3 hrs	7 hrs	9 hrs	11 hrs	12 hrs
Time as p.m	1:00am	___	___	___	___	Mid night

Finding time in A.M and P.M

Examples

1. Express 6 o'clock in the morning using a.m or p.m
   6 o'clock in the morning is 6:00am

2. Express 8 o'clock in the evening using a.m or p.m
   8'oclock in the evening is 8:00pm

Activity

Write the following time in a.m or p.m

1. The time when the first lesson begins at 8 o'clock.
2. The time when you have lunch at 1 o'clock.
3. What time is a half past 3 o'clock in the afternoon?
4. The time when we play games at 4 o'clock.
5. The time you go to sleep at 8 o'clock.

Finding duration

Examples

Hassan started walking from his home at 7:15am and reached school at 8:15am. How long did it take him?

Reached school at	8 : 15
Started walking at	- 7 : 15
He took	1 : 00 hr

Hassan took 1 hour

Activity

1. A mathematics lesson started at 8:15am and ended at 9:35am. How long did it take?
2. The baby slept at 1:15am and woke up at 3:00pm. How long did it take sleeping?
3. A concert started at 4:30pm and ended at 10:20pm. How long was the concert?
4. Joselyne read a newspaper from 6:30pm to 7:25pm. How long did she take reading the news paper?
5. An examination started at 8:45am and ended at 11:am. How long did it take?

Note:

Hours, Days, Weeks, Months and years

60 minutes	=	1 hour
24 hours	=	1 day
7 days	=	1 week
14 days	=	1 fortnight (2 weeks)
4 weeks	=	1 month
52 weeks	=	1 year
12 months	=	1 year

Hours, Days and weeks

Changing hours to days

Example

1. How many days are there in 72 hours?

24 hours make 1 day

1 hour make $\frac{1}{24}$ day

72 hours make $\frac{1}{24}$ day x $\frac{72}{1}$ $\frac{^{3}\text{hours}}{\text{hours}}$

= 3 days

Activity

How many days are there in;

a) 48 hours b) 216 hours c) 60 hours

d) 240 hours e) 120 hours f) 144 hours

Changing days to hours

Example

How many hours are there in 5 days?

In one day there are 24 hours

In 5 days there are 24 x 5 = 120 hours

In 5 days there are 120 hours

Activity

There are 24 hours in 1 day. How many hours are there in;

a) 4 days b) 6 days c) 10 days

d) 13 days e) 15 days f) 17 days

g) 19 days h) 21 days i) 24 days

j) 30 days k) 92 days l) 50 days

Changing weeks to days

Examples

1. 1 week has 7 days

How many days are there in 8 weeks?

1 week = 7 days

8 weeks = (8 x 7) days

= 56 days

2. How many days are there in 12 weeks?

1 week = 7 days

12 weeks = (12 x 7) days

= 84 days

Activity

How many days a re there in;

a) 3 weeks b) 7 weeks c) 10 weeks

d) 12 weeks e) 15 weeks f) 20 weeks

g) 24 weeks h) 30 weeks i) 35 weeks

j) 42 weeks k) 49 weeks l) 50 weeks

Changing days to weeks

Examples

1. How many weeks are there in 63 days?

7 days make 1 week

63 days make $^{63}/_{7}$ or 63 ÷ 7

= 9 weeks

2. How many weeks are in 105 days?

7 days = 1 week

105 days = $^{105}/_{7}$ or 105 ÷ 7

= 15 weeks

Activity

How many weeks are there in;

a) 21 days b) 35 days c) 49 days

d) 70 days e) 910 days f) 91 days

g) 315 days h) 707 days i) 637 days

Addition of days and weeks

Examples

1. Work out;

Weeks	Days	
1	3	3 + 2 = 5
+2	2	1 + 2 = 3
3	5	

2.

Weeks	Days	
5	5	5 + 6 = 11
+	4	6 11 ÷ 7 = 1 rem 4
10	4	1 + 5 + 4 = 10

Assignment

a)

Weeks	Days
2	4
+1	5

b)

Weeks	Days
12	6
+4	5

c)

Weeks	Days
9	5
+ 2	3

d)

Weeks	Days
20	4
+ 11	3

Subtraction of days and weeks

Example

1. Work out:

Weeks	Days
3	2
- 1	5
1	4

(2 + 7) – 5
9 – 5 = 4 days
(3 – 1) – 1
2 – 1 = 1 week

2.

Week	Days
6	0
- 3	6
2	1

(0 + 7) - 6
7 – 6 = 1
(6 – 1) - 3
5 – 3 = 2

Activity

Work out the following.

a)

Wks	Days
4	3
- 1	4

b)

Wks	Days
8	2
- 3	5

c)

Wks	Days
12	1
- 8	5

d)

Wks	Days
7	4
- 2	6

Ordinary year and leap year

- An ordinary year has got 365 days.
- A leap year has got 366 days.
- An ordinary year gives a remainder when divided by 4.
- A leap year gives no remainder when divided by 4.

The days of the months are;

January	31 days
February	28/29 days
March	31 days
April	30 days
May	31 days
June	30 days
July	31 days
August	31 days
September	30 days
October	31 days
November	30 days
December	31 days

In the month of February, if the number of days are 28 then that year is an ordinary year and 29 days is a leap year.

MEASURES (LENGTH)

Changing Metres(M) to centimeters (CM)

Examples

1. Change 3 metres to centimeters

   1m = 100cm

   3m = (3 x 100) cm

   = 300cm

2. Change 3m + 2m + 2m to cm

   3m + 2m + 2m = 7m

   1 m = 100cm

   7m = (7 x 100)cm

   = 700cm

Activity

Change the following to centimeters.

a) 4m b) (2 + 5 + 4)m c) 27m

d) 6m e) 18m f) (4 + 1 + 8)m

g) 14m h) 23m i) (3x5)m

j) Complete the table below.

Cm	100	____	300	___	500	___	700
M	1	2	____	4	____	6	7

Changing centimeters (M) to metres(M)

Examples

1. Change 200cm to m

   100cm = 1m

   200cm = $\frac{200}{100}$

   = 2m

2. Change 800 centimetres to metres

   100cm = 1m

   800cm = $\frac{800}{100}$

   = 8m

Activity

Change the following to metres.

a) 100cm b) 300cm c) 500cm

d) 700cm e) 400cm f) 600cm

g) 900cm h) 1000cm

Addition in metres and centimeters

Examples

1. Add;

	m	cm
	2	45
+	6	36
	8	81

2. Add;

	m	cm	
	8	25	25 + 85 = 110
+	6	85	110 ÷ 100 = 1 rem 10
	15	10	1m = 10cm
			1 + 8 + 6 = 15m

Activity

1. Work out the following.

a)

m	cm
3	42
+ 4	17

b)

m	cm
19	45
+ 14	18

c)

	m	cm
	4	25
+	4	10

d)

	m	cm
	24	40
+	19	17

2. Odyeke has 13m 82cm of wire. His friend has 18m 36cm of wire. What is the total length of both wires?

Subtraction of metres and centimeters

Examples

1. Subtract;

	m	cm
	6	80
-	2	60
	4	20

2. Subtract;

	m	cm	
	9	24	100 + 14 = 124
-	5	30	124 – 30 = 94
	3	94	8 – 5 = 3

3. Otim had a ribbon measuring 15m 36cm. HE cut off 9m 21cm. What length remained?

	m	cm	
	15	36	Otim had
-	9	21	He cut off
	6	15	Length that remained

Activity

Work out the following.

a)

	m	cm
	7	30
-	2	10

b)

	m	cm
	9	60
-	4	20

c)

	m	cm
	10	15
-	6	30

d)

	m	cm
	12	70
-	6	40

e) Isa had a string measuring 25m 15cm. He cut off 18m 35cm. What length of the string did he remain with?

f) Subtract 3m 75cm from 11m 20cm

Multiplication of metres and centimeters

Examples

Work out the following.

1. Mary , Joseph and Joan each bought 3m 45cm of cloth. What was the total length of the cloth bought?

m	cm
3	45
x	3
10	35

2. A family of 7 people got 8m 25cm of cloth each. What was the total length of cloth got by the whole family?

m	cm
8	25
x	7
57	75

Activity

1. Find the total height of 4 boys each 1m 52cm tall.
2. Find the total length of 8 roper each 2m 36cm.
3. Opio, Odeke and Odong each had 9m 54cm of cloth. What was the total length of their cloth?
4. Ali, Aisha and Aida shared a ribbon. If each got 5m 35cm long. What was the length of the ribbon shared?
5. 7 boys had pieces of wire measuring 5m 75cm each. Find the total length of the wire which they had.
6. Kate and Regina had 6m 50cm of string each. Find the total length of string they had altogether.

Division of metres and centimeters

Examples

1. The piece of timber Bob and Pablo shared equally was 8m 10cm long. What length and each got?

	m	cm
	4	05
2	8	10
4x2 -	8	
		10
5x2		- 10

Each got 4m 5cm long

2. The length of a string is 15m 24cm. Divide the string into 3 equal pieces. What is the length each piece?

	m	cm
	05	08
3	15	24
		- 15
		24
		- 24

Each piece of string is 5m 8cm

Activity

1. 4 girls shared 36m 28cm of cloth equally. What length of cloth did each girl get?
2. Divide 21m 12cm by 3.
3. Agnes had a string measuring 5m 45cm, if he cut it into 5 equal pieces, how long was each piece?
4. 6 workers divided equally 24m 18cm of a road for cleaning. What part did each clean?
5. 7 boys shared 50m 25cm of cloth equally. Find the length of each piece of cloth?

Changing metres to kilometres

Note: 1000m = 1 kilometres

Examples

1. Work out

Change 3000 m to km

1000m = 1km

3000m = 3000

1000

= 3km

2. Change 20000m to km

1000m = 1km

20000m = 20~~000~~

1~~000~~

= 20km

Activity

Change the following to kilometres

a) 14000m b) 25000m c) 8000m

d) 1000m e) 30000m f) 5000m

g) 6000m h) 12000m

i) Deo walked a distance of 4000m from home to school. What distance did he walk in kilometres?

Changing kilometres into metres

Examples

Change the following to metres

1. 5km to m

1km = 1000m

5km = 5 x 1000

= 5000m

2. 12km to metres

1km = 1000m

12km = 12 x 1000

= 12000m

3. Abdul covered 7km while running. What distance did he run in metres.

1km = 1000m

7km = 7 x 1000

= 7000m

Activity

Change the following measures in metres

a) 4km b) 16km c) 30km

d) 19km e) 24km

f) A cyclist covered a distance of 5km. What is this distance in metres?

Addition of kilometres and metres

Examples

1. Add 15km 880m to 6km 750m

	Km	m	
	15	880	880 + 750 = 1630
+	6	750	1630 ÷ 1000 = 1km 630m
	22	630	

Assignment

a)

	Km	m
	13	530
+	8	670

b)

	km	m
	58	460
+	17	780

c) A road construction company made 24km 855m of the road on Monday and 37km 255m on Tuesday. What distance of the road did they make?

Subtraction of kilometres and metres

Examples

1. Subtract:

	km	m
	46	260
-	12	150
	34	110

2. Subtract 130km 690 from 280km 455m

	Km	m
	280	455
-	130	690
	149	765

Activity

Subtract the following.

a)

	Km	m
	47	290
-	23	280

b)

	km	m
	700	450
-	500	350

c)

	km	m
	90	55
-	35	85

d) Subtract 15km 680m from 23km 750m.

e) From a length of 315km 425m subtract 285km 315m.

Multiplication of kilometres and metres

Examples

1. Work out:

	km	m
	8	350
x		3
	25	50

2.

	Km	m
	15	320
	x	3
	45	960

Activity

Work out the following.

a)

Km	m
7	300
x	8

b)

km	m
9	250
x	6

c)

km	m
13	200
x	3

d)

km	m
8	140
x	5

Division of kilometres and metres

Examples

1. Divide 24km 40km by 4

	Km	m
	6	10
4	24	40
	24	
		40
		40

Activity

Work out the following

a)

	Km	m
5	50	150

b)

	km	m
4	32	240

c)

	km	m
8	16	2400

d)

	km	m
9	81	270

e) Divide 66km 660m by 6

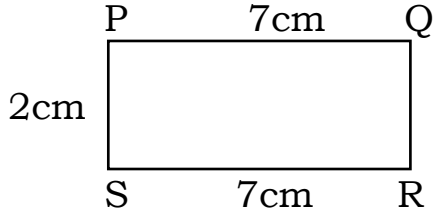
f) 21km 14m ÷ 7

MEASURES (PERIMETER)

Perimeter is the total distance round a figure.

Examples

1. Find the perimeter of the figure below.

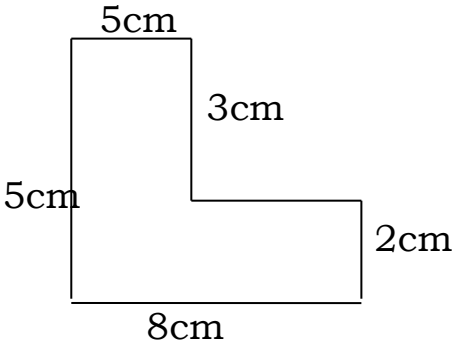


Perimeter = PQ + QR + RS + SP

= 7cm + 2cm + 7cm + 2cm

= 18cm

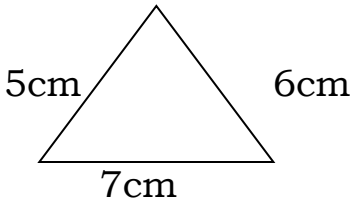
2. Find the perimeter of the figure below.



Perimeter = Add all sides round the figure
= 5cm + 3cm + 2cm + 8cm + 5cm
= 26cm

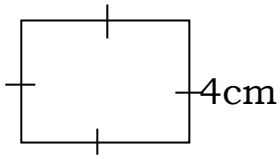
Perimeter= 26cm

3.



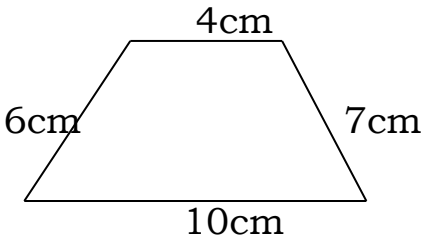
Perimeter = s + s + s
= 5cm + 6cm + 7cm
= 18cm

4.



All sides are equal
Perimeter = s + s + s + s
= 4cm + 4cm + 4cm + 4cm
= 16cm

5.

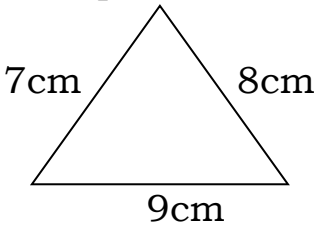


Perimeter = 6cm + 4cm + 7cm + 10cm
= 27cm

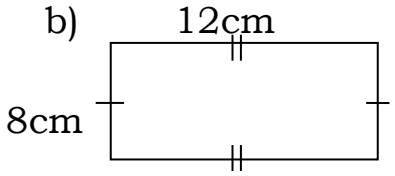
Activity

Find the perimeter of the following figures.

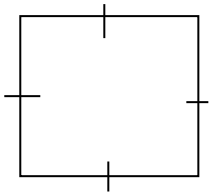
a)



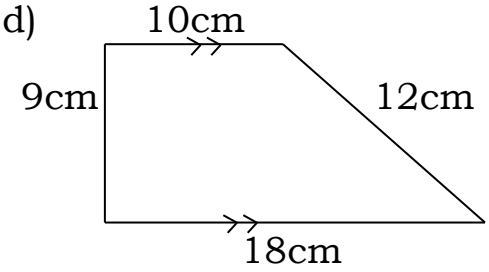
b)



c)



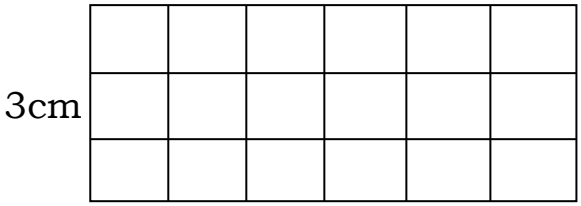
d)



MEASURES (AREA)

Area is the amount of space covered by a flat surface.

Finding the area of figure.



Length(L) = 6cm

Width (W) = 3cm

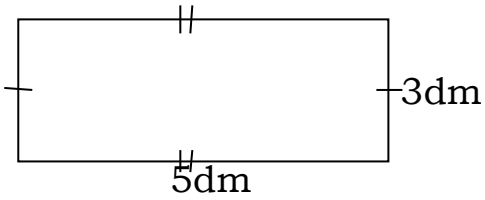
Area = L x W

= 6cm x 3cm

= 6 x 3 x cm x cm

= 18cm²

Or 18 square cm



Length(L) = 5dm

Width (W) = 3dm

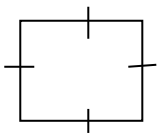
A = Lx W

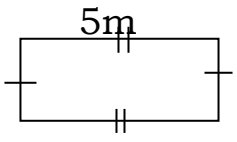
= 5dm x 3dm

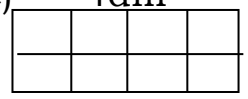
= 15dm²

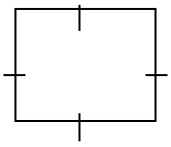
Activity

Find the area of the figures below.

a) 

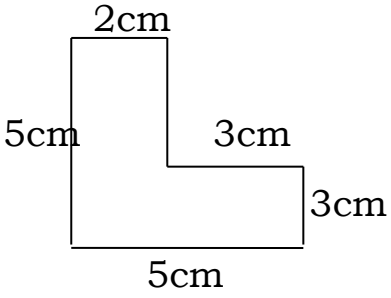
b) 2m 

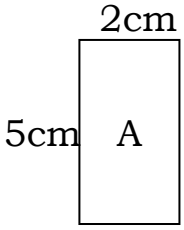
c) 2dm 

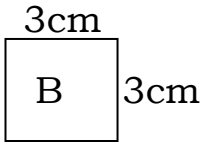
6cm 

Finding the area by separating figures

Find the area of the figure below.







Area of rectangle A = L x W
= 5cm x 2cm
= 5 x 2 x cm x cm
= 10cm²

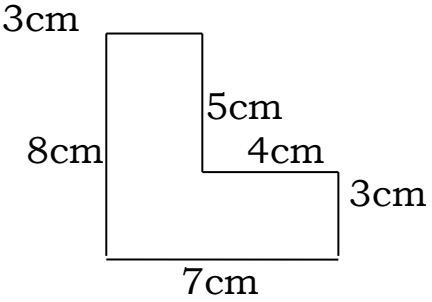
Area of rectangle B = L x W
= 3cm x 3cm
= 3 x 3 x cm x cm
= 9cm²

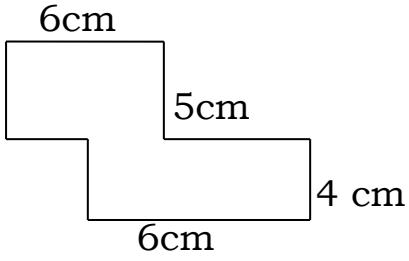
Total area of the figure (A + B)
= (10cm2 + 9cm2)
= 19cm²

Alternatively – separation of figure

Activity

Find the area of the figures below.

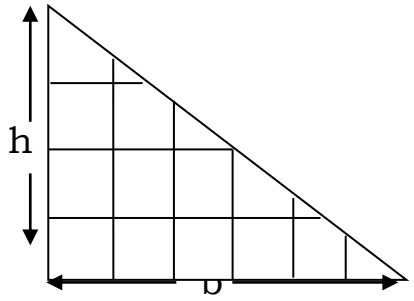
a) 

b) 

Finding the area of a triangle

Examples

1. Find the area of the figures below.



base (b) has 6 units
height (h) has 4 units

Area of a triangle

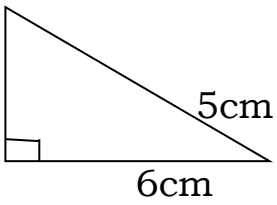
= ½ x base x height

= ½ x 6 x 4 units

= 1 x 3 x 4 units

= 12 units squared

= 12 square units

2. 

base (b) = 6cm

height (h) = 5cm

Area = ½ x b x h

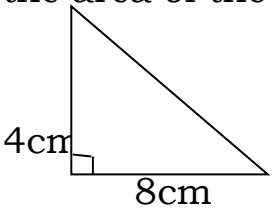
= ½ x 6cm x 5cm

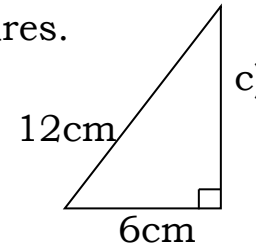
= ½ x 30cm^2

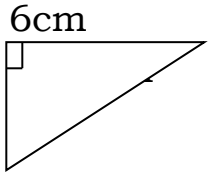
= 15cm^2

Activity

Find the area of the figures.

a) 

b) 

c) 

CAPACITY

Finding half and quarter litres

Note:

1 litre = 2 half litres
2 litres = (2 + 2) half litres
3 litres = (2 + 2 + 2) half litres
1 litre = 4 quarter litres
2 litres = (4 + 4) quarter litres
3 litres = (4 + 4 + 4) quarter litres

Examples

Work out the following.

1. How many ½ litre bottles are in 1 litre container?

   $1 \div \frac{1}{2}$

   $1 \times \frac{2}{1}$

   2 half litre bottles are in 1 litre

2. How many ¼ litres are in 2 litres

   $2 \div \frac{1}{4}$

   $2 \times \frac{4}{1}$

   8 quarter litres are in 2 litres

3. How many ½ litre bottles are in a 3 litre container?

   $3 \div \frac{1}{2}$

   $3 \times \frac{2}{1}$

   6 half litre bottles are in 3 litre container

Activity

1. How many ½ litres are in a 5 litre container?
2. How many ¼ litre bottlea are in a 1 litre container?
3. How many ¼ litre bottles are in 4 litres?
4. Namuddu has 6 litres. How many ½ litres has she got?
5. Divide 4 litres of milk into ½ litres. How many half litres will you get?

Addition of litres and half litres

Examples

1. Add 1 ½ litres and 2 ½ litres

   (1 ½ + 2 ½) litres = 1 + 2 + ½ + ½

   = 3 + $\frac{1 + 1}{2}$

   = 3 + 1

   = 4 litres

2. Mukuli had 2 ½ litres of milk and 4 litres of milk. How much milk does he have altogether?

   (4 + 2 ½) litres = 4 + 2 ½

   = 6 ½ litres

Activity

1. Add ½ a litre to 3 ½ litres.
2. What is the sum of 2 ½ litres and 4 ½ litres?
3. Atwine drank 3 ½ litres of bear. She took another 2 litres. How many litres did she drink altogether?
4. There were 6 ½ litres of petrol in a car fuel tank. If 7 ½ litres were added, how many litres were there altogether?
5. Increase 10 ½ litres by 4 ½ litres
6. Add 5 ½ litres to 3 ½ litres

Addition of litres

Example

1. Add 80 litres of milk to 40 litres of milk.

   80 litres
   + 40 litres
   120 litres

2. A home uses 95 litres of water in the morning and 87 litres in the afternoon. How much water is used in a day?

   Morning 95 litres
   Afternoon + 87 litres
   They use 182 litres

Activity

1. A drum contains 86 litres of juice. Another 46litres is added. How many litres of juice does the drum now hold?
2. Apedo sold 78 litres of milk on Monday and 74 litres on Wednesday. How many litres of milk did he sell altogether?
3. Add 124 litres to 3456 litres.
4. Add 145 litres to 1134 litres and 36 litres.
5. Three families use 70 litres, 80 litres and 111 litres of paraffin respectively. How many litres do they use altogether?

Changing litres to milliliters

Examples

1. Express 2 litres as milliliters

   1 litre = 1000ml

   2 litres = (2 x 1000)ml

   = 2000 ml

2. Express 15 litres as milliliters

   1 l = 1000ml

   15 l = (15 x 1000) ml

   = 15,000ml

Changing milliliters to litres

Examples

1. Convert 400ml to litres

   1000ml = 1l

   1 ml = $\frac{1}{1000}$ l

   4000ml = $\frac{1}{1000} \times \frac{4000}{1}$ l

   = 4 litres

2. Express 500ml as litres.

   1000ml = 1 litre

   1ml = $\frac{1}{1000}$ l

   500ml = $\frac{1}{1000} \times \frac{500}{1}$ l

   = ½ litre

   OR = 0.5 litre

Activity

1. Change the following to ml.
   a) 2l b) 6l c) 3l
   d) 5l e) 12l f) 7l

2. Change the following to litres.
   a) 7000ml b) 3000ml c) 15000ml
   d) 5000ml e) 10000ml f) 22000ml

Addition of litres and millitres

Examples

1. Add

	L	ml
	7	250
+	2	400
	9	650

2. I have 150 litres 200ml of water. Awiimwe gives me 120 litres 800ml of water. How much water do I have now?

	L	ml	
	150	200	200+ 800 = 1000
+	120	800	1000 ÷ 1000 = 1 rem 0
	171	000	

Activity

1. Add

a)

	L	ml
	3	340
+	8	220

b)

	l	ml
	12	48
+	06	24

2. Add 16 litres 720 ml to 8 litres 250ml.
3. A banker used 4 litres 570ml of cooking oil. She later used another 15 litres 110ml more. How much oil did she use?

Subtraction of litres and millitres

Examples

1. Subtract

	L	ml
	12	48
-	08	36
	04	12

2. From 50l 65ml take away 42 l 58ml.

	L	ml
	59	65
-	42	58
	08	07

3. A taxi driver bought 30 litres 450 millilitres of fuel from the petrol station and used 18 litres 300ml. How much fuel did he remain with?

		L	ml
He bought		30	450
He used	-	18	300
He remained with		12	150

Multiplication of litres and milliliters

Examples

1. Work out

L	ml
14	28
x	4
36	112

2.

L	ml
42	50
x	5
210	250

Activity

Work out the following.

a)

L	ml
12	10
x	5

b)

l	ml
36	42
x	6

c)

l	ml
64	48
x	7

d)

l	ml
213	520
x	2

Division of litres and millitres

Examples

a) Divide 14l 24ml by 2.

```
      07l      12ml
   ┌──────────────
2  │ 14l      24ml
 - 0 ___   24  ___
   14
   14  ___
```

b) A factory uses 42l 30ml of fuel in 6days. How much fuel does the same factory use in one day.

```
      07l      05ml
   ┌──────────────
6  │ 42l      30ml
 -  0___
      42
      42
```

Activity

Work out the following.

a) 2 ⟌ 16l 18ml

b) 6 ⟌ 12l 24ml

c) 3 ⟌ 9l 12ml

d) 7 ⟌ 21l 28ml

e) 4 ⟌ 12l 16ml

f) 8 ⟌ 24l 32ml

WEIGHT

Changing kilograms to grams

Examples

1. Convert 2 kg to grams

   1 kg = 1000g

   2kg = (2 x 1000)g

   = 2000g

2. ½ kg

1kg = 1000g

½ kg = ½ x 1000g

= 500g

3. 2.5kg

1kg = 1000g

2.5kg = (2.5 x 1000)g

= 2500g

Changing grams to kilograms

Examples

1. Express 2000g as kg

1000g = 1 kg

1g = $\frac{1}{1000}$ kg

2000g = $\frac{1}{1\cancel{000}} \times 2\cancel{000}$

= 2 kg

2. Change 4500 to kg

1000g = 1kg

1g = $\frac{1}{1000}$ kg

4500g = $\frac{1}{10\cancel{00}} \times 45\cancel{00}$

= 4.5 kg

Addition of kilograms and grams

Examples

1. Add:

	kg	g
	2	250
+	3	150
	5	400g

2. Find the sum of 104kg 420g and 187kg 350g

	Kg	g
	104	420
+	187	350
	291	770

3. A farmer took 2 sacks of coffee to the store for sell. One weighed 96kg 480g and the other 88kg 776g. Find the total weight of the two bags.

	Kg	g	
	96	480	480 + 776 = 1256
	+88	776	1kg = 1000g
	185	256	1256 ÷ 1000 = 1 rem 256

Activity

1. What is the total weight when you add 40kg 130g to 24kg 243g?
2. Add 12kg 125g to 132kg 820g.
3. Add 136kg 268g to 98kg 75g.
4. What is the sum of 709kg 285g and 98kg 56g.
5. Alice bought 25kg 135g of rice. She later bought 15kg 234g more. How much rice did she buy?

Subtraction of kilograms and grams

Examples

1. Subtract

	Kg	g
	75	640
-	28	450
	47	190

2. Nakato had 40kg 350g of ghee. She sold 26kg 850g of it. How much ghee did she remain with?

		Kg	g	
She had		40	350	1000 + 350 = 1350
She sold	-	26	850	1350 ÷ 850 = 500
She remained with		13	500	

Activity

1. Work out the following.

a)

	Kg	g
	81	366
-	33	424

b)

	kg	g
	48	760
-	31	720

2. Subtract 36kg 785 g from 48kg 460g
3. A builder used 10kg of nails from 13kg 72g. What is the total weight of the remaining nails?
4. What weight remains when 26kg 15g is removed from 61kg 16g?
5. Subtract 24kg 490g 72kg 365g.

Multiplication of kilograms and grams

Examples

1. Work out:

kg	g	
32	120	120 x 9 = 1080
x	9	since 1000g = 1kg
289	80	Then 1000g + 80g = 1kg 80g

2. Multiply;

kg	g
12	40
x	4
48	160

Activity

Work out the following

a)

Kg	g
4	310
x	3

b)

kg	g
34	89
x	2

Division of kilograms and grams

Examples

1. Work out the following

```
        Kg      kg
        06      11
   4  24 |   44
   - 0   ___
         24
         24
         ____
           44
       - 4 __
           4
           4
```

2. Divide 16kg 240g by 8

```
        08kg    030g
     8 |16      240
      -0
      16
      16
      ____________
                240
                0
                ___
                24
                24
                ___
                 0
```

Activity

Work out the following.

a)
```
      Kg    g
   4 |16    24
```

b)
```
      kg    g
   5 |5     10
```

c)
```
      kg    g
   6 |30    42
```

d)
```
      kg    g
   2 |4     8
```

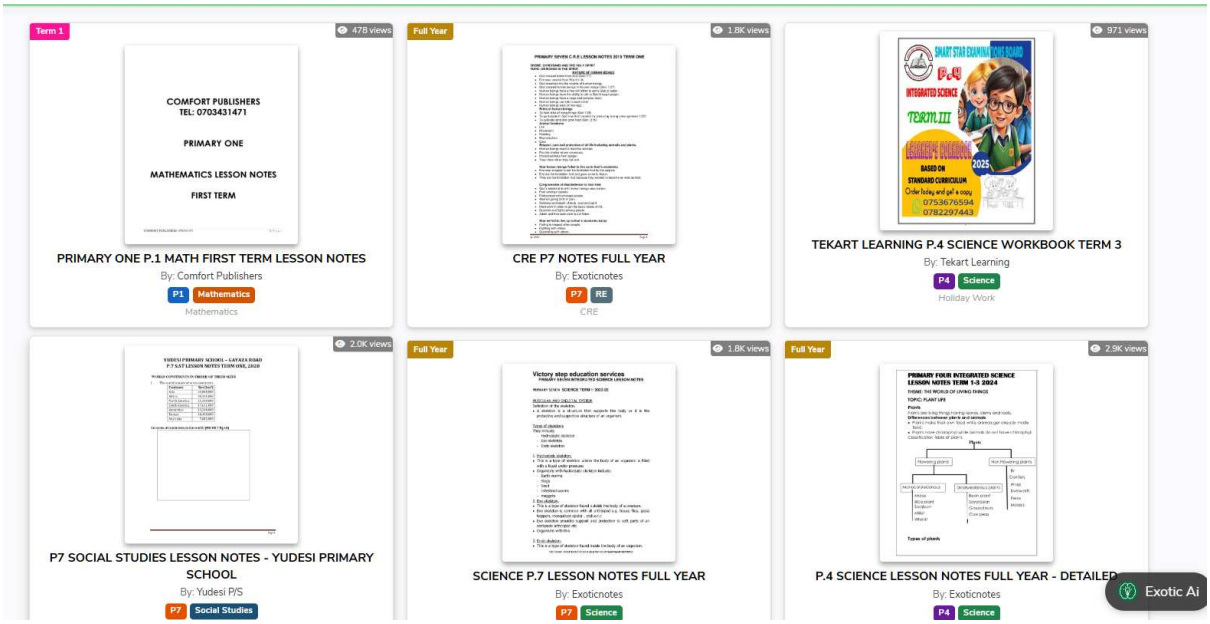
e)
```
      kg    g
   3 | 9    12
```

f)
```
      kg    g
   7 |14    21
```

g)
```
      kg    g
   2 | 6    8
```

h)
```
      kg    g
   8 |8     16
```

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