JAFFNA HINDU COLLEGE

Risk Holiday Self - Education Worksheet (2) – 2020

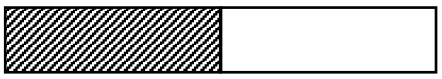
Grade – 06 | Mathematics

Name/Index No : …… Mrs.S.Vimalan, B.Sc, PGDE

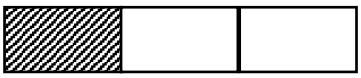
INSTRUCTIONS :

- Answer all the questions.
- Answer the questions on answer sheets only.
- Read the respective lesson units thoroughly and comprehend before you attempt answering the questions.
- File the completed answer and hand over to the class teacher when the school reopens.

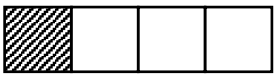
Unit-9 Fractions



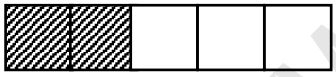
$= \frac{1}{2}$ Read as half



$= \frac{1}{3}$ Read as one third



$= \frac{1}{4}$ Read as quarter or one fourth



$= \frac{2}{5}$ Read as two fifth

These are known as fractions.

$\frac{1 \leftarrow \text{Numerator}}{3 \leftarrow \text{Denominator}}$

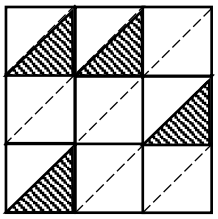
In a proper fraction, the numerator is always less than its denominator. Some examples for proper functions are,

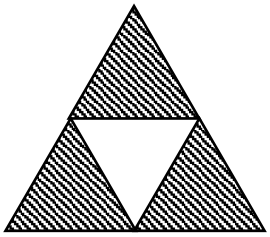
$\frac{1}{2}, \frac{1}{3}, \frac{2}{3}, \frac{4}{5}, \frac{7}{8}$ *and* $\frac{3}{5}$

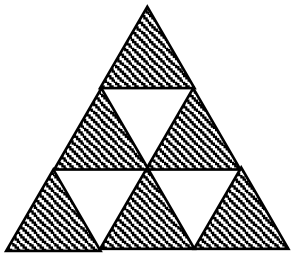
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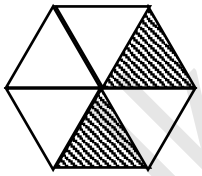
Exercise

1) Consider each of the figures below as a whole unit. Now write down the coloured quantity as a fraction.









2) Colour the quantity indicated by the fraction.

i. $\frac{4}{7}$

ii. $\frac{5}{9}$

iii. $\frac{3}{8}$

iv. $\frac{3}{5}$

v. $\frac{2}{3}$

3) Write down the fraction with denominator 7 and numerator 2.

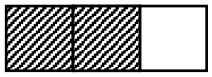
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Unit fractions

Fractions with numerator 1 are known as unit fractions.

eg:- $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{7}$ *and* $\frac{1}{9}$

Let us explain $\frac{2}{3}$ in terms of $\frac{1}{3}$

 $\Rightarrow \frac{2}{3}$ is two $\frac{1}{3}$ s.

 $\Rightarrow \frac{3}{4}$ is three $\frac{1}{4}$ s.

Exercise

1) Write down the unit fractions with denominators 3,7,9,8 and 5.

2) Fill in the blanks.

   i. $\frac{3}{5}$ is ..... $\frac{1}{5}$s

   ii. $\frac{2}{7}$ is ..... $\frac{1}{7}$s

   iii. Two ..... is $\frac{2}{9}$

Equivalent fractions

Example

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

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

$\frac{2}{4}$ *and* $\frac{3}{6}$ *are equievalent to* $\frac{1}{2}$

$\frac{8}{12}=\frac{8\div 2}{12\div 2}=\frac{4}{6}$

$\frac{8}{12}=\frac{8\div 4}{12\div 4}=\frac{2}{3}$

$\frac{4}{6}$ *and* $\frac{2}{3}$ *are equievalent to* $\frac{8}{12}$

To obtain equivalent fraction the numerator and denominator should be multiplied or divided by the same number.

Exercise

Write down two equivalent fractions for each fraction.

i. $\frac{1}{4}$

ii. $\frac{3}{7}$

iii. $\frac{2}{5}$

iv. $\frac{12}{36}$

v. $\frac{20}{30}$

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Comparison of fractions

Comparison of fractions having the same numerator

Example

1) $\frac{1}{3}, \frac{1}{4} \Rightarrow \frac{1}{3} > \frac{1}{4}$
2) $\frac{2}{5}, \frac{2}{7} \Rightarrow \frac{2}{5} > \frac{2}{7}$
3) $\frac{3}{5}, \frac{3}{4} \Rightarrow \frac{3}{5} < \frac{3}{4}$

Out of two fractions having the same numerator, the larger fraction is the fraction with the smaller denominator.

Comparison of fractions having the same denominator

Example

1) $\frac{1}{3}, \frac{2}{3} \Rightarrow \frac{1}{3} < \frac{2}{3}$
2) $\frac{2}{5}, \frac{3}{5} \Rightarrow \frac{2}{5} < \frac{3}{5}$
3) $\frac{4}{7}, \frac{2}{7} \Rightarrow \frac{4}{7} > \frac{2}{7}$

Out of two fractions having the same denominator, the larger fraction is the fraction with the larger numerator.

Comparison of fractions, where the numerators and denominators are not equal.

Example

1) $\frac{1}{3}, \frac{5}{6}$

Let us write these fractions as fractions having the same denominator using equivalent fractions.

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

$\frac{2}{6}$ is less than $\frac{5}{6}$

that is, $\frac{2}{6} < \frac{5}{6}$, Accordingly $\frac{1}{3} < \frac{5}{6}$.

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2) $\frac{1}{2}, \frac{2}{5}$

$\frac{1}{2} = \frac{1\times5}{2\times5} = \frac{5}{10}$

$\frac{2}{5} = \frac{2\times2}{5\times2} = \frac{4}{10}$

$\frac{5}{10}$ is greater than $\frac{4}{10}$

that is, $\frac{5}{10} > \frac{4}{10}$, Accordingly $\frac{1}{2} > \frac{2}{5}$.

Exercise

1) Find the smallest fraction out of the fractions in each of the following parts.

i. $\frac{1}{5}, \frac{1}{3}$

ii. $\frac{1}{11}, \frac{1}{13}$

iii. $\frac{1}{8}, \frac{1}{5}$

iv. $\frac{2}{3}, \frac{2}{5}$

v. $\frac{5}{6}, \frac{5}{9}$

vi. $\frac{3}{4}, \frac{3}{8}$

vii. $\frac{2}{9}, \frac{5}{9}$

viii. $\frac{4}{5}, \frac{4}{7}, \frac{4}{6}$

ix. $\frac{6}{7}, \frac{6}{13}, \frac{6}{9}$

2) Fill in the blanks by using the symbols <,>,= .

i. $\frac{1}{7} \cdots \frac{2}{7}$

ii. $\frac{8}{11} \cdots \frac{5}{11}$

iii. $\frac{4}{9} \cdots \frac{4}{5}$

iv. $\frac{2}{10} \cdots \frac{1}{9}$

v. $\frac{1}{2} \cdots \frac{8}{15}$

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Addition of fractions

Example

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

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

$=\frac{3}{5}$

2) $\frac{3}{7}+\frac{2}{7}$

$=\frac{3+2}{7}$

$=\frac{5}{7}$

3) $\frac{2}{10}+\frac{3}{5}$

$=\frac{2}{10}+\frac{3\times 2}{5\times 2}$

$=\frac{2}{10}+\frac{6}{10}$

$=\frac{8}{10}$

4) $\frac{2}{3}+\frac{1}{15}$

$=\frac{2\times 5}{3\times 5}+\frac{1}{15}$

$=\frac{10}{15}+\frac{1}{15}$

$=\frac{11}{15}$

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Exercise

Simplify the following.

i. $\frac{2}{10}+\frac{4}{10}$

ii. $\frac{5}{11}+\frac{3}{11}$

iii. $\frac{3}{12}+\frac{9}{12}$

iv. $\frac{1}{7}+\frac{2}{7}+\frac{3}{7}$

v. $\frac{2}{11}+\frac{3}{11}+\frac{4}{11}$

vi. $\frac{1}{3}+\frac{1}{5}$

vii. $\frac{1}{4}+\frac{5}{8}$

viii. $\frac{2}{9}+\frac{2}{3}$

ix. $\frac{4}{21}+\frac{1}{3}$

x. $\frac{3}{18}+\frac{2}{3}$

Subtraction of fractions.

Example

1) $\frac{3}{4}-\frac{2}{4}$

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

$=\frac{1}{4}$

2) $\frac{7}{11}-\frac{3}{11}$

$=\frac{7-3}{11}$

$=\frac{4}{11}$

3) $\frac{5}{10}-\frac{2}{5}$

$=\frac{5}{10}-\frac{2\times 2}{5\times 2}$

$=\frac{5}{10}-\frac{4}{10}$

$=\frac{1}{10}$

4) $\frac{3}{4}-\frac{5}{12}$

$=\frac{3\times 3}{4\times 3}-\frac{5}{12}$

$=\frac{9}{12}-\frac{5}{12}$

$=\frac{4}{12}$

Exercise

Simplify the following.

i. $\frac{5}{6}-\frac{1}{6}$

ii. $\frac{10}{13}-\frac{5}{13}$

iii. $\frac{5}{8}-\frac{3}{8}$

iv. $\frac{13}{15}-\frac{1}{3}$

v. $\frac{13}{15}-\frac{3}{5}$

vi. $\frac{17}{18}-\frac{7}{9}$

vii. $\frac{3}{4}-\frac{17}{24}$

viii. $\frac{2}{3}-\frac{9}{21}$

ix. $\frac{19}{20}-\frac{3}{5}$

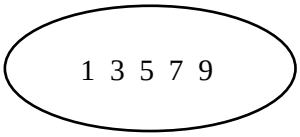
x. $\frac{26}{30}-\frac{5}{6}$

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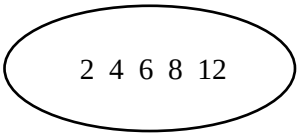
Unit-10 Selection

Example

1) Separate the numbers 3,2,1,7,4,9,5,6,8 and 12 into two groups based on a common characteristic and write them down.



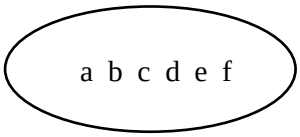
Odd numbers in this collection



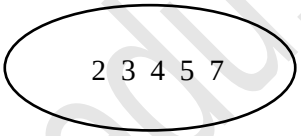
Even numbers in this collection

2) Separate the following into two groups based on a common characteristic and write them down.

a,3,4,d,e,7,b,5,c,2,f



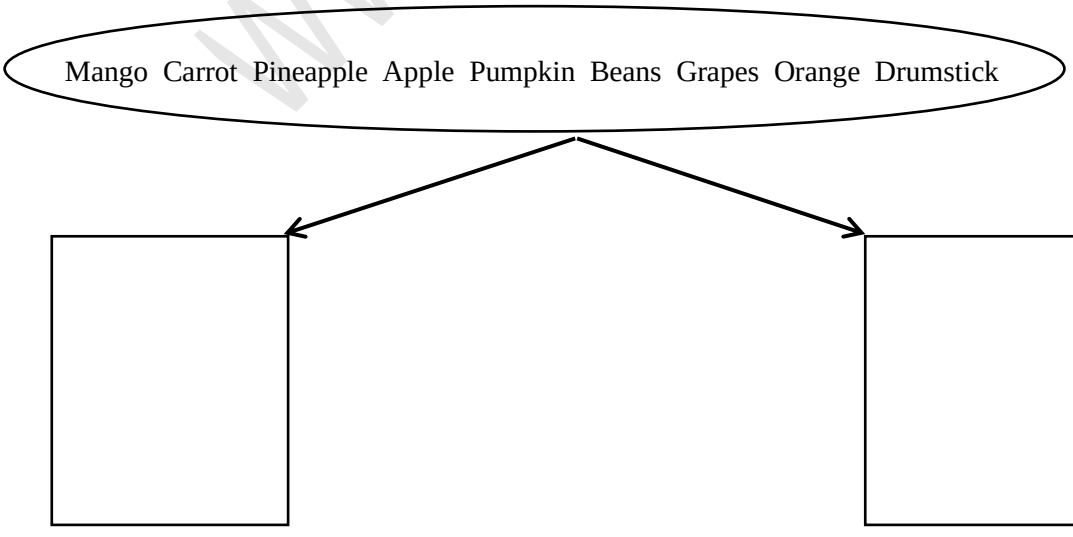
Letters in this collection



Numbers in this collection

Exercise

1) Separate the collection of items in each of the followings into two groups according to the given characteristics and write them down.

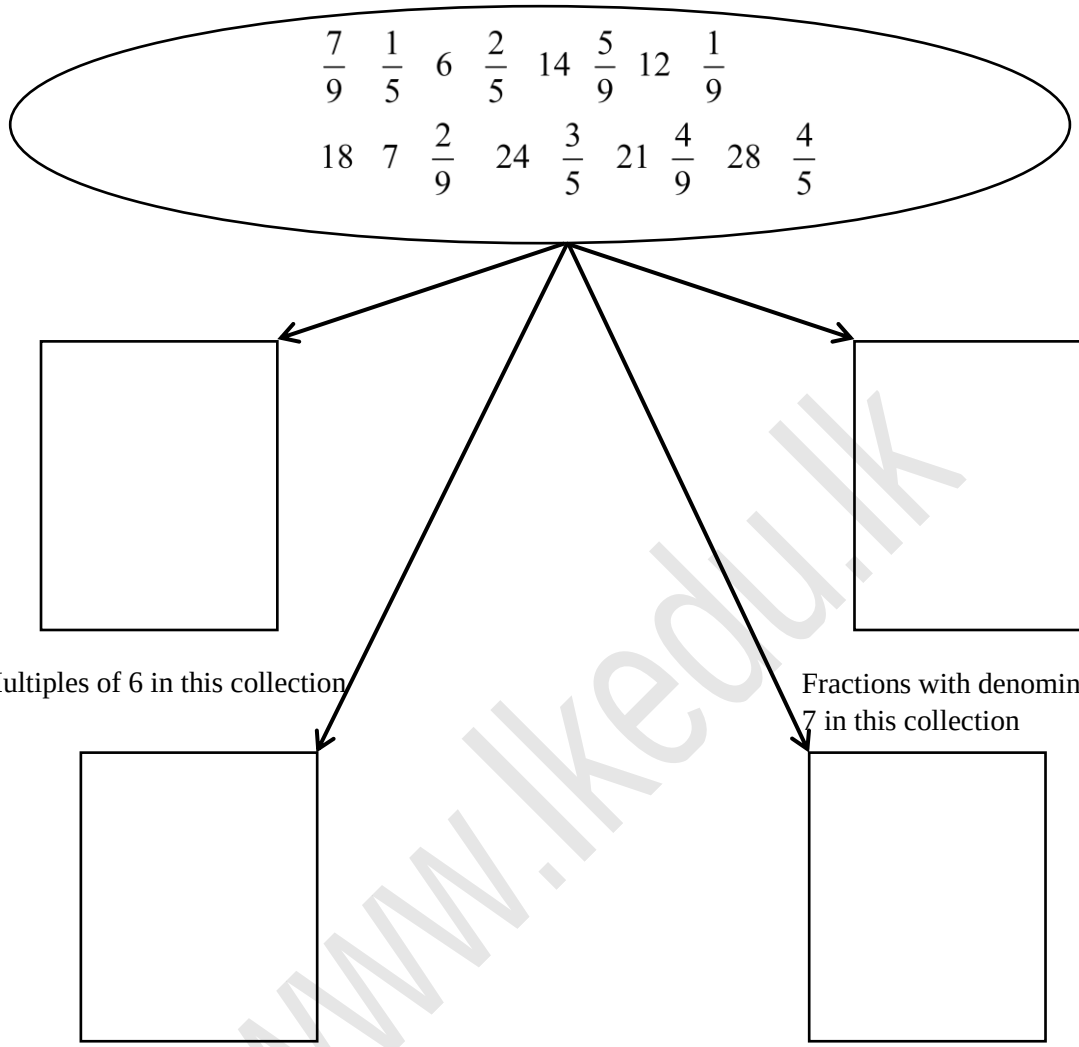


Vegetables in this collection

Fruits in this collection

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2) Two of the common characteristics that were used to separate the following numbers into four groups are given. Identify a common characteristic for each of the other two groups. Give a suitable name to each group and then separate all the given numbers appropriately into the four groups and write them down.



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Unit-11 Factors and multiples

We can write 8 in the following ways as a product of two whole numbers.

$8 = 1 \times 8$

$8 = 2 \times 4$

$8 = 4 \times 2$

$8 = 8 \times 1$

when a whole number is written as a product of two whole numbers, these two numbers are known as factors of the original number.

$\therefore$ The factors of 8 are 1,2,4 and 8.

Example

Find the factors of 12.

$12 = 12 \times 1$

$12 = 2 \times 6$

$12 = 3 \times 4$

The factors of 12 are 1,2,3,4,6 and 12.

- 0 is not a factor of a whole number.
- 1 and the number itself are factors of the given number.

Exercise

Find the factors of each of the following numbers.

i. 3
ii. 19
iii. 18
iv. 33
v. 60
vi. 29
vii. 42
viii. 48
ix. 27
x. 36

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Finding the factors using the method of division

If a certain whole number can be divided by a whole number such that there is no remainder, then we identify the second number as a factor of the first number.

Example 1

Find three factors of 18 by using the method of division.

$$\begin{array}{r} 9 \\ 2\overline{)18} \\ \underline{18} \\ 0 \end{array} \qquad \begin{array}{r} 6 \\ 3\overline{)18} \\ \underline{18} \\ 0 \end{array} \qquad \begin{array}{r} 2 \\ 9\overline{)18} \\ \underline{18} \\ 0 \end{array}$$

The number 18 can be divided by 2,3 ,and 9 with no remainder.

$\therefore$ 2,3 and 9 are the three factors of 18.

Example 2

Find three factors of 54 by using the method of division.

$$\begin{array}{r} 27 \\ 2\overline{)54} \\ \underline{54} \\ 0 \end{array} \qquad \begin{array}{r} 18 \\ 3\overline{)54} \\ \underline{54} \\ 0 \end{array} \qquad \begin{array}{r} 9 \\ 6\overline{)54} \\ \underline{54} \\ 0 \end{array}$$

2,3 and 6 are three factors of 54.

Example 3

Is 9 a factor of 28? Explain the reason for your answer.

$$\begin{array}{r} 3 \\ 9\overline{)28} \\ \underline{27} \\ 1 \end{array}$$

$28 \div 9 = 3$ with a remainder 1.

Therefore, 9 is not a factor of 28.

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Exercise

1) Find three factors of each of the following numbers using the method of division.
   i. 30
   ii. 45
   iii. 36
   iv. 24

2) Is 7 a factor of 91? Explain the reason for your answer.

3) Is 6 a factor of 73? Explain the reason for your answer.

Multiples

$2 \times 1 = 2$

$2 \times 2 = 4$

$2 \times 3 = 6$

$2 \times 4 = 8$

$2 \times 5 = 10$

The above obtained numbers known as a multiple of 2.

- 3,6,9,12,15,18 and 21 are several multiples of three.
- 5,10,15,20, and 25 are several multiples of five.

Exercise

1) Write down five multiples of 3 which are greater than 10.
2) Write down five multiples of 4 between 1 and 30.
3) Write down all the multiples of 2 between 1 and 10.
4) Write down two numbers which are multiples of both 2 and 3.
5) What is the largest multiple of 8 which is less than 100?

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Divisibility

- Examining whether a number is divisible by 2.

  If the value of the digit in the ones place of a number is divisible by 2, then the number is divisible by 2.

Example

12- The ones place digit 2 is divisible by 2, then 12 id divisible by 2.

1536- The ones place digit 6 is divisible by 2, then 1536 id divisible by 2.

- Examining whether a number is divisible by 5.

  If the value of the digit in the ones place of a number is 0 or 5, then that number is divisible by 5.

Example

95- The ones place digit is 5 then 95 is divisible by 5.

1450- The ones place digit is 0 then 1450 is divisible by 5.

- Examining whether a number is divisible by 10.

  If the value of the digit in the ones place of a number is 0, then that number is divisible by 10.

  eg:- 10,100,110,1120,5340 and 4580 are divisible by 10.

Exercise

Select and write down the numbers which are suitable for the blank boxes. (A number could be included in more than one box.)

250, 4584, 135, 3150, 2472, 850, 1252, 780, 465, 1700, 362, 100

i. Numbers which are divisible by 2.

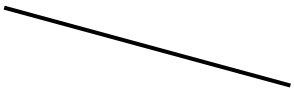
ii. Numbers which are divisible by 5.

iii. Numbers which are divisible by 10.

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Unit-12 Rectilinear plane figures

A straight line segment

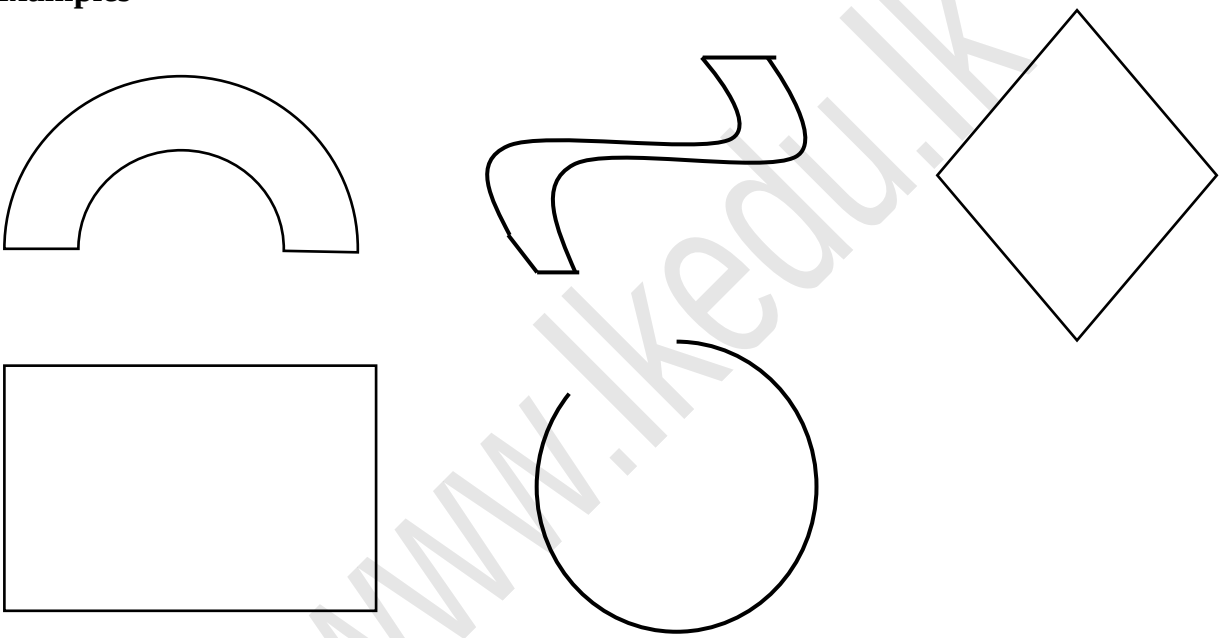


A curved line segment



Figures drawn on flat surfaces using straight line segments and curved line segments are defined as plane figures.

Examples

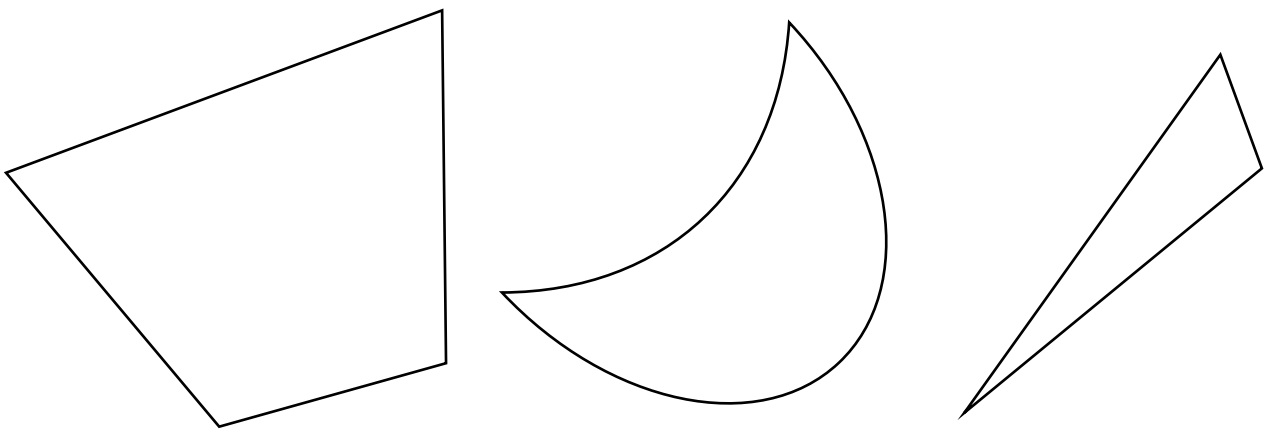


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Closed plane figures and open figures

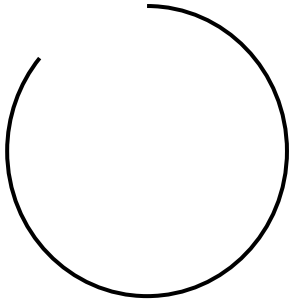
Figures which are completely bounded by line segments are defined as closed plane figures.

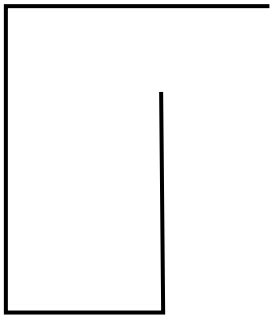
Examples

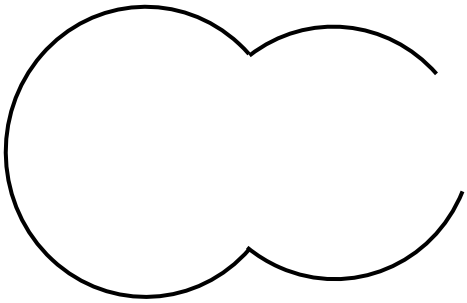


Figures which are not completely bounded by line segments are called open figures.

Examples





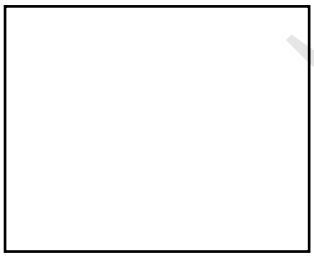


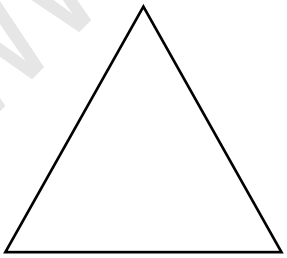


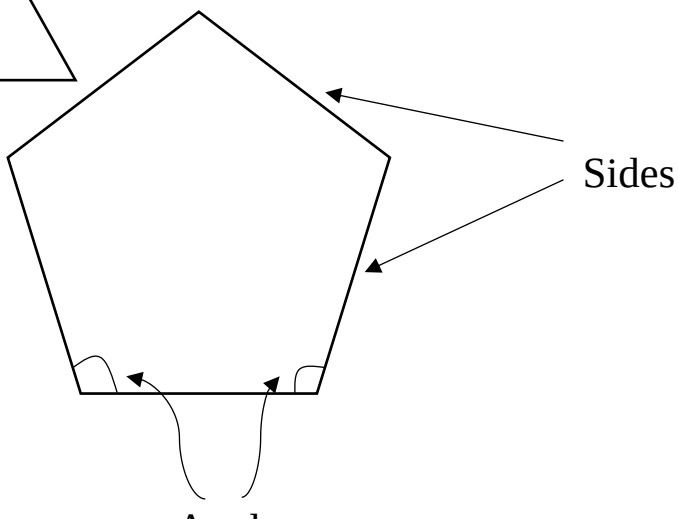
Rectilinear plane figures

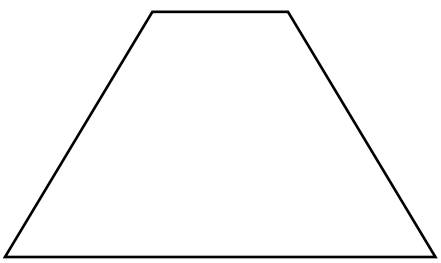
Figures which are completely bounded by only straight line segments are called closed rectilinear plane figures.

Examples





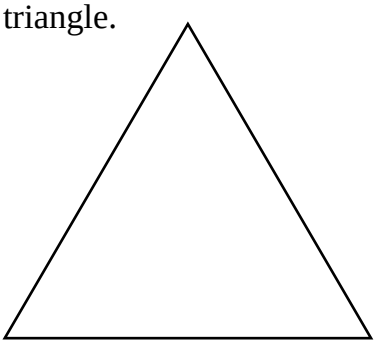




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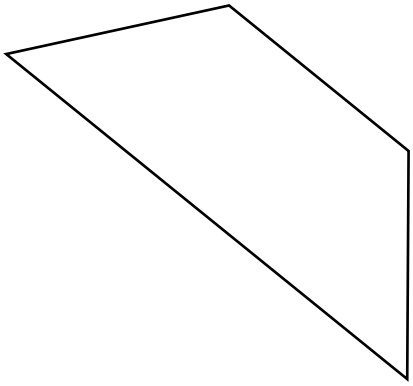
Triangles and quadrilaterals

A closed rectilinear plane figure drawn with three straight line segments is defined as a triangle.



Triangle has three sides and three angles.

A closed rectilinear plane figure drawn with four straight line segments is defined as a quadrilateral.



A quadrilateral has four sides and four angles.

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Various types of quadrilaterals and their properties.

Exercise

1) Do the activity 1 on page no6 in your mathematics part II book.
2) Do the exercise 12.3 in your mathematics book.