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State Council for Educational Research and Training, Maharashtra

Mathematics Bridge Course

Std- 7th

Student's Name-.....

Area- Geometry Unit -Basic concepts in Geometry

SubUnit - Point, Line, Line Segment, Ray **Day- 1st**

Learning Outcome–The learner describes Geometrical terms like line, line segment, angle, triangle, quadrilateral, circle etc. with the help of examples in surroundings.

Let's learn. 

Point

A point is shown by a tiny dot. Single capital letters are used to name a point.

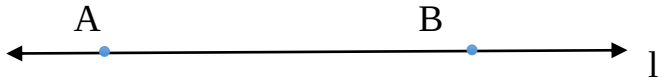
P •

As -Point P

Line

Take two points A and B on a sheet of paper and join them using a rular, we get a straight line. This line can be extended to both sides. To show this extended line on paper we use arrowheads at both ends of the line. In Mathematics line means straight line.

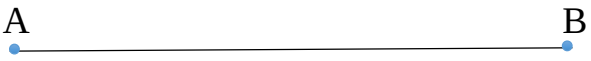
We can name the line using one or two letters.



As Line l is shown in the figure.We can name this line as *line AB* or *line BA.*

Line Segment

A piece of line is called **line segment**. Line segments have endpoints. We can name the line segment by using two letters.Line segment is written as 'seg' in short.



As – seg AB or seg BA

Ray

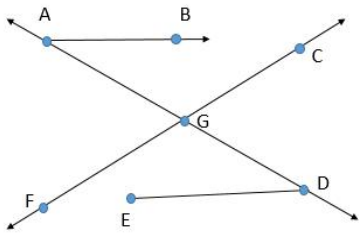
A ray is a part of a line.It starts at one point and goes forward continuously in the same direction.The starting point of the ray is called its **origin**.We can name the ray by using two letters. While naming the ray origin must be taken first.

P Q

As Point P is the origin of ray PQ

Let's Practice

- Observe the figure



Points : A, B, C, D, E, F, G

Lines : line AD, line CF

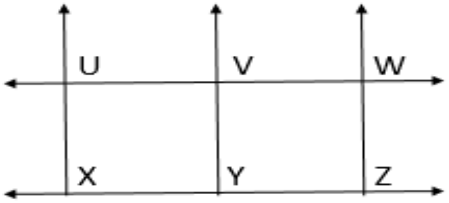
Line Segments : seg DE, seg DG, seg FG

Ray : ray AB, ray GC, ray GA

Students do you find any more points, lines, line segments and rays? Find out.

Let's try:

Observe the figure and write the answers.



1) Write the names of all points in the figure.
.....

2) Write the names of all points in the figure. .....

3) Write the names of all line segments in the figure.
. .....

4) Write the names of all rays in the figure.
.....

Some help (Link)

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Now I know this : Now I know points, lines, line segments, rays and parallel lines.

I can read and write their names.

Area- GeometryUnit -Basic concepts in Geometry

Sub Unit–Collinear Points, Non-collinear Points, Planes,

Concurrent Lines, Parallel Lines **Day-2nd**

Learning Outcome- :The learner describes the basic concepts like plane and parallel lines.



Let's learn.

Intersecting Lines

When two lines intersect each other in one point they are called intersecting lines and the point where they intersect is called intersecting point.

Concurrent Lines

When two or more lines pass through the same point, they are called concurrent lines .

An infinite number of lines can be drawn through one point but one and only one line can be drawn through any two distinct points.

Collinear Points

Three or more points which lie on a single line are called collinear points.

Non-collinear Points

Points which do not lie on a single straight line are called non-collinear points.

Planes

In Mathematics, a flat surface is called a plane.The plane extends infinitely in all four directions.A single capital letter is used for naming the plane.

Parallel Lines

Lines which lie in the same plane but do not intersect are said to be parallel to each other.

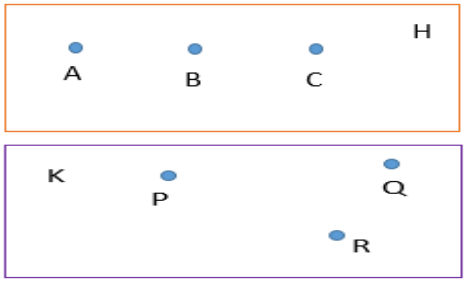


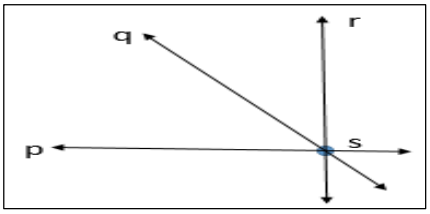
Let' Practice.

- Observe the figure alongside.

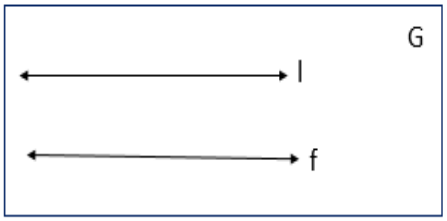
  Points A, B and C are collinear points in the plane H.

  Points P, Q and R are non-collinear points in the plane K.





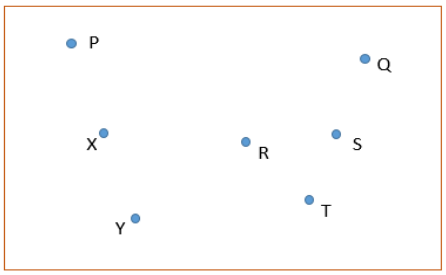
Line P, Q and R are the concurrent Lines and point S is the point



Line l and line f are in the same plane G and don't intersect each other.Such lines called parallel lines.

Let's try.

1] Observe the figure and answer the questions.



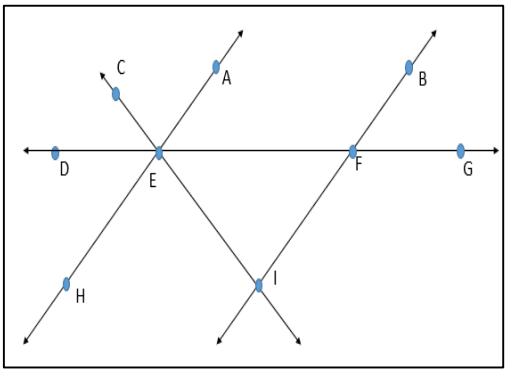
1) Write the names of collinear points.

.....

2) Write the names of non-collinear points.

.....

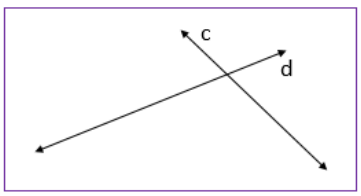
2] Observe the figure and write the names of the concurrent lines and the point of concurrence.

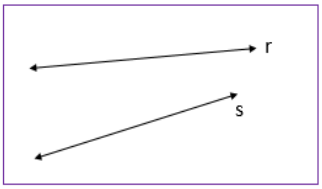


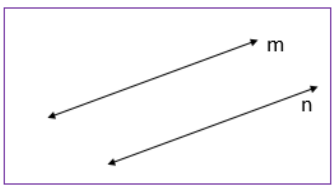
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3] Observe the figures and find out the pair of parallel line.







(A) (B) (C)

Ans.....

ICT tools(Links)

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Now I know: 

I can identify the plane.

I can identify parallel lines, collinear and non-collinear points, point of concurrence.

Area-Geometry **Unit- Angle**

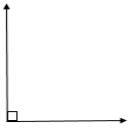
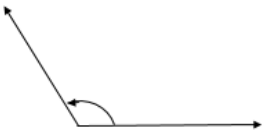
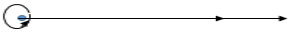
Sub Unit- Types of Angles, Geometrical Instruments, An Angle Bisector
Day-3 rd

Learning Outcomes- : The learner demonstrates an understanding of angles.

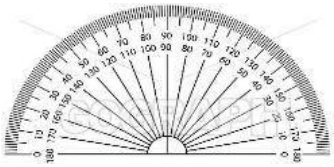
The learner identifies examples o angles in the surroundings, classifies angles according to their measure, estimates the measure of angles using 45^0 ,90^0, and 180^0 as reference angles.

The learner draws the angles of given measure.

Let's learn : 

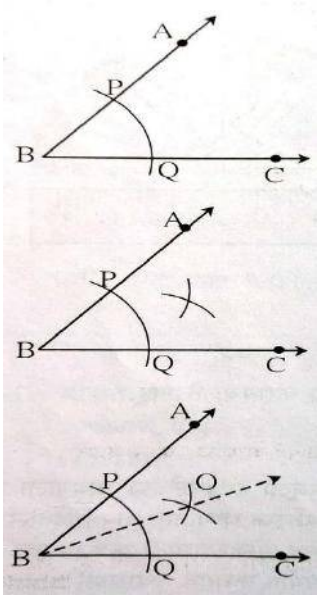
Name of Angle	Measure of Angle	Figure
Zero Angle	0^0	
Acute Angle	Greater than 0^0but less than 90^0	
Right Angle	90^0	
Obtuse Angle	Greater than 90^0 but less than 180^0	
Straight Angle	180^0	
Reflex Angle	Greater than180^0 but less than 360^0	
Full or Complete Angle	360^0	

Geometrical Instruments

Instruments	Pictures	Use
Scale/Ruler		To measure the length of a line segment.
Protractor		To measure an angle.
Compass		To draw a circle.
Set Squares		To draw the angles of measure 90^0, 30^0, 60^0, 45^0.
Divider		To measure the distance between two point. (A Scale is needed with divider.)

Let's practice. 

To draw an angle bisector using a compass.



Draw an angle∠ ABC of any measure.

- Place the point of a compass on point B with any convenient distance.
  Draw an arc to cut rays BA and BC.
  Name the points of intersection as P and Q.

- Place the point of a compass on point P taking convenient distance draw an arc inside the angle.Using the same distance draw another arc inside the angle from the point Q to cut the previous arc.Name the point of intersection as point O. Now draw ray BO.
  Ray BO is the bisector of ∠ ABC.

Let's try:

- ✓ The measures of angles are given below.Divide the angles according their measures.
  (45^0, 155^0, 206^0, 321^0, 90^0, 0^0, 255^0, 180^0, 67^0, 360^0, 342^0, 89^0, 240^0, 75^0, 215^0, 148^0, 120^0, 122^0, 1^0, 30^0, 200^0)

Name of Angle	Measure of Angle
Zero Angle	
Acute Angle	
Right Angle	
Obtuse Angle	
Straight Angle	
Reflex Angle	
Full or Complete Angle	

- ✓
- ✓ Use the proper geometrical instruments to construct the following angles. Use the compass and the ruler to bisect them.
  1) 70^0 2) 90^0 3) 120^0 4) 50^0 5) 100^0

ICT tools (Links)

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Now I know :

I can identify the types of angles and classify them.

I know the uses of the instruments in the compass box.

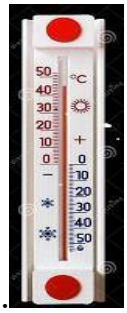
Area- Number Work **Unit : Integers**
Sub Unit–Introduction of Integers **Day : 4th**

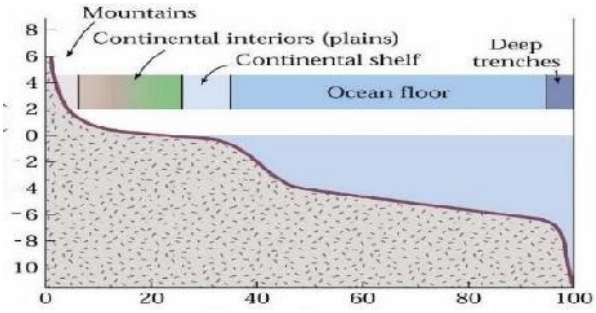
Learning Outcome- : Students solve the examples of addition and subtraction of integers.

Let's learn : 

- We have to count objects in order to find out the answer to 'How many?'The numbers 1,2,3,4…. That we have used for counting are called natural numbers.
  Natural Numbers – 1,2,3,4,5,6,7,8,9……
- The set of all natural numbers together with zero are called whole numbers.
  The numbers less than zero and with – sign are called negative numbers.
- When we put a minus sign (-) before any number the number obtained is lsss than zero..
- On the thermometer there are increasing numbers like 1,2,3…above zero, these numbers are called positive numbers.
- On the thermometer there are decreasing numbers like -1,-2,-3…below zero, these numbers are called negative numbers.

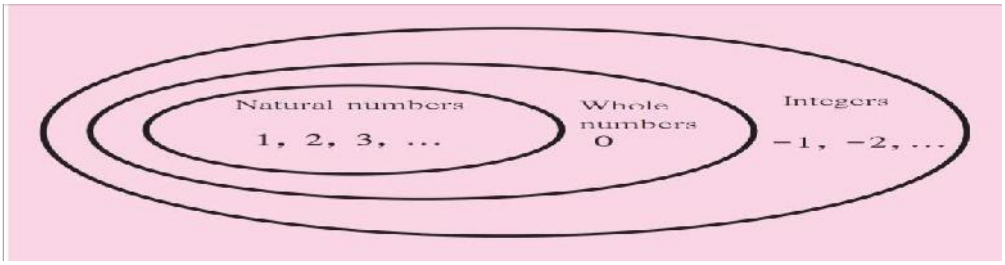




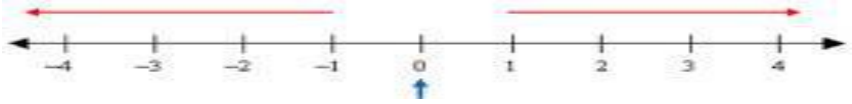


Height of a hill is shown by positive number and depth is shown using negative numbers.

- **Positive numbers zero and negative numbers together form a group of numbers called the group of integers**.



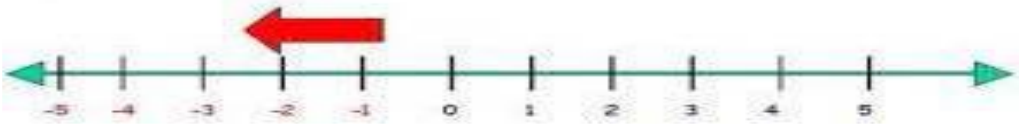
Positive numbers are marked on the right of zero on the number line.
Positive numbers and negative numbers are on the opposite Sides of zero on the number line.



Let's practice.

Ex. No 1. In a lift, the groundfloor is numbered 0 (zero) while the floors below the ground are numbered -1, -2.

Ex. No 2 . Show the numbers -3 and +2 on the numberline.



Let' try.

Q No 1 Classify the following numbers as positive numbers and negative numbers.

-24, +5, +32, -15, -8, +1, +3, -12, -6, +10, -49

Positive numbers-.....**.....**.....

Negative numbers.–.....

Q No 2. Write the numbers in the following examples using the proper signs.

1. **The height of Kalsubai, heighest peak in Maharashtra, is 1646 metres.**

Ans-.....

2. **A kite is flying at a distance of 120 metres from the ground.**

Ans -.....

3. A tunnel is at a depth of 2 metres under the ground.

Ans - .....

4. A bird sitting on the 35 metres high temple.

Ans -.....

ICT tools(Links)

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Now I know: 

I can classify the given numbers into positive and negative numbers.

I know what is meant by integers.

I can use the signs for the numbers in the examples.

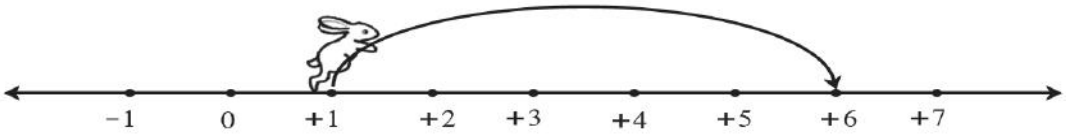
Area-Number Work **Unit- Integer**

Sub Unit – Addition of Integers **Day – 5th**

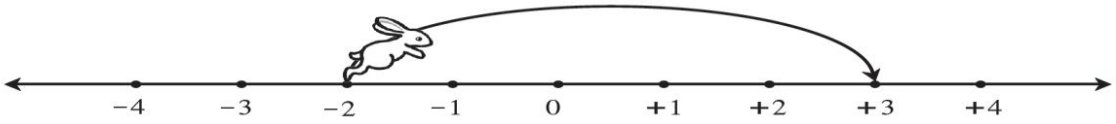
Learning Outcome- : The learner solves problems involving addition and subtraction of integers.

Let's learn : 

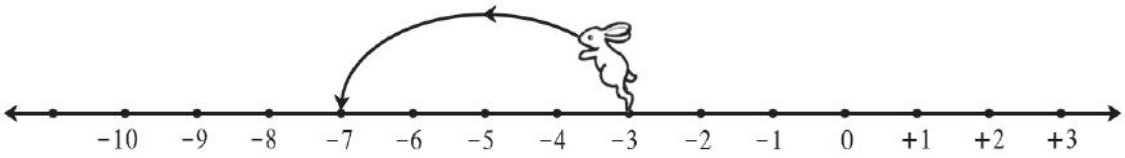
- ✓ **To add a positive number to the given number, we move that many units to the right on the number line from the given number.**
  1+5 = (+1) + (+5) = +6



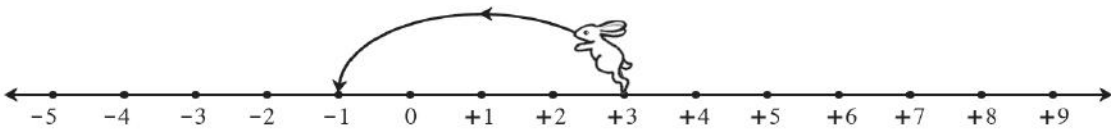
(-2) + (+5) = +3



- ✓ **To add a negative number to the given number, we move that many units to the left on the number line from the given number.**
  (-3) + (-4) = -7

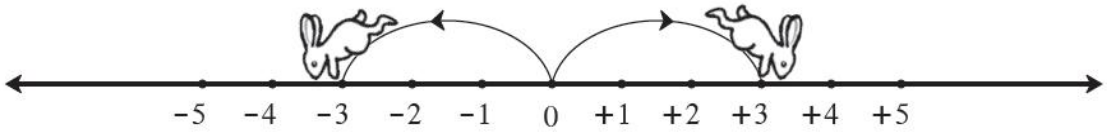


(+3) + (-4) = -1



- **i.e. We move backward on the number line which means we subtract.**
- **The amount we have or the amount we get is shown as a positive number. The amount we borrow or we spend is shown as a negative number.**
- **Opposite numbers are at the same distance from zero but in the opposite direction.**

- **The sum of two opposite numbers is zero.**



(+3) + (-3) = (0)

Let's Practice

Ex No 1: I have 7 counters**,** that is I have number +7**.** I won 3 counters in the game.

That number is +3. Now I have 10 counters in all.

(+**7**) + (+3) = (+**10**)

Ex No 2: Umar borrowed 3 rupees from Suman and 5 rupees from Raju to buy a pen**..**

He borrowed 3 rupees from Suman. That number is -3
He borrowed 5 rupees from Raju. That number is -5
(-3) + (-5) = (-8)
Total debt of Umar for pen is **(-8)**

Ex No 3Rohan borrowed 8 rupees from his friend to buy a pen. His mother gave him 6 rupees to buy sweets. Rohan repaid 6 rupees to his friend.

Rohan got money from his mother (+6)
He borrowed money from friend **(-8)**
He repaid money to his friend **+(+6)**
(-8) +(+6)= (-2)
Still Rohan owes 2 rupees to his friend.

Ex No 4:Rinku has 10 rupees.She spent 6rupees for buying sweets.

Rinku has 10 rupees = (+10)
She spent for sweets = (-6)
(+10)+ (-6)= (+4)

Remember.....

1. When adding integers with the same signs, ignore the signs and add the numbers. Then give the common sign to their sum.

2. When adding integers with different signs, ignore the signs and subtract the smaller number from the bigger one. Then give the common sign of the bigger number to the difference obtained.

Let's try: 

Write the opposite numbers of the following numbers.

Numbers	9	+14	- 25	- 32	+ 27	-16	- 38	30	81
Opposite Numbers									

Complete the following table.

+	7	3	+ 4	−2
− 6	7+(−6) =1			
3				
0				
−5				

ICT tools  **(Links)**

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Now I know: 

I can add and subtract the given positive and negative numbers.

I can tell the opposite numbers of the given numbers.

I can make the rules of the addition of integers.

Area-Number Work **Unit- Integers**

Sub Unit – Subtraction of Integers **Day – 6th**

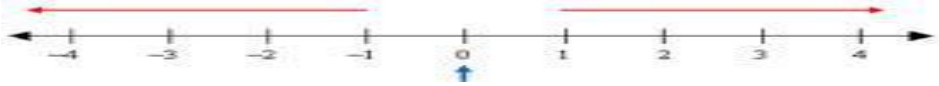
Learning Outcome- : The learner solves problems involving addition and subtraction of integers.

Let's learn : 

- ✓ **If we add 1 to any number on the number line, we get the next number on the right.**

-4 + 1 = -3 -1 + 1 = 0 0 + 1 = 1 1 + 1 = 2

- ✓ **On the number line, every number is smaller than the number on its immediate right by 1.**



-4 < -3 < -2 < -1 < 0 < 1 < 2 < 3 < 4

Suppose Ramesh has a debt of 8 rupees. He earns 5 rupees. He first pay off 5 rupees of his debt.

Thus his debt is reduced by the amount he earned.

The 5 rupees he earned reduced his debt by 5 rupees and are subtracted from his debt.

We can write this in mathematics.

Debt = -5 rupees debt reduced means – (-5) = (+5)

5 rupees debt reduced from the 8 rupees debt.

(-8) – (-5) = (-3) (-3) It means that 3 rupees debt remained.

To subtract a number from another number is to add its opposite number to the other number. For example : 6 – (- 3) = 6 + (+ 3)

Let's practice. 

1) (+7) – (-3)
= (+7) +3
= +7 +3 = +10
2) (+3) – (+2)
= (+3) -2
=+3-2
=+1

3) (-9) – (-4)
= (-9) +4
=-9+4 = -5
4) (-4) – (-7)
= (-4) +7
= -4+7 =+3

Let's try. 

1. Write the proper signs >, <, = in the boxes below..

−4 ☐ 3	−5 ☐ −5	4 ☐ 3	−3 ☐ 3
0 ☐ 3	3 ☐ 3	3 ☐ 0	−4 ☐ −7
3 ☐ 9	59 ☐ −3	9 ☐ 3	−4 ☐ 9
−4 ☐ 13	0 ☐ −6	11 ☐ 11	+13 ☐ 13
−8 ☐ 3	13 ☐ 23	−6 ☐ +7	+7 ☐ −9

2. Subtract the numbers in the top row from the numbers in the first column and write the proper number in each empty box.

-	-3	0	5	4	-7	6	-2
7	7-(-3)=10						
-3							
6							
-5				- 5 - 4= -9			

ICT tools  **(Links)**

Now I know: 

I can subtract the given positive and negative numbers.

I can create the rules of the addition of integers.

Area-Operations on Numbers **Unit- Operations on Fractions**

Sub Unit - Introduction of Fractions **Day – 7th**

Learning Outcome- : The learner uses the fractions and decimals in different situations which involve money, length, temperature etc.

Let's learn : 

✓ **Observe the division of apples equally between two children.**

Apples	Children		
6	2		$6 \div 2 = 3$
4	2		$4 \div 2 = 2$
1	2		$1 \div 2 = \frac{1}{2}$
7	2		$7 \div 2 = \frac{7}{2}$

Ex. If 7 apples are divided equally between two people, how many will each one get?

Example : If 7 apples are divided equally between 2 people, how many will each one get?

$\frac{7}{2} = 7 \div 2$

Divisor $2\overline{)7}$ Dividend, Quotient 3, -6, Remainder 1

$\frac{7}{2} = 3\frac{1}{2}$

Each will get 3 full apples and $\frac{1}{2}$ apple.

❖ If we convert the improper fraction into a mixed number, the numerator of the fractional part is smaller than the denominator.

Let's practice.

✓ $2\frac{3}{5}$ **is a mixed number. Convert it into an improper fraction.**

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

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

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

$=\frac{13}{5}$

$2\frac{3}{5}=\frac{2\times5}{1\times5}+\frac{3}{5}$

$=\frac{2\times5+3}{5}$

$=\frac{13}{5}$

✓ $\frac{23}{7}$ **is a improper fraction. Convert it into a mixed number.**

$\frac{23}{7}= 23\div 7$

$\frac{23}{7}= 3\frac{2}{7}$

Divisor = 7
Dividend = 23
Quotient = 3
Remainder = 2

Let's try:

1. Convert into improper fractions.

i) $1\frac{3}{7}$ ii) $\mathbf{3}\frac{2}{4}$ iii) $5\frac{2}{6}$ iv) $9\frac{3}{5}$ v) $7\frac{1}{3}$

2. Convert into mixed numbers.

i) $\frac{22}{7}$ ii) $\frac{15}{6}$ iii) $\frac{11}{4}$ iv) $\frac{30}{8}$ v) $\frac{42}{13}$

3. Convert into the fractions.

i) If 27 chocolates are equally distributed among 6 children, how many chocolates will each child get?

ii) If a rope of 67 metres length is cut among 12 pieces, what will be the length of one piece?

ICT tools(Links)

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Now I know : 

Improper fractions can be converted into mixed numbers.
Mixed numbers can be converted into improper fractions.

Division can be done in the form of fractions.

Area-Operations on Numbers **Unit- Operations on Fractions**

Sub Unit – Addition and Subtraction of Mixed Number **Day- 8th**

Learning Outcome- : The learner uses the fractions and decimals in different situations which involve money, length, temperature etc.

Let's learn : 

Students we have learnt to convert improper fractions into mixed numbers.

Nowwe will learn to add and subtract the mixed numbers.

Observe the next example.

Let's learn the methods of addition and subtraction of mixed numbers.

Ex 1. $3\frac{1}{2} + 2\frac{1}{4}$

First add the integers and then add the fractions.

$3\frac{1}{2} + 2\frac{1}{4} = 3+2+\frac{1}{2} + \frac{1}{4}$

First equalize the denominators.

$$=5+\frac{1\times2}{2\times2} + \frac{1}{4}$$

$$= 5+\frac{2}{4} + \frac{1}{4}$$

$$= 5+\frac{3}{4} = 5\frac{3}{4}$$

Ex 2. $7\frac{3}{4} - 3\frac{1}{2}$

First subtract the integers and then subtract the fractions.

$7\frac{3}{4} - 3\frac{1}{2} = 7-3+\frac{3}{4} - \frac{1}{2}$

First equalize the denominators.

$$=4 +\frac{3}{4} - \frac{1}{2}$$

$$= 4+ \frac{3}{4} - \frac{1\times2}{2\times2}$$

$$= 4+ \frac{3}{4} - \frac{2}{4} = 4+ \frac{1}{4} = 4\frac{1}{4}$$

Let's practice. 

Add. Ex-1 $2\frac{5}{4}+4\frac{3}{2}$

Method 1

$2\frac{5}{4}+4\frac{1}{2}=(2+4)+\frac{5}{4}+\frac{1}{2}$

$=6+\frac{5}{4}+\frac{1\times2}{2\times2}=6+\frac{5}{4}+\frac{2}{4}$

$=6+\frac{5+2}{4}=6+\frac{7}{4}$

$=6+1+\frac{3}{4}\ =7\frac{3}{4}$

Method 2

$2\frac{5}{4}+4\frac{1}{2}=\frac{2\times4+5}{4}+\frac{4\times2+1}{2}$

$=\frac{13}{4}+\frac{9\times2}{2\times2}$

$=\frac{13}{4}+\frac{18}{4}$

$=\frac{31}{4}\ =7\frac{3}{4}$

वजाबाकी करा.

Subtract Ex. 1 $3\frac{4}{7}-2\frac{1}{9}$

Method 1

$3\frac{4}{7}-2\frac{1}{9}=(3-2)+(\frac{4}{7}-\frac{1}{9})$

$=1+\frac{4\times9}{7\times9}-\frac{1\times7}{9\times7}\ =1+\frac{36}{63}-\frac{7}{63}$

$=1+\frac{36-7}{63}=1+\frac{29}{63}\ =\ 1\frac{29}{63}$

Method 2

$3\frac{4}{7}-2\frac{1}{9}=\frac{3\times7+4}{7}-\frac{2\times9+1}{9}$

$=\frac{25}{7}-\frac{19}{9}=\frac{25\times9}{7\times9}-\frac{19\times7}{9\times7}$

$=\frac{225}{63}-\frac{133}{63}=\frac{225-133}{63}=\frac{92}{63}=\ 1\frac{29}{63}$

Let's try : 

1.Add.

i) $1\frac{3}{7}+2\frac{5}{7}$ ii) $2\frac{3}{7}+2\frac{5}{4}$ iii) $1\frac{3}{5}+2\frac{5}{3}$ iv) $3\frac{3}{5}+2\frac{5}{3}$ v) $1\frac{3}{9}+2\frac{1}{5}$

vi) $7\frac{1}{12}+3\frac{5}{3}$

2. Subtract

i) $2\frac{5}{7}-1\frac{3}{7}$ ii) $4\frac{5}{7}-2\frac{3}{5}$ **iii)** $9\frac{5}{3}-2\frac{3}{5}$

iv) $3\frac{4}{7}-2\frac{1}{3}$ v) $8\frac{3}{9}-2\frac{1}{5}$ v**i)** $9\frac{5}{3}-2\frac{3}{5}$

3. Solve the problems

1) **To complete some work together Manas and Rajan spent** $2\frac{1}{2}$ **and** $3\frac{1}{2}$ **hours time respectively, How much total time did they spend**?

2) **Rayaba planted sugarcane in** $\frac{4}{7}$ **part of his farm, brinjals in** $\frac{1}{3}$ **part and melons in the remaining part. Then how much of his farm did he plant brinjals?**

3) Raju stored $\frac{3}{5}$ **quintals of onions in the store room. Ganpat also stored** $\frac{1}{4}$ **quintals of onions in the same store room. After that Ramakant sold** $\frac{3}{10}$ **quintals of onions from the same store room to the merchant. If the maximum capacity of the store room is 400 quintals then how many quintals onions is remaining in the store room?**



Now I know:

I can add the mixed numbers.
I can subtract the mixed numbers.
I can solve the word problems of the mixed numbers.

Area-Operations on Numbers **Unit- Operations on Fractions**

Sub Unit - Show the fractions on the number line. **Day- 9th**

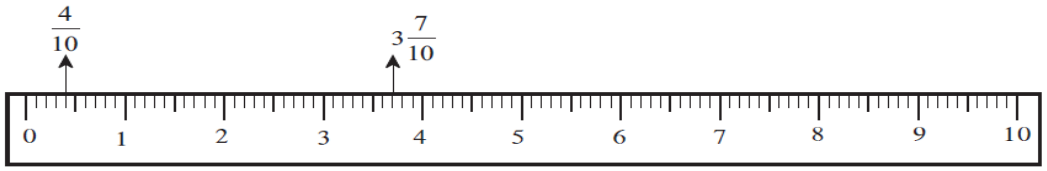
Learning Outcome- : The learner uses the fractions and decimals in different situations which involve money, length, temperature etc.

Let's learn : 

✓ Think about it.

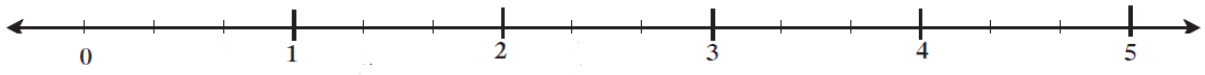
$3\frac{7}{10}$, $\frac{4}{10}$ Can we mark these fractions on the number line?

It is easy to mark the fractions $\frac{4}{10}$ and $3\frac{7}{10}$ on the number line because on the scale, every centimetre is divided into 10 equql parts. In the first unit, the fourth mark from zero shows the fraction $\frac{4}{10}$. The 7th mark of the 10 equal parts after 3, between the numbers 3 and 4, shows the fraction $3\frac{7}{10}$.



Let's practice 

Ex No 1 . Show the fractions $\frac{1}{3}$, $\frac{4}{3}$, $\frac{9}{3}$ on the number line.

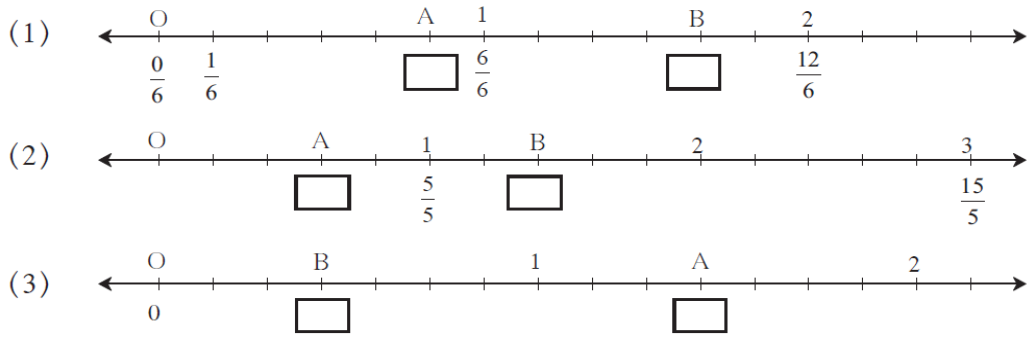


Ex No 2 . Draw an number line and show the fractions $\frac{5}{7}$, $\frac{14}{7}$, $\frac{15}{7}$ on the number line.

Remember..... If a fraction has to be shown on a number line, every unit on the number line must be divided into as many equal parts as the denominator of the fractions.

Let's try :

1) What fractions do the points A and B show on the number lines below?



2) Show the following fractions on the number line.

i) $\frac{5}{7}, \frac{9}{7}, 3\frac{2}{7}, \frac{15}{7}$

ii) $\frac{2}{5}, \frac{7}{5}, \frac{17}{5}, 2\frac{4}{5}$

If we want to show the fractions $\frac{5}{7}, \frac{5}{7}, \frac{5}{7}$ how big should the unit be?And how many parts the units on number line equally divided?

ICT tools (Links)

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Now I know

Any given fraction can be marked/shown on the number line.

Any given mixed number can be marked/shown on the number line

Name of field– Operations on Numbers **Unit– Operation on fraction**

Subunit- Multiplactive inverse of fraction **Day– 10th**

Learning Outcome – Uses practical fractions and decimal fractions in situations involving money, length, temperature, etc. in daily life

Let's understand a little bit



Example.1. $\frac{1}{4} \times 8 =$



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

$= 2$

To complete whole bhakari needs 4 parts of $\frac{1}{4}$ 4

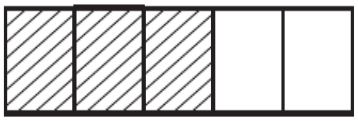
Example.2. $\frac{2}{3} \times 3 = 2$

Example 3. $\frac{1}{5} \times 10 = 2$

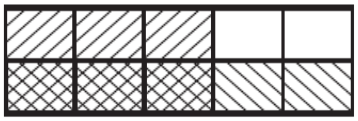
See how the multiplication $\frac{3}{5} \times \frac{1}{2}$ is done with the help of the rectangular strip



- Draw vertical lines to divide a rectangular strip into 5 equal parts.



- Shade the part that shows the fraction $\frac{3}{5}$



- We have to show $\frac{1}{2}$ of $\frac{3}{5}$ So, draw a horizontal line to divide the strip into two Shade one of the two horizontal parts in a different way.

When we divided the strip into 2 equal parts, we also divided the $\frac{3}{5}$ part into 2 equal parts. To take one of those parts, consider the parts shaded twice.

We have 10 equal boxes. Of these, 3 boxes have been shaded twice. These boxes, i.e., the part shaded twice can be written as the fraction $\frac{3}{10}$.

$\frac{3}{5} \times \frac{1}{2} = \frac{3}{10}$

We can carry out the above multiplication like this : $\frac{3}{5} \times \frac{1}{2} = \frac{3\times1}{5\times2} = \frac{3}{10}$

When multiplying two fractions, the product of the numerators is write

> When multiplying two fractions, the product of the numerators is written in the numerator and that of the denominators, in the denominator.

Let's practice



Example.1. Radha bought 56 kg rice from the market . Out of that rice she Used $\frac{2}{7}$ kg, then find how much rice she used?

here we find $\frac{2}{7}$ of 56

$\therefore \frac{56}{1} \times \frac{2}{7} = \frac{56 \times 2}{1 \times 7}$

$= \frac{7 \times 8 \times 2}{7}$

$= 8 \times 2$

$= 16$

Radha used 16 kg rice.

Let's solve it



1) $\frac{1}{3} \times 3$ 2) $\frac{2}{8} \times 4$ 3) $\frac{3}{9} \times 6$

4) $\frac{9}{7} \times \frac{7}{8}$ 5) $\frac{6}{17} \times \frac{3}{2}$ 6) $\frac{5}{9} \times \frac{4}{9} =$

1. Out of 60 students in std 6 th, $\frac{1}{3}$ students pass in first class, then how many students pass in first class?

2. 4/9 of the total troops in the army are guarding the northern border. About a quarter of these troops are working for defense in the northeast. If the number of troops on the northern border is 540,000, what is the number of troops working for defense in the northeast?

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little help (Link)

I understand this:

How to do the multiplacition of fractions .

Name of field– Operations on Numbers **Unit– Operation on fraction**

Subunit- Multiplactive inverse of fraction **Day– 11th**



Learning Outcome – Uses practical fractions and decimal fractions in situations involving money, length, temperature, etc. in daily life

1. $\frac{1}{3} \times \frac{3}{1} = 1$
2. $\frac{6}{7} \times \frac{7}{6} = 1$
3. $4 \times \frac{1}{4} = 1$

When the product of two numbers is 1, each of the numbers is the multiplicative inverse or reciprocal of the other.

Let's practice 

Example.1. $\frac{\mathbf{5}}{\mathbf{6}} \times \frac{\mathbf{6}}{\mathbf{5}} = \frac{30}{30} = 1$

Example.2. $\frac{\mathbf{3}}{\mathbf{2}} \times \frac{\mathbf{2}}{\mathbf{3}} = \frac{6}{6} = 1$

Example.3. $\frac{\mathbf{61}}{\mathbf{3}} \times \frac{\mathbf{3}}{\mathbf{61}} = \frac{183}{183} = \mathbf{1}$

Example.4. $\frac{\mathbf{15}}{\mathbf{6}} \times \frac{\mathbf{6}}{\mathbf{15}} = \frac{\mathbf{90}}{\mathbf{90}} = 1$

Example.5. $4 \times \frac{\mathbf{1}}{\mathbf{4}} = \frac{\mathbf{4}}{\mathbf{4}} = 1$

A fraction is multiplied by another fraction obtained by exchanging the numerator and denominator of the first fraction. Their product is 1. Each fraction of such a pair is called the reciprocal or multiplicative inverse of the other.

Let's solve it 

1. Write the reciprocals of the following numbers.

i) 7 ii) $\frac{7}{5}$ iii) $\frac{11}{9}$ iv) 3 v) $\frac{1}{3}$

vi) 1 vii) $\frac{17}{6}$ viii) $\frac{19}{6}$ ix) 0 x) $\frac{7}{5}$

I understand this: 

Understand concept of multiplicative inverse .

Tells multiplicative inverse of given numbers .

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Name of field– Operations on Numbers

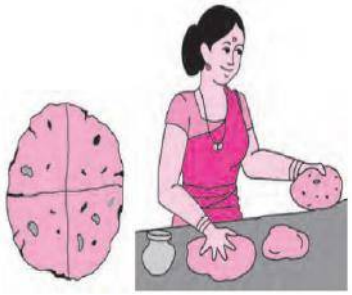
Unit– Operation on fraction Sub unit- Division of fraction Day– 12th

Learning Outcome – Uses common fractions and decimal fractions in daily life.

Let's understand a little bit



Example : Here is one bhakari. If each one is to be given a quarter of it, how many will get a share?



As we can see in the picture, we can get 4 quarters from one bhakari, so it will be enough for four people.

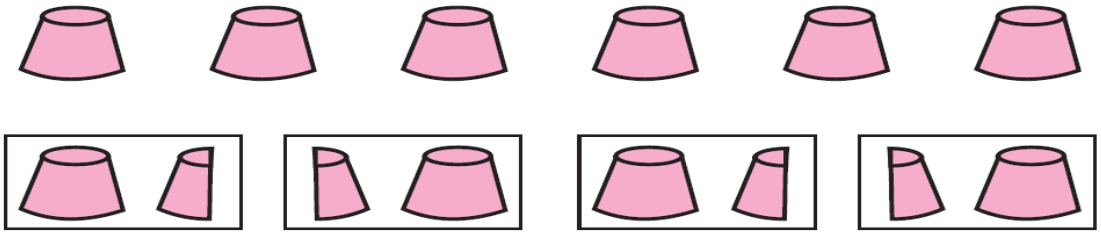
A quarter means $\frac{1}{4}$ We can write this as $4 \times \frac{1}{4} = 1$

Now, we shall convert the division of a fraction into a multiplication.

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

Example : There are 6 blocks of jaggery, each of one kilogram. If one family requires one and a half kg jaggery every month, for how many families will these blocks sufficient ?

One and a half is $1 + \frac{1}{2} = \frac{3}{2}$



Let us divide to see how many families can share the jaggery.

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

$= \frac{6}{1} \times \frac{2}{3} = 4$ Therefore, 6 blocks will sutfficent for 4 families.

Let's practice



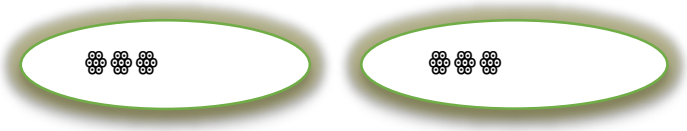
Example : $24 \div 6 = \frac{24}{1} \times \frac{1}{6} = 4$

Example :. $\frac{7}{9} \div \frac{5}{8} = \frac{7}{9} \times \frac{8}{5} = \frac{7 \times 8}{9 \times 5} = \frac{56}{45} = 1\frac{11}{45}$

To divide a number by a fraction is to multiply it by the reciprocal

Let's solve it

Draw the pictures observing the division given in figures.

$6 \div 3$  2

$6 \div 1$

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

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

Solve

1) $\frac{1}{3} \div \frac{1}{3}$ 2) $\frac{2}{8} \div 4$ 3) $\frac{3}{9} \div \frac{1}{3}$

1) There were 420 students participating in the Swachh Bharat campaign. They cleaned $\frac{42}{75}$part of the town, Sevagram. What part of Sevagram did each student clean if the work was equally shared by all?

Help (link)

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I understand this:

Division of fractions

Solves word problems of fractions.

Name of field– Operations on Numbers **Unit– Operation on fraction**
Subunit- Decimal fraction **Day– 13th**

Learning Outcome– Uses practical fractions and decimal fractions in situations involving money, length, temperature, etc. in daily life

Let's understand a little bit 

If one is taken ten times the ten's or one is taken ten times then ten's and one is taken hundred times then it becomes hundredth.

And one part out of ten equal parts becomes $\frac{1}{10} = 0.1$

Also one part out of 100 equal parts becomes $\frac{1}{100} = 0.01$

Also one part out of 1000 equal parts becomes $\frac{1}{1000} = 0.001$

This shows decimal fractions

The fractions whose denominator is 10,100,1000,…. or in the multiple of ten these fractions are called decimal fractions.

As. $\frac{7}{10}, \frac{2}{100}, \frac{27}{1000}, \ldots$

After writing the integer (·) this symbol is given. This symbol is called decimal.

Now see the table given below and understand the place values 325.678

Hundreds	Tens	Units	Tenths	Hundredths	Thousands
100	10	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{100}$
3	2	5	6	7	8

Let's practice 

As $8\frac{5}{10} = 8 + 0.5 = 8.5$

$12\frac{6}{10} = 12.6$ $\frac{7}{10} = 0.7$ $1\frac{4}{10} = 1.4$

As $2\frac{7}{100} = 2 + 0.07 = 2.07$

$6\frac{5}{100} = 6.05$ $5\frac{13}{100} = 5.13$ $7\frac{5}{100} = 7.05$

Let's solve it 

1. Convert into improper fractions.

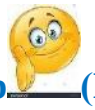
i) $9\frac{6}{10}$ ii) $3\frac{5}{10}$ iii) $4\frac{52}{100}$ iv) $9\frac{1}{100}$

v) $\frac{30}{100}$ vi) $21\frac{2}{10}$ vii) $7\frac{3}{100}$ viii) $14\frac{25}{1000}$

2. Read the given fractions and , write the place value of each of the digits in the number

i) 3.23 ii) 54.45 iii) 49.03 iv) 0.47 v) 5.3

vi) 16.73 vii) 1.003 viii) 123.024

A little help (Link) 

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I understand this: 

- Understood decimal fraction
- How to Converts decimal fraction into proper fractio
- Finds place value of decimal fraction.

Name of field– Operations on numbers
Unit- Operations on fractions
Subunit - Showing decimal fractions on number line. **Day- 14th**

Let's understand a little bit

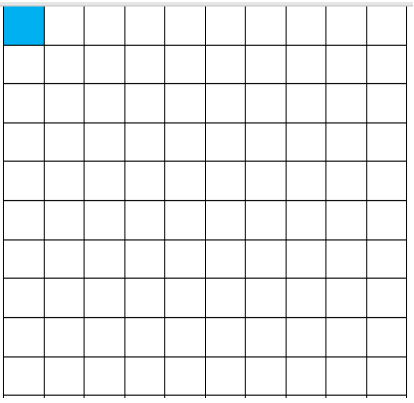


Observe the graph

On graph taking 1 square cm unit we

can show $\frac{1}{100}$, square cm taking

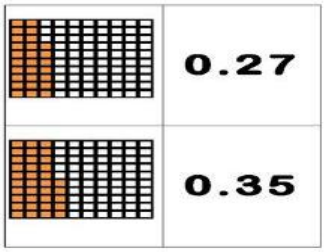
$10 \times 10 = 100$



Using graph paper show the fraction $\frac{1}{10}$

Let's practice



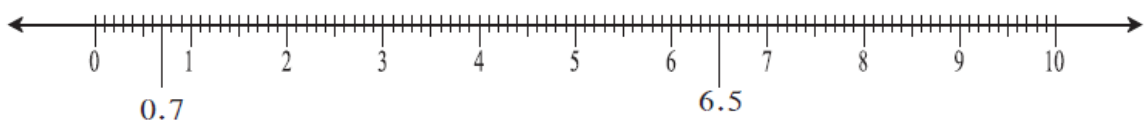


and $\frac{35}{100}$ on graph paper

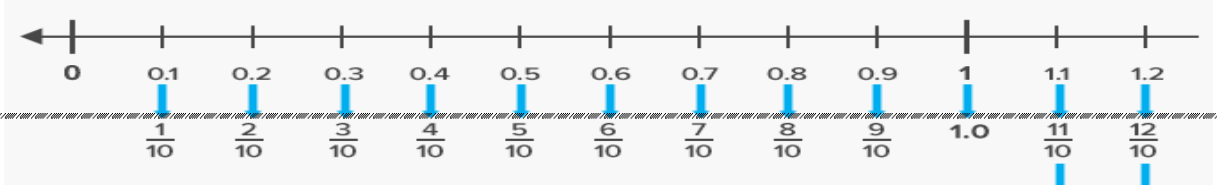
imal fractions using

a number line

Observe how the decimal fractions are shown on number line



Observe how the decimal fractions are shown on number line



Let's solve it

Example.1.Show the decimal fractions on number line

2.7, 0.9, 7.7, 8.2, 9.5, 6.3



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A little help (Link)

I understand this:

- How to Shows the decimal fractions on graph paper .
- How to Shows the decimal fractions on number line.

Unit test no .1 Day 15th

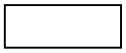
Std: Seven Subject : Maths

Name of Student :- ..... Marks : 15

Note 1. All questions are compulsory.

2. Numbers on right side indicate marks

Q.1. Match the pairs. (2)

	Figure	name of figure
1)		Ray
2)		Segment
3)		Line
4)		Plane

Q.2. Write the opposite numbers. (3)

-48 , 15, - 99

Q..3. Solve the following questions. (Each carry 2 marks) (10)

1. Classify the given numbers into positive or negative.

   -5, 9, −2, 23

2. Show the given numbers on number line.

   3.5, 0.8, 1.9, 4.2

3. Add.

   i) 9+(−4) ii) $5\frac{1}{2}+3\frac{2}{5}$

4. Convert the given fractions into decimal fractions.

   i) $\frac{36}{40}$ ii) $\frac{9}{8}$

5. Using compass box .draw angle of measure 60 and bisect it.

Name of field– Operations on numbers
Unit- Operations on fractions
Subunit- Conversion of proper fractions into decimal

Day- 16th

Learning outcome– Uses practical fractions and decimal fractions in situations involving money, length, temperature, etc. in daily life

Let's understand a little bit 

- ✓ If denominator of common fraction is 10, 100, 1000 then it can be written in the form of decimal fraction

Examples $\frac{6}{10} = 0.6$ $\frac{12}{10} = 1.2$ $\frac{9}{10} = 0.9$ $\frac{1}{10} = 0.1$

- ✓ The fractions whose denominator is not in the multiple of 10 these fractions can be written in the form of decimal fractions

$\frac{2}{5} = \frac{2\times2}{5\times2} = \frac{4}{10} = 0.4$ $\frac{1}{2} = \frac{1\times5}{2\times5} = \frac{5}{10} = 0.5$

- ✓ If digits in the numerator are more than the zeros in the denominator then leaving digits number of zeros from right side the decimal is given.

i) $\frac{123}{10} = 12.3$ ii) $\frac{45602}{100} = 456.02$ iii) $\frac{3576}{1000} = 3.576$

- ✓ If digits in the numerator are equal to zeros in the denominator then the decimal is given before the number and zero is written in the place of integer.

i) $\frac{7}{10} = 0.7$ ii) $\frac{27}{100} = 0.27$ iii) ii) $\frac{576}{1000} = 0.576$

- ✓ If digits in the numerator are less than the zeros in the denominator then some zeros are written number of zeros and digits are equalise and decimal is given before the number zero is written in the place of integer.

i) $\frac{7}{100} = \frac{07}{100} = 0.007$ ii) $\frac{5}{1000} = \frac{005}{100} = 0.005$

This is how we convert a decimal fraction into a common fraction. In the numerator, we write the number we get by ignoring the decimal point. In the denominator, we write 1 followed by as many zeros as there are decimal places in the given number.

Let's practice 

i) $26.4 = \frac{264}{10}$ ii) $0.04 = \frac{4}{100}$ iii) $19.315 = \frac{19315}{1000}$

Let's solve it 

1. Convert the decimal fractions into common fractions .

i)34.23 ii) 44.15 iii) 29.03 iv) 0.37

v) 15.3 vi) 6.76 vii) 1.009 viii) 323.004

2. Convert the common fractions into decimal fractions.

i) $\frac{3}{4}$ ii) $\frac{4}{5}$ iii) $\frac{9}{8}$ iv) $\frac{16}{20}$

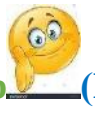
v) $\frac{32}{40}$ vi) $\frac{7}{25}$ vii) $\frac{19}{200}$ vii) $\frac{13}{50}$

3. Write the proper number in the empty boxes.

i) $\frac{3}{5} = \frac{3 \times \square}{5 \times \square} = \frac{\square}{10} = \square$ ii) $\frac{25}{8} = \frac{25 \times \square}{8 \times 125} = \frac{\square}{1000} = \square$

iii) $\frac{21}{2} = \frac{21 \times \square}{2 \times \square} = \frac{\square}{10} = \square$ iv) $\frac{22}{20} = \frac{22 \times \square}{20 \times \square} = \frac{\square}{100} = \square$

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A Little help  (Link)

I understand this: 

Converts proper fractions into decimal fractions .

Converts decimal fractions into proper fractions .

Name of field– Operations on numbers
Unit- Operations on fractions Subunit- Conversion of proper fractions in decimal fraction **Day– 17th**

Learning outcome- Uses practical fractions and decimal fractions in situations involving money, length, temperature, etc. in daily life

Let's understand a little bit 

Example 1:- For the school students Sudha gave 3 litre 150 ml, Radha gave 5 litre 200 ml and Sampat gave 4 litre 300 ml milk then how many milk collected the school?

In this example,

Milk from Sudha=3 litre150 ml
Milk from Radha=5litre200ml
Milk from Sampat=4litre300ml
= 5 लिटर 200 मिली
संपतने दिलेले दुध =4 लिटर 300 मिली

3.150litre
\+ 5.200litre
\+ 4.300litre
12.650 litre

Observe similarity in the addition of integers and decimal fraction .

We write digits one below the other according to their place values while adding whole numbers. We do the same thing here. Remember that while writing down an addition problem and the total, the decimal points should always be written one below the other.

Let's practice 

Nandu went to a shop to buy a pen, notebook, eraser and paintbox. The shopkeeper told him the prices. A pen costs four and a half rupees, an eraser one and a half, a notebook six and a half and a paintbox twenty-five rupees and fifty paise. Nandu bought one of each article. Prepare his bill.



STUDENT'S STATIONARY

No.24 **Date .25.8.2020**

No.	NAME	Quantity	COST
1	Pen	1	4.50
2	Note book	1	6.50
3	Ereaser	1	1.50
4	Color box	1	25.50
	Total		38.00



Let's solve it

1. Solve .

   i) 154.1 + 27.159 ii) 62 + 18.159 iii) 70+26.5+3.040

   i) 40.1 + 29.07 ii) 12.01 + 0.109 iii) 5.07+18+3.789

2. The length of rectangular garden 7 m 23 cm and breadth is 4 m 4 cm then find the perimeter?

3. Kapil travelled 29.450 km by cycle, 32.050 km motorcycle and 50 km by bus, then how many km Kapil travel ?



A little help (Link)

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I understand this:

How to add decimal fractions properly .

Solves word problems using addition of decimal fractions .

Name of field– Operations on numbers Unit- Operations on fractions
Subunit- Conversion of proper fractions in decimal fractions

Day– 18th

Learning outcome– Uses practical fractions and decimal fractions in situations involving money, length, temperature, etc. in daily life

Let's understand a little bit 

Students , we have already seen how to add decimal fraction.

Now we will see how the subs traction is done in decimal fractions .

When we substract whole numbers first we substract unit's places and then ten's places and so on . The same method is used in the substraction of decimal fractions. But the decimal point must come in same place.

Let's practice 

1. Length of Ramu's pencil is 10.7 cm and length of Mandar's pencil is 5.4 cm . Then Ramu's pencil is how much larger than Mandar's pencil?

In this example to find the difference between the lengths of pencils we do substraction.

Arrange the decimal fraction as shown below

```
  0 10
  1 Ø . 7
- 5 . 4
-----------
  5 . 3
```

Ramu's pencil is 5.3 cm larger than Mandar's pencil

Solve:- 192.53 - 62.70

```
    8  11  15
  1 9  2 . 5  3
- 6  2 . 7  0
----------------
  1 2  9 . 8  3
```

Let's solve it 

Subtract the following .

i) 76.56 – 12.457 ii) 63 – 20.124 iii) 452 – 65.45 iv) 200.35 – 14.256

v) 140.61 – 12.007 vi) 30 – 12.005 vii) 200.005 – 56.12 viii) 108.56 – 62.87

2) Rajan was travelling by car with speed 85.9 km/ hr.If the speed limit of car on the road is 55 km/ hr. Find how much speed should be reduced by Rajan to obey as per the rule of speed of car on the rule?

3) Karishama is travlling 2,54,000 km from A to B.Out of that she completed 168.63 km .Then find the reaming distance of her travelling?

A little help  (Link)

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I understand this: 

Subtract the decimal fractions .

Name of field– Operations on numbers Unit- Operations on fractions

Subunit- Conversion of proper fractions in decimal fractions Day– 19th

Learning outcome – Uses common fractions and decimal fractions in daily life

Let's understand a little bit 

Students , we have already seen how to add and subtract decimal fraction.

Now we will see how the multiplication is done in decimal fractions .

Example . 1 . 6.5×7

In this example 6.5 is a decimal fraction . Convert it into proper fraction .

$$\therefore 6.5 \times 7 = \frac{65}{10} \times \frac{7}{1}$$

$$= \frac{65}{10} \times \frac{7}{1}$$

$$= \frac{65 \times 7}{10 \times 1}$$

$$\therefore 6.5 \times 7 = \frac{455}{10}$$

$$\therefore 6.5 \times 7 = 45.5$$

Example .2 . 2.7×8

We solve this example in another method .

Multiply the numbers without using decimal point

$$27 \times 8 = 216$$

But in the example decimal point is given

$$2.7 \times 8$$

To write the proper answer place decimal point after the digits which are given in the example

$$2.7 \times 8 = 21.6$$

Let's practice 

Example.1. The price of one box of medicine is rupees 73.57 . Rama wants to buy four and half box of medicine. Find the cost he should pay?

Method I

$73.57 \times 4.5 = ?$

$73.57 \times 4.5 = \frac{7357}{100} \times \frac{45}{10}$

$= \frac{331065}{1000}$

$= 331.065$

Method II

7357

× 45

331065

73.57

× 4.5

331.065

First, multiply ignoring the decimal point.

Then, in the product, starting from the units place, we count as many places as the total decimal places in the multiplicand and multiplier, and place the decimal point before them

Let's solve it 

Solve.

If $618.25 \times 15 = 927375$ then $61.825 \times 15 = ?$

If $405 \times 123 = 49815$ then $4.05 \times 1.23 = ?$

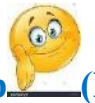
iii) If $170 \times 9 = 1530$ then $1.70 \times 0.9 = ?$

Multiply.

4.5 × 2.3 ii) 1.6 × 9 iii) 0.05 × 1.4 iv) 1.06 × 6

21.2 × 7 ii) 0.2 × 0.1 iii) 0.25 × 0.25 iv) 12.3 × .2

Gopi have 8.50 meter cloth. He made 55 masks from that cloth. Each mask requires 0 meter 20 cm cloth, then find remaining cloth.

A little help (Link) 

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Name of field– Operations on numbers Unit- Operations on fractions
Subunit-Conversion of proper fractions in decimal fractions Day– 20th

Learning outcome– Uses common fractions and decimal fractions in daily life

Let's understand a little bit 

Students , we have already seen how to add and subtract decimal fraction. Now we will see how the multiplication is done in decimal fractions .Now we will see how the division is done in decimal fractions.

$$6.9 \div 3$$

In the above example 6.9 is decimal fraction . We convert this into proper fraction

$$6.9 \div 3 = \frac{69}{10} \div \frac{3}{1}$$

But we know that division of two fractions means multiplication of first fraction and recipol of another fraction .

$$\therefore \frac{69}{10} \div \frac{3}{1} = \frac{69}{10} \times \frac{1}{3}$$
$$= \frac{69 \times 1}{10 \times 3}$$
$$= \frac{23}{10} = 2.3$$

Example . 2 . $2.7 \div 5$

In the above example 6.9 is decimal fraction . We convert this into proper fraction

$$\div 5 = \frac{\mathbf{27}}{\mathbf{10}} \div \frac{\mathbf{5}}{\mathbf{1}}$$

But we know that division of two fractions means multiplication of first fraction and recipol of another fraction .

$$\therefore \frac{27}{10} \div \frac{5}{1} = \frac{27}{10} \times \frac{1}{5}$$
$$= \frac{27 \times 1}{10 \times 5} = \frac{27}{50}$$

Here denominator is 50, convert it in the multiple as 100 . So we multiply numerator and denominator by 2

$$= \frac{27 \times 2}{50 \times 2} = \frac{54}{100}$$

Let's practice



E.g.1. $\frac{2}{7} \div \frac{3}{2} = \frac{2}{7} \text{ X } \frac{2}{3}$

$= \frac{2 \text{ x } 2}{7 \text{ x } 3}$ $= \frac{4}{21}$

Dividing a number by a fraction means multiplying that number by the

E.g. 2. $5.2 \div 4 = ?$

$= \frac{52}{10} \div \frac{4}{1}$ $= \frac{52}{10} \text{ X } \frac{1}{4}$ $= \frac{52 \text{ x } 1}{10 \text{ x } 4}$

$\therefore 5.2 \div 4 = \frac{13}{10}$ $= 1.3$

E.g. 3 $6.4 \div 1.6 = ?$

$\frac{64}{10} \div \frac{16}{10} = \frac{64}{10} \text{ X } \frac{10}{16} = 4$

Let's try to solve it



1. Divide the following.

   i) 4.8 ÷ 2 ii) 2.25 ÷ 5 iii) 32.6 ÷ 2 iv) 45.5 ÷ 25 v) 6.8 ÷ 3.4

2. The length of a road is 2km 400m. If trees are planted alongside the road at a distance of 4.8m, then how many trees will be required?
3. 20 kg mango box costs ₹625. What is the cost of 1 kg mangoes?

I understand



Decimal fractions can be divided

Unit: Statistics **Topic: Bar graph**

Sub topic: Read and interpret bar graph **Day: 21st**

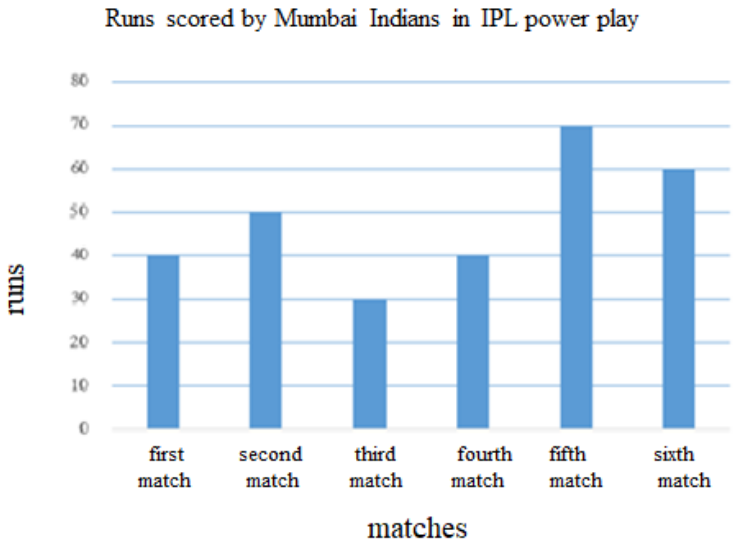
Study outcome –Read and interpret a bar graph

Let's understand a little bit 

Students you all like to watch the IPL. So today we are going to study a bar graph based on IPL. The following graph shows us the number of runs scored by Mumbai Indians during the IPL power play.

Let us now understand the bar graph.

1. Six matches are shown in sequence at equal distances on the horizontal axis



   (X axis).
2. The runs in the power play of each match are shown at equal distances on the vertical axis (Y axis).

Runs scored in every match during the power play is shown by each bar. For example, the height of first bar is 40. It means runs scored by Mumbai Indians in the first match is 40. In the same way the height of the other bars shows us the runs scored in other matches.

3. Six matches are shown in sequence at equal distances on the horizontal axis (X axis).
4. The runs in the power play of each match are shown at equal distances on the vertical axis (Y axis).
5. Runs scored in every match during the power play is shown by each bar. For example, the height of first bar is 40. It means runs scored by Mumbai Indians in the first match is 40. In the same way the height of the other bars shows us the runs scored in other matches.

From the above column ,you can see the information in the table below.

Match	First match	Second match	Third match	Fourth match	Fifth match	Sixth match
Score in power play	40	50	30	40	70	60

Let's practice 

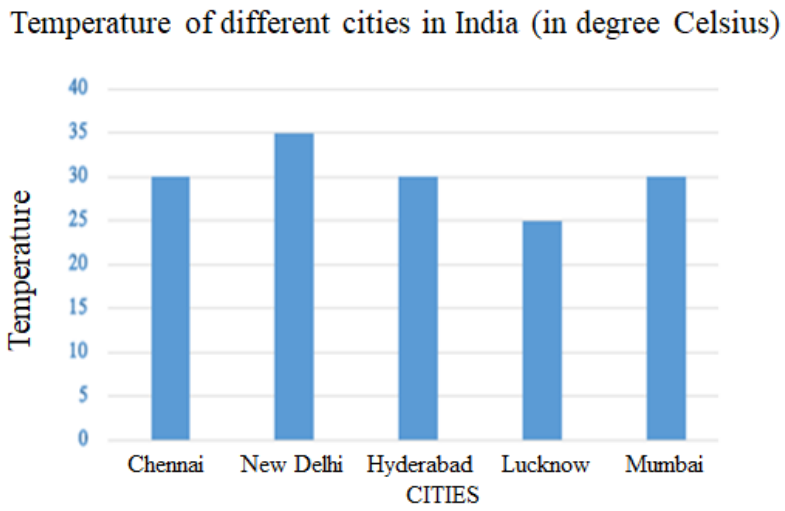
Now answer the following questions by observing the section in the above bar graph.

1. What information is displayed on the vertical line (Y axis)?
2. What information is displayed on the horizontal line (on the X axis)?
3. In which match did Mumbai Indians score the most runs?
4. In which match have Mumbai Indians scored the least number of runs?
5. In which two matches have the score been equal? How much is it?
6. In which match has 60 runs been scored?
7. What is the total number of runs scored in power play in all the six matches?
8. What is the difference between the highest score and the lowest score?

Write the answers to the above questions in your notebook and get it checked from your teachers or parents.

Let's try to solve it

Findtheanswerstothequestionsposedbythesectioninthefollowingcolumns.



1. What in formation does the above bar graph show?
2. What in formation is displayed on the vertical line (on they axis)?
3. What information is displayed on the horizontal line (on X axis)?
4. Which city has the highest temperature?
5. Which city has the lowest temperature? What is it?
6. Which 2 cities have the same temperature?
7. What is the temperature of Chennai?
8. What is the difference between highest temperature and lowest temperature?

By reading a bar graph questions based on it can be answered.

A little help (link)

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I understand

By reading a Bar graph questions based on it can be answered

Unit: Statistics **Topic: Bar graph**

Subtopic: Drawing a bar graph based on given information. **Day: 22nd**

Learning outcome – Draws simple graph using graph paper.



Let's understand little bit

Now, let us see how to draw a bar graph from the given information. Let us understand a one example for this.

E.g. The number of sixth grade students who are interested in various games is shown in the table below.

Name of the game	Cricket	Kho-Kho	Kabaddi	Football	Basketball
Numbers of students	6	5	3	4	2

Steps for drawing a graph -

1. First draw a vertical line on the left side of the graph paper and name it as Y axis.
2. Draw a horizontal line at the bottom of the graph and name it X axis.
3. Let's show the names of 5 games at equal distances on the X axis and the numbers 1,2,3,4,5,6 at a distance of 1cmontheYaxis.Herethenumber of students with this as the favourite game is 6 so label maximum 6 to7 numbers on the Y axis.
4. Draw the bars for cricket-6cm ,Kho-Kho- 5cm, Kabaddi-3cm, Football-4cm and Basketball -2cm.
5. Finally, in the upper right corner of the graph paper, write the ratio 1cm = 1 student.

Thus, this is the way you will get the bar graph.



Let's we try to solve it

1. Make a table of the weights of all the people in your house and draw bars showing the information.
2. Make a table showing the number of cups, glasses, plates, bowls in your hose and draw a bar graph showing the information.

-

A little help (links)

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I understand

With the help of given information bar graph can be drawn on graph paper.

Unit: Operations on numbers **Topic: Divisibility**
Subtopic: Divisibility **Day: 23rd**

Learning outcome – Identify the test of Divisibility

Let's understand a little bit



Test of divisibility by 2: A number is divisible by 2 if it has 0,2,4,6,8 in its one's place.

Test of divisibility by 5: A number is divisible by 5 if it has 0,5 in its one's place.

Test of divisibility by 10: A number is divisible by 10 if it has 0 in its one's place.

Test of divisibility by 3: A number is divisible by 3 when the sum of its digits is divisible by 3. E.g. 924, 315, 849, 255.

Test of divisibility by 4: A number is divisible by 4 if the last 2 digits of the given number is divisible by 4.

E.g. 756, 924, 212, 848, 252.

Test of divisibility by 9: A number is divisible by 9 when the sum of its digits is divisible by 9.

Let's practice



Q1. Look at the following numbers. Identify the numbers that are divisible by 2, 5, 10 and fill in the table given below.

135,564,475,650,400,638,606,508,9009,5535,

Divisible by 2	Divisible by 5	Divisible by 10

Q2. i. Write any 5 three-digit numbers divisible by 2.

ii. Write any 5 three-digit numbers divisible by 5.

iii. Write any 5 three-digit numbers divisible by 10.

Let's try to solve it 

Q1. Look at the following numbers. Identify the numbers that are divisible by 3, 4, 9 and fill in the table given below.

591, 264, 549, 657, 636, 612, 558, 9039, 5355, 5440

Divisible by 3	Divisible by 4	Divisible by 9

Q2. i. Write any 5, three-digit numbers divisible by 3.

ii. Write any 5, three-digit numbers divisible by 4.

iii. Write any 5, three-digit numbers divisible by 9.

A little help (links)

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I have understood: 

Divisibility test of 3 and 4.

I can recognize numbers that are divisible by 3 and 4

Unit: Operations on numbers **Topic: HCF and LCM**

Subtopic: HCF. **Day: 24th**

Learning outcome – You will be able to find the HCF of the given numbers

Let's understand a little bit 

Divisor, Divisible

Dividing 45 by 5 gives the remainder zero, so, 5 is the divisor and 45 is divisible by 5

Factors of 45: 1, 3, 5 ,9, 15, 45

Factors of 36: 1, 2, 3, 4, 6, 9,12, 18, 36

Write the common factors of 45 and 36 _____

Highest Common Factor: H.C.F.

Find the HCF of 12 and 18

Factors of 12: 1, 2, 3, 4, 6, 12

Factors of 18: 1, 2, 3, 6, 9, 18

Common factors of 12 and 18: 1, 2, 6

6 is the highest factor common to both 12 and 18. Hence 6 is the HCF of 12 and 18.

Let's practice 

Q. Find the HCF of the following numbers

(1) 36, 42

Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36

Factors of 42: 1, 2, 3, 6, 7, 14, 21, 42

Common factors of 36 and 42: 1, 2, 3, 6

6 is the highest factor common to both 36 and 42. Hence 6 is the HCF of 36 and 42.

(2) 27, 36 **(3) 40, 35** **(4) 24, 25** **(5) 42, 56**

(6) 52, 78

Let's try to solve it 

Q. Find the HCF of the following

(1) 45, 30 **(2) 16, 48** **(3) 39, 25** **(4) 49, 56** **(5) 120, 144**

(6) 81, 99 **(7) 24, 36** **(8) 25, 75** **(9) 48, 54** **(10) 150, 225**

A little help  **(links)**

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I have understood: 

I can find the factors and common factors of the given numbers.

I can find the HCF of the given numbers.

Unit: Operations on numbers **Topic: HCF and LCM**

Subtopic: HCF. **Day: 25th**

Learning outcome – You will be able to find the HCF of the given numbers

Let's understand a little bit 

Highest Common Factor: HCF

To find the HCF of the given numbers means to list the factors of the numbers and then find the highest common factor. In short HCF is the highest number that completely divides the given numbers.

Let's practice 

There are two paper strips, first is12 meters in one color and second is 18 meters in other color. Both the paper strips are to be cut into pieces of equal lengths.What is the maximum length of the piece?

The lengths of the strips that are to be divided must be factors of 12and18.

Factors of 12:1,2,3,4,6,12

Factors of 18:1,2,3,6,9,18

Common factors: 1, 2, 3, 6

6 is the largest of the common factors of 12and18,so the maximum length in which each strip can be cut is 6meters.

Let's try to solve it 

Q1.A shop has 20Kg of Jowar and 50Kg of wheat. All the grains are to be filled in bags. If each bag is to be filled with the same weigh to grain, then what is the maximum weight of grain that can be filled in each bag?

Q2. A plot of land 18m long and 15m wide is to be divided into square parts for vegetable plantation. If all the squares are to be of equal length, then what will be the maximum length of each side?

Q3.If each of the ropes of 8 meters and 12 meters lengths are to be cut in to pieces of the equal length, then what should be the maximum length of each such piece in
meters?

Q4. In order to see the Tadoba Tiger Project at Chandrapur, 140 and 196 students of 6th and 7th class respectively went for a trip. All the students of both the classes were to be put in group with equal number of students in each. Each group is allotted a guide for briefing. What is the maximum number of students in each group? What is there as on for taking maximum number of students in each group?

Q5. In the Rice Research Center, rice of Basmati variety is 2610Kg and Indrayani variety is1980kg. For sale both the variety of rice is to be packed in bags with equal quantity of rice. What is the maximum weight of each bag? How many bags will be there of each variety of rice?

A little help  **(links)**

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I have understood: 

I can use HCF to find a solution to the above situations

Unit: Operations on numbers **Topic: HCF and LCM**

Subtopic: LCM. **Day:- 26th**

Learning outcome – You will be able to find the LCM of the given numbers

Let's understand a little bit



Multiples

Multiples of 8: 8, 16, 24, 32, 40, 48, 56…

Multiples of 6: 6, 12, 18, 24, 30, 36, 42…

Write the common multiples of 8 and 6……

Lowest Common Multiple: LCM

Finding the LCM of the given numbers means to find their multiples and then find the lowest common multiple.

Find the LCM of 4 and 6

Multiples of 4: 4, 8, 12, 16, 20, 24, 28, 32, 36, 40…

Multiples of 6: 6, 12, 18, 24, 30, 36, 42, 48, 54 …

Common multiples of 4 and 6: 12, 24, 36

If we look at the common multiples of 4 and 6 we see that 12 is the lowest common multiple. Hence LCM of 4 and 6 is 12.

Let's



Find the LCM of 13 and 6.

Multiples of 13: 13, 26, 39, 52, 65, 78, 91, 104, 117, 130…

Multiples of 6: 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72, 78, 84…

Common multiples of 13 and 6 = 78

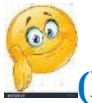
If we look at the common multiples of 13 and 6 we see that 78 is the lowest common multiple. Hence LCM of 13 and 6 is 78

Let's try to solve it 

Question. Find the LCM of the following numbers

(1)8,20 (2)2,3,5 (3)12,28 (4)15,20

(5)8,11 (6)9,15 (7)11,22 (8)15,45

A little help  **(links)**

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I have understood: 

I can find the multiples and the common multiples of the given numbers.

I can find the LCM of the given numbers.

Unit: Operations on numbers **Topic: HCF and LCM**
Subtopic: LCM. **Day: 27th**

Study outcome – Find the LCM of the given numbers

Let's understand a little bit



Lowest common multiple: LCM

To find the LCM of the given numbers means to find their common multiples and then find the lowest common multiple.

In short finding LCM means writing the lowest common multiple in the table of the given numbers.

Let's practice



Question.There are small boxes that can hold 20 or 25 bottles of the same type. To fill a large box completely, how may bottles of each type would be needed?

Multiples of 20:20,40,60,80,100,120,140...

Multiples of 25:25,50,75,100,125,150...

LCM of 20and25:100

If you look at the list of multiples of 20 and 25, you can see that 100 is the smallest common multiple.

Hence LCM of 20 and 25 is100.

So, to fill the boxes of any size completely we need at least 100 bottles.

Let's try to solve it 

Question(1). For the exercise on the ground, if there are 20 children in each row or 25 children in each row, then all the rows are full and no child is left behind. What is the minimum number of students on the ground?

Question (2)Veena has some beads. She wants to make a garland with the same number of beads in each string. If she makes garlands with16, 24 or 40 beads then what is the minimum number of beads she has?

Question (3) Same number of sweets were placed in three different boxes. If 20, 24 and 12 children were given sweets from the first, second and third boxes respectively, then what is the minimum number of sweets present in three boxes altogether?

Question(4) In a city, there are 3 signals on a main road. These signals turn green after every 60s, 120s and 24s. At 8 am in the morning all three signals started by turning green. After how much time will all the three signals turn green together?

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A little help  (links)

I have understand: 

I can use LCM in above situation

Unit: Algebra **Topic: Equations**

Subtopic: Equations in one variable **Day: 28th**

Learning outcome – In order to generalize variables are used in different

Let's understand a little bit



In mathematics we use symbols. These symbols have different meaning. By using these symbols mathematical writing becomes brief. Along with symbols, alphabets are also used in mathematics. By using alphabets, mathematical writing becomes easy and precise. Alphabets used in mathematical writing are called as variable.

Let us see one example.

Two times a number is 8.

Let us assume the unknown value as x.

When a  number is doubled the value is 8. Means 2x = 8

Let's practice

E.g. 1. A number multiplied by 1 gives the number itself.

Means, a X 1 = a

Here alphabet **a** is used.

E.g. 2. Even if we interchange the place of the two digits being added their sum remains the same.

Let us take a and b as the two numbers to be added.

Their sum will be a + b

After interchanging their places their sum would be b + a

Hence, if a and b are any two numbers then as per rule

a + b = b + a

Let's try to solve it 

Question 1. Use any variable for the unknown and carry out the following operation.

1) The sum of a number and 0 is the number itself.
2) The sum of any two numbers and the sum of those same numbers interchanged remains the same.

Question 2. Write a statement for the following equations

1) x – 0 = x
2) y ÷ 1 = y

A little help  **(links)**

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I have understood: 

1) We can use an alphabet in place of unknown.
2) For generalization, variables can be used to carry out different operations.

Unit: Algebra **Topic: Equations**

Subtopic: Equations in one variable **Day: 29th**

Study outcome –Equations in one variable help us to solve simple examples.

Let's understand a little bit



We have seen how to use variables in order to carry out generalization.

Now we will see how to use variables to solve an equation.

E.g. 1. Mohit had a few books. His father gave him 6 notebooks and now he has 15 notebooks in all. How many notebooks did he have in the beginning?

Let us try to find the answer to this question.

We have to find the number of notebooks that Mohit has. Let us assume there are ***x*** notebooks with him.

It means, x added to 6 will give 15.

Let us write this as equation.

$x + 6 = 15$

To solve this equation, subtract 6 from both the sides of equal to.

$x + 6 - 6 = 15 - 6$ (subtracting 6 from both sides of equation)

$\therefore x = 9$

As *x* is equal to 9 means Mohit had 9 notebooks at the beginning.

Let's practice



E.g. 1. Two brothers bought 10 books. If one brother has bought 4 books, how many books did the other brother buy?

Answer: Let the number of books the second brother bought be m

Both of them bought 10 books together.

$\therefore m + 4 = 10$

∴ m + 4 – 4 = 10 – 4 ……(subtracting 4 from both sides)

∴ m = 6

∴ Second brother might have bought 6 books.

E.g. 2. Sania had a few masks. Her mother gave her 5 more masks and now she has 8 masks. How many masks did Sania have in the beginning?

Answer: Let the number of masks Sania had be y

Her mother gave her 5 masks and now she has 8 masks.

∴ y + 5 = 8

∴ y + 5 – 5 = 8 – 5

∴ y = 3

Thus, Sania had 3 masks in the beginning.

Let's try to solve it 

Question 1. Solve the following equations.

1) 8 = t + 5
2) $\frac{p}{4} = 9$

Question 2. Frame an equation from the given information and find the value of variable.

1) 3 years ago Sameer was 10 years old. What is his age today?
2) John has a few hens. After selling 56 hens in the market he is left with 144 hens. How many hens did John had?

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A little help  **(links)**

I have understood: 

Given information can be represented as an equation
Equation in one variable helps to solve simple examples.

TEST NO. 2 Day – 30th

Standard: Seventh Subject: Mathematics

Students name: …… Marks: 15

Instructions: 1. All questions are compulsory

2. number in the bracket on right side shows marks.

Question 1. Write any 3, three-digit numbers divisible by 4 (3)

Question 2. Solve (2 marks each) (6)

i) 85.212 – 3.410

ii) 6.17 x 3.9

iii) 17.5 ÷ 5

Question 3. Solve the following (2 marks each) (6)

1. Vijay has 20kgs jowar and 30 kgs wheat. All the grains are to be filled in bags carrying equal quantity. What is the maximum quantity of grains that can be filled in each bag?

2. Ramu had a few sheeps. After selling 34 sheeps in the market he is left with 176 sheeps. How many sheeps did Ramu had?

3. Seema has 24 notebooks and 20 books. Find the ratio of notebooks to books.

Unit: Algebra **Topic: Ratio and Proportion**
Subtopic: Ratio **Day: 31st**

Learning outcome –Comparison between two quantities can be done by using

Let's understand a little bit



In day-to-day life we compare two quantities. We know how to compare two quantities by doing addition and subtraction. Now let us see how this comparison can be done in a different way with the help of an example.

Gautam is 14 years old and Sameera is 7 years old.

Sameera is 7 years younger than Gautam.

Gautam is 2 times Sameera's age. Here the comparison is made by subtraction or multiplication.

When two quantities are compared by subtraction then that subtraction is called as Ratio. But while comparing both the numbers should represent the same quantity!

Gautam is 2 times Sameera's age. This information is the ratio of Gautam's and Sameera's age and that is written as 2 : 1 which is read as two is to one.

Ratio helps in framing and solving the equation in simple way.

Let's practice



E.g. 1. Ketan brought 12 bananas and 6 mangoes. Write this as a ratio.

Ratio of bananas to mangoes

$$\frac{number\ of\ bananas}{number\ of\ mangoes} = \frac{12}{6} = \frac{12 \div 6}{6 \div 6} = \frac{2}{1} = 2$$

OR

Ratio of mangoes to bananas

$$\frac{number\ of\ mangoes}{number\ of\ bananas} = \frac{6}{12} = \frac{12 \div 6}{6 \div 6} = \frac{1}{2}$$

E.g. 2. A block of jaggery weight 1 kg whereas pieces of jaggery weight 200 g. What is the ratio of weight of jaggery pieces to jaggery block?

First convert both the measurements in same unit. Let us convert kilogram to gram.

1 kg = 1000 g

∴ weight of jaggery block is 1000 g and jaggery pieces is 200 g.

$$\frac{weight\ of\ jaggery\ pieces}{weight\ of\ jaggery\ block} = \frac{200}{1000} = \frac{2\ x\ 100}{10\ x\ 100} = \frac{2}{10} = \frac{2\ x\ 1}{2\ x\ 5} = \frac{1}{5}$$

Ratio of weight of jaggery pieces to jaggery block is 1 : 5

Let's try to solve it 

E.g. 1. On a playground 30 cricket players and 20 Kho-kho players are being trained. Find the ratio of cricket players to the total number of players on the playground.

E.g. 2. In a small company there are 40 men and 30 women employees. Find the ratio of number of men to number of women and number of women to number of men.

A little help (links) 

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I have understood: 

Ratio is used to form an equation.

Comparison between two numbers can be done using ratio.

Unit: Algebra **Topic: Ratio and Proportions**

Subtopic: Unitary Method **Day: 32nd**

Learning outcome – Unitary method is used to solve word problems.

Let's understand a little bit 

Unitary Method:

Finding the cost of one item from the cost of many by subtraction or finding the cost of many from the cost of one by addition is called as unitary method.

Let us try to understand this by solving one example.

Cost of 10 notebooks is ₹200. What is the cost of 4 notebooks?

To find the cost of 4 notebooks first we have to find the cost of 1 notebook.

Cost of 10 notebooks is ₹200

∴ Cost of 1 notebook is 200 ÷ 10 = ₹20

Thus, cost of 4 notebooks = 20 x 4 = ₹ 80

Let's practice 

E.g. 1. If a bunch of 15 bananas is ₹ 45 then what is the cost of 8 bananas?

Answer: Cost of 15 bananas is ₹45

∴Cost of 1 banana = 45 ÷ 15 = ₹3
Thus, cost of 8 bananas = 8 x 3 = ₹24

E.g. 2. If the cost of 10kg of rice is ₹ 325, then what is the cost of 8 kg rice?

Answer: Cost of 10 kg rice is ₹325

∴Cost of 1 kg rice = 325 ÷ 10 = ₹ 32.5
Thus, cost of 8 kg rice = 32.5 x 8 = ₹ 260

Let's try to solve it 

1) If the cost of 15 balls is ₹ 100, then what is the cost of 1 ball?
2) If cost of 14 chairs is ₹ 5992, then what amount is to be paid for 12 chairs?
3) If the weight of 30 containers is 6 kg, then what is the weight of 1080 such containers?

A little help (links)

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I have understood: 

We can find the cost of 1 item from the cost of many.

We can find the cost of many items from the cost of 1.

Name of the field: Practical Mathematics **Topic: Percentage**

Sub-topic: Percentage **Day : 33rd**

Learning Outcome – Converts percentage in to fraction and vice-versa .

Let's understand a little bit 

s% this mark is a percentage mark.

Cent means one hundred.

Percentage is also called cent method.

58% means 58 units out of 100 units and can be written in fraction as $\frac{58}{100}$.

Let's practice 

Equivalent fractions are used to make denominator 100.

(1) Percentage in the form of fractions

25% means 25 parts out of 100 parts, means $\frac{25}{100}$ of total = $\frac{1}{4}$ part

35% means 35 parts out of 100 parts, means $\frac{35}{100}$ of total = $\frac{7}{20}$ part

(2) Information in the form of fractions in percentages

$\frac{3}{4} = \frac{3\ X\ 25}{4\ X\ 25} = \frac{75}{100}$, $\frac{3}{4}$ part of total means $\frac{75}{100}$ = 75%.

$\frac{4}{5} = \frac{4\ X\ 20}{5\ X\ 20} = \frac{80}{100}$, $\frac{4}{5}$ part of total means $\frac{80}{100}$ = 80%.

Let's solve it 

(1) In one test, Shabana got 736 marks out of 800, what percentage of marks did she get?

(2) The village school has 500 students. Out Of these, 350 students can swim, what percentage of students can swim and what percentage of students cannot swim?

(3) Prakash sown Jowar in 75% of farm out of 19500 square meter, then how many sq.m. farm sown by him?

(4) Soham received a total of 40 messages on his birthday. 90% of them were birthday wishes, so how many messages did he get besides birthday wishes?

(5) Out of 5675 people in a village, 5448 people are literate, what is the literacy rate of the village?

A little help  **(Link)**

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I understand this: 

I can convert percentage information to fractions.

I can convert information in the form of fractions into percentages.

Name of the field: Practical Mathematics **Topic: Profit - loss**
Sub-topic Profit- loss **Day: 34th**

Learning Outcome – Calculate Profit / loss from daily transactions /examples .

Let's undesrstand a little bit 

If the selling price is more than the cost price, there is a profit
Profit = Selling Price - Cost Price
If the selling price is less than the cost price, there is a loss.
Loss = Cost price - Selling price

Let's practice 

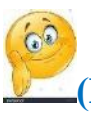
If Rambhau bought 500 kg of rice for Rs 22,000 and sold all the rice at Rs 48 per kg, how much profit did he make?
The purchase price of 500 kg of rice is Rs 22,000.
∴ Selling price of 500 kg rice = 500 × 48 = 24000 Rs
The profit was made as the selling price is more than the cost price.
Profit = Selling Price - Cost Price
= 24000 - 22000
= 2000
∴In this transaction, Rambhau made a profit of Rs 2000.

Let's solve it 

1. If a shopkeeper buys a bicycle for Rs.3000 and sells the same bicycle for Rs.3400, how much profit does he make?
2. Sunandabai bought milk for Rs.475. If he made yoghurt and sold it for Rs. 700, how much profit did he make?
3. On Diwali, Jijamata Mahila Bachat Gat purchased raw material worth Rs. 15000 for making Chakalis. How much profit did the Bachat Gat get when they got Rs 22050 after selling Chakalis?

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litttle help (LinkI understand this: 

I can calculate the profit and loss of daily transactions.

Name of the field: Practical Mathematics **Topic: Profit-Loss**
Sub-topic: Percent Profit – Percent Loss **Day: – 35th**

Learning Outcome –Find Percents profit / loss from daily examples.

Let's understand a little bit 

In trading, all expenses incurred on an article before it can be sold have to be added to the cost price of the article. That is called the total cost price of the article.
They compare the profit or loss percentage with the purchase price. When it is said that 10% profit or loss is made, then if the total purchase is Rs.100, the profit or loss is Rs 10.

Let's practice 

Joseph bought a machine for 23,500 Rupees. The cost of transporting it was Rs 1,200 and he had to pay Rs 300 in taxes. He sold the machine to the shopkeeper for Rs 24,250, Did Joseph made a profit or a loss? What percentage?
Total cost price of machine = 23500 + 1200 + 300= ` 25000
Selling price = 24250 Rs.The selling price is more than total cost price hence he made a loss.
Loss = Total cost price – Selling price
= 25000 – 24250= ` 750Joseph Made a loss of Rs 750.
If the loss is N%, then we will solve the equation by writing ratio of loss and cost price in two forms $\frac{N}{100}=\frac{750}{25000}\therefore\frac{N}{100}\times 100=\frac{3}{100}\times 100\therefore N = 3$Joseph made loss of 3%

Let's solve 

1. Gokulchand sold pants worth Rs 400 for Rs 448. If a Rs 200 shirt sells for Rs 225, which of these deals is more profitable?
2. Mansukh bought the cupboard for Rs 4,500 and sold it for Rs 4,950. How much percent profit did Mansukh's made?

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little help  (Link)

I understand this: 

I can detect percent profit or percent loss in daily transactions.

Name of the field Practical Mathematics **Topic: Bank and Simple interest**
Sub-topic: Bank **Day – 36th**

Learning Outcome – Identify Bank transactions .

Let's understand a little bit 

Question. Observe the picture below and write the correct words in the blanks below.



a) Above picture is of ..... (Bank/ Market).

b) Bank is ..... (a shop/an institution).

c) Bank is a ..... (educational/financial) institution.

d) Bank is related to ..... (Money / Grain / Vegetable).

e) Your money in ..... (bank / home) can be more secure.

Let's practice 

Q.1) Which of the following can be done by going to the bank?

a) can buy materials. b) Can keep money safe. c) Can pay electricity bill.

d) Can sell materials. e) Can take a loan. f) Can do financial transactions.

Answer:-.....

Q.2) Write the names of some banks you know.

Answer:-.....

Q.3) Do you have a bank account? If so, write the account number.

Answer:- .....

Let's solve 

Q.1) Write the correct word in the blanks given below.

a) The amount can be withdrawn from the current account of the bank ..... (once / any number of times).

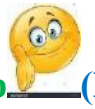
b) Interest on current bank account amount ..... (received / not received).

Q.2) What are the facilities available to the account holder for transacting on savings account?

Answer:-.....

Q.3) What are the benefits of getting higher interest on deposits for a longer period?

Answer:-.....

A little help  (Link)

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I understand this: 

I know about the bank, the documents required to open an account there and the financial transactions there.

Name of the field: Practical Mathematics Topic: Bank and Simple interest

Sub-topic: Simple interest Day: 37th

Learning Outcome - Find Percents profit / loss from daily examples and find simple intrest.

Let's understand a little bit 

Q.1) Write the correct word in the blanks.

A) The amount deposited in the bank or given by the bank to the borrower is called .....

B) The rate of interest p.c.p.a means the interest to be paid for each year for ..... Rupees.

C) The period for which the amount deposited in the bank or taken from the bank is used is called .....

Let's practice 

Q.1) Ishwari deposited Rs. 50,000 in bank for 6 years at an interest rate of 8 p.c. p.a. Then write the following.

I) Principal - …… II) Rate - ……III) Period - .....

Q.2) Amit borrowed Rs. 98000 from the bank for 4 years at the rate 12 p.c.p.a. Then write the following.

I) Principal - …… II) Rate - ……. III) Period - .....

Example: Ajitrao took a loan of Rs. 42000 from a bank. If the interest rate is 10% per annum, how much will he have to repay to the bank after one year?

Principal = 42000 Rs , Rate =10 p.c.p.a. ,Period = 1 Year

If the principal increases, the interest increases, which means the interest increases in proportion to the principal.

Lets consider the interest received on Rs 42000 be x.

Interest of Rs 10 is paid on the principal of Rs 100.

Let us take the ratio of interest to principal. Let's find the equation by writing ratio into two forms.

$$\frac{x}{42000} = \frac{10}{100}$$

$$\frac{x}{42000} \text{ X } 42000 = \frac{10}{100} \text{ X } 42000 \qquad \text{(Multiply by 42000 to both sides)}$$

$x = 4200$

Simple interest = 4200 रु.

Amount to be returned to the bank = Principal + Interest = 42000 + 4200 = 46200 Rs.

Let's solve it 

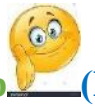
Q.1) What will be the interest for one year on Rs. 4000 at 10 p.c.p.a.?

Q.2) Raosaheb took a loan of Rs. 35000 from the bank. If the interest rate is 12% per annum, how much will he have to repay to the bank after one year?

Q.3) A loan of Rs.8000 given by Raghav to his friend at the rate of 9p.c.p.a., how much will he get back after one year?

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A little help (Link) 

I understand this: 

If principal rate, period is is given, I can find out simple interest for one year of amount payable.

Name of the field: Geometry **Topic: Triangle**

Sub-topic - Types of triangle and its properties **Day – 38th**

Learning outcome – Classifies / Identifies triangle types

Let's understand a little bit 

- A closed figure formed by joining three non-collinear points is called a triangle.
- The vertices, sides and angles of a triangle are called the elements of a triangle.

Types of triangles - from the sides

- A triangle whose three sides are of equal length is called an equilateral triangle.
- A triangle whose two sides are of equal length is called an isosceles triangle.
- A triangle whose any two sides are not equal in length is called scalene triangle.

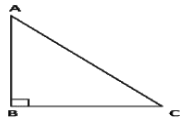
Types of triangles - from angles

- A triangle whose all three angles are acute angles is called an acute-angled triangle.
- A triangle whose one angle is a right angle is called a right-angled triangle.
- A triangle whose one angle is an obtuse angle is called an obtuse-angled triangle.

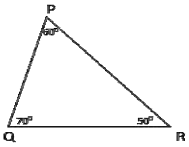
Properties of triangles

- The sum of the measures of all the three angles of a triangle is 180^0.
- The sum of the lengths of any two sides of a triangle is always greater than the length of the third side.

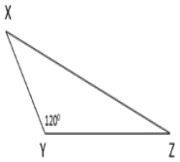
Let's practice



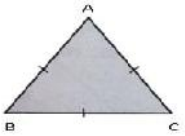
Δ ABC is a right angled triangle.



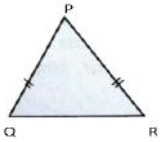
Δ PQRis an acute angled triangle.



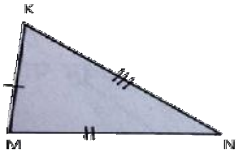
Δ XYZ is an obtuse angled triangle.



Δ ABC is a equilateral triangle.



Δ PQR is an isosceles triangle.



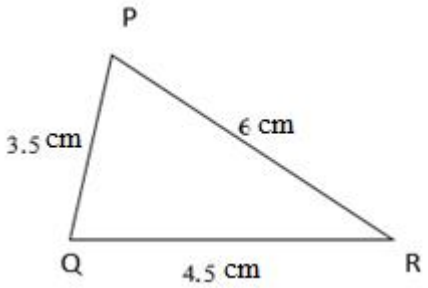
Δ XYZ is a scalene triangle.

In the figure alongside

Seg PQ +Seg QR >Seg PR

Seg PQ +Seg PR >Seg QR

Seg QR +Seg PR >Seg PQ



Let's solve it

- Below are the lengths of the sides of the triangle. Write the type of triangle from it.

1) 7 cm, 7 cm, 7 cm .....
2) 4.5 cm, 4.5 cm, 4 cm .....
3) 6.3 cm, 5.2 cm, 3.7 cm .....
4) 8.4 cm, 5.3 cm, 5.3 cm .....
5) 6 cm, 6 cm, 6 cm .....
6) 9 cm, 5 cm, 6 cm .....

- Below are some lengths of sides are given to draw a triangle. Decide whether triangles with sides of this length can be drawn. Write the reason.

1) 17 cm, 7 cm, 8 cm .....
2) 7 cm, 24 cm, 25 cm .....
3) 9 cm, 5 cm, 16 cm .....

A little help (Link)

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I understand this:

I can identify, read and write vertices, angles and sides of triangle.

I understand types of triangle based on sides and angles.

I understand the sum angles of a triangle is 180^o and I can use it.

I understand the property that the sum of lengths of two sides of a triangle is greater than length of third side.

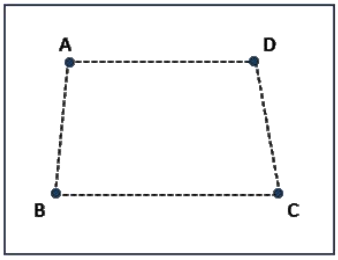
Name of the field: Geometry **Topic: Quadrilateral**
Sub-topic – Quadrilateral **Day – 39th**

Learning outcome – Identifies the sides and angles of a quadrilateral. Tells some properties of a quadrilateral.

Let's understand a little bit



Take four points A, B, C, D, on a paper, such that any three of them will be non -collinear. These points are to be joined to make a closed figure, but in such a way that when any two points are joined the other two must lie on the same side of that line. The figure obtained by following the given rule is called a quadrilateral

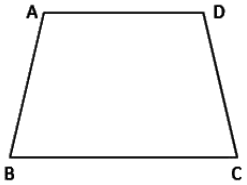


- Reading and writing of quadrilateral
- A quadrilateral can be named starting from any vertex in a clockwise or counter clockwise around the figure.
- Adjacent sides of the quadrilateral have a common vertex.
- Opposite sides of the quadrilateral do not have a common vertex.
- The angles of a quadrilateral which have one common arm are called adjacent angles of quadrilateral.
- The angles of a quadrilateral which do not have a common arm are called opposite angles of quadrilateral.
- The line segment which joins the vertices of the opposite angles of a quadrilateral are the diagonals of quadrilateral.

Let's practice



When writing the name of a quadrilateral a sign like this '□' is put in place of the word 'quadrilateral'.



Reading	Writing	Reading	Writing
Quadrilateral ABCD	□ ABCD	Quadrilateral BCDA	□ BCDA
Quadrilateral CDAB	□ CDAB	Quadrilateral DABC	□ DABC
Quadrilateral ADCB	□ ADCB	Quadrilateral DCBA	□ DCBA
Quadrilateral CBAD	□ CBAD	Quadrilateral BADC	□ BADC

Adjacent sides of quadrilateral

1) side AB and side BC 2) side BC and side CD
3) side CD and side DA 4) side DAand side AB

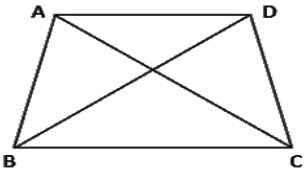
Opposite sides of quadrilateral
1) side AB and side CD 2) side BC and side AD

Adjacent angles of quadrilateral
1) ∠ABC and ∠BCD 2)∠BCD and ∠CDA
3) ∠CDA and ∠DAB 4)∠DAB and ∠ABC

Opposite angles of quadrilateral

1)∠ABC and ∠ADC 2)∠BCD and ∠DAB

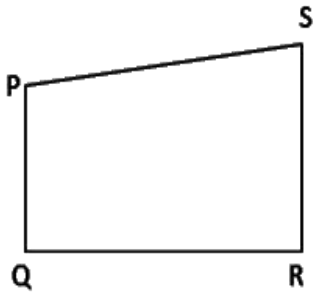
A quadrilateral can be named starting from any vertex in a clockwise or counter clockwise



Diagonals of quadrilateral
Seg AC and seg BD are diagonals of □ ABCD.

Let's solve it

With the help of □ PQRS write the following.



1) Write pairs of opposite angles.
   1).....2) .....
2) Write pairs of opposite sides.
   1).....2).....
3) Write pairs of adjacent sides.
   1)..... 2).....3).....4).....
4) Write pairs of adjacent angles.
   1)..... 2).....3).....4).....
5) Write names of diagonals.
   1).....2).....
6) Write names of quadrilateral by different ways.
   .....

A little help(Link)

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I understand this:

- The vertices, angles and sides of a quadrilateral.
- Opposite angles, opposite sides, adjacent angles, adjacent sides.
- Diagonal of a quadrilateral.

Name of the field: Geometry **Topic: Quadrilateral**
Sub-topic – Polygon **Day – 40th**

Learning outcome – Identifies Polygon.

Let's understand a little bit



Draw a diagonal of a square and divide it into two triangles.

We know that the sum of all the angles of a triangle is 180^0

Two triangles are formed in a quadrilateral.

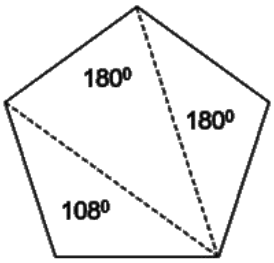
From this, the sum of all the angles of the quadrilateral is equal to two triangles.

$\Rightarrow 180^0 \times 2 = 360^0$

- The sum of all four angles of a quadrilateral is 360^0.
- A closed figure with triangles, squares, pentagons and more than five sides is called a polygon.

Join any one vertex of the pentagon to other vertices as shown in the figure.

We get three triangles. We know that the sum of the angles of each triangle is 180^0.



Three triangles are formed in a pentagon. From this sum of all angles of the pentagon will be equal to three triangles.

$\Rightarrow 180^0 \times 3 = 540^0$

Thus dividing all the polygons into triangles the sum of all their angles can be found.

Let's practice



Pentagon

Vertices : A, B, C, D, E

sides : seg AB, seg BC, seg CD,seg DE, seg AE

angles : ∠ EAB, ∠ABC, ∠BCD, ∠CDE, ∠DEA

Observe the following table.

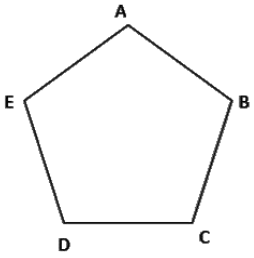
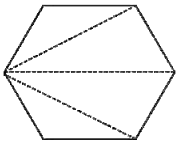


Figure	Name of figure	Number of sides
	Pentagon	5
	Hexagon	6

	Heptagon	7
	Octagon	8

The sum of all the angles of a hexagon = $180^0 \times 4$
$= 720^0$

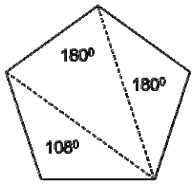


Let's solve it 

Complete the following table.

Name of polygon	Number of vertices	Number of sides	Number of angles
Pentagon			
Hexagon			
Heptagon			
Octagon			

- ✓ Find examples of polygons found in your area. Draw their figures.
- ✓ Draw a polygon. Divide it into triangles as shown in the figure.
- ✓ From that, determine the sum of all its angles.



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Little help (Link) 

I understand this: 

Concept of Ploygons

Name of the field: Geometry **Topic: Geometric Construction**

Sub- topic - Draw a line perpendicular to that line. **Day – 41st**

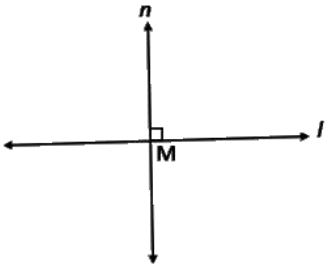
Learning outcome – Do some basic constructions.



Let's understand a little bit

Perpendicular

In the figure alongside, line l and line n intersect at point M. Measure every angle near point M. If each angle between line l and line n is a right angle, then the lines are perpendicular to each other.



This is indicated by the symbol 'line l ⊥ line n'. And read

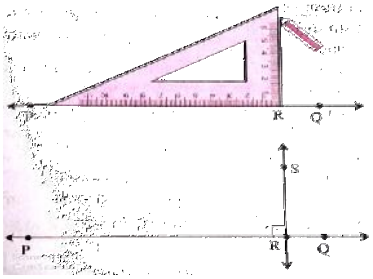
As 'line l perpendicular line n'.



Let's practice

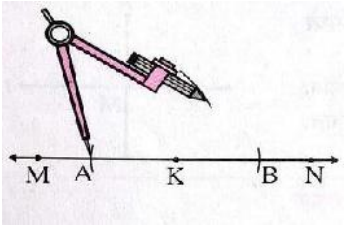
Draw a line perpendicular through the point on the line.

Using Set square



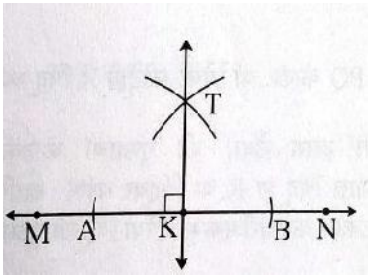
- Draw the line PQ. Take the point R anywhere on this line.
- Place the set square on the line in such a way that the vertex of its right angle is at point R and one arm of the right angle falls on line PQ.
- Draw a line RS along the other arm of the set square.
- Line RS is perpendicular to line PQ at point R.

Using a compass



- Draw line MN. Take point K anywhere on the line.
- Place the compass point on point K. Draw two arcs on either side of point K. to cut the line MN at equal distances from K. Name the pointsof intersection A and B respectively.

- Place the compass point at A and, taking a convenient distance greater than half the length of AB, draw an arc on one side of the line.



- Place the compass point at B and using the same distance, draw another arc to intersect the first one at T.
- Draw a line passing through points K and T.
- The line KT is perpendicular to line MN at K.

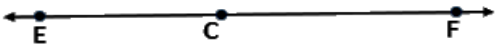
Let's solve it

1) A line PQ is given below. Draw a line SR perpendicular to line PQ at point D using set square.



2) Draw line *n*. Take any point H on the line. Using a set square, draw a line Perpendicular to line *n* at the point H.

4) Line EF id given below, draw a line perpendicular to line EF at point C using compass.



4) Draw a line t. Take a point W anywhere on the line. Using a compass, draw a line perpendicular to line t at the point W.

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A little help (Link)

I understand this:

The line can be drawn perpendicular to the point on the line.

Name of the field: Geometry **Topic: Geometric construction**

Sub-topic- Drawing a perpendicular to a line from a point outside the line.

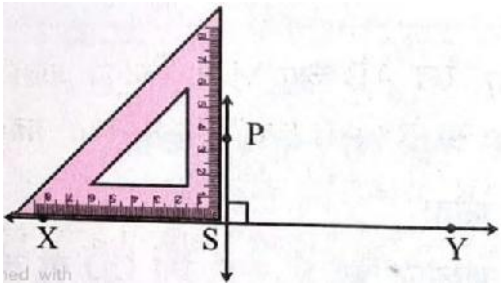
Day :-42nd

Learning outcome – Do some basic constructions.

Let's practice

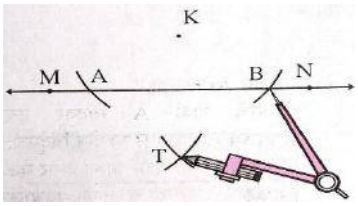
Drawing a perpendicular to a line from a point outside the line.

Using a set square

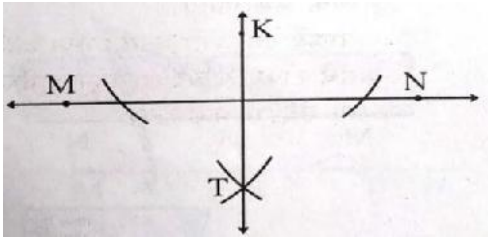


- Draw line XY. Take a point P anywhere outside XY.
- Place one of the arms of the right angle of a set squarealong the line XY.
- Slide the set square along the line in such a way that the other arm of its right angle touches point P. Draw a line along this side, passing through point P. Name the line PS. Line PS is perpendicular to line XY.

Using compass



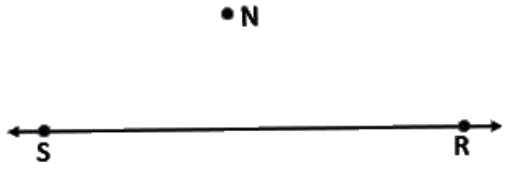
- Draw line MN. Take any point K outside the line.
- Place the compass point at point K and using any convenient distance, draw arcs to cut the line MN at two points A and B.
- Place the compass point at A and taking a distance greater than half of AB, draw an arc on the lower side of line MN.



- Place the compass point at B and using same distance, draw an arc to cut the previous arc at T.
- Draw line KT.
- Line KT is perpendicular to line MN.

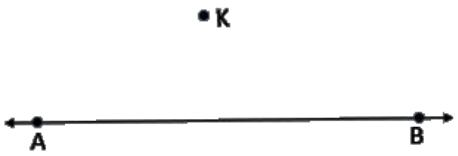
Let's solve it

1) Line SR is given below, draw a line AB perpendicular to line SR at point N using set square.



2) Draw line q. Take point U anywhere outside the line. Using a compass, draw a line perpendicular to line q at point U.

3) Line AB is given below, using a compass, draw a line MN perpendicular to line AB at point K.



4) Draw line b. Take point S outside the line. Draw a line perpendicular to line b at point S using compass.

A little help (Link)

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I understand this:

The line can be drawn perpendicular to the point outside the line.

Name of the field: Geometry **Topic: Geometric construction**

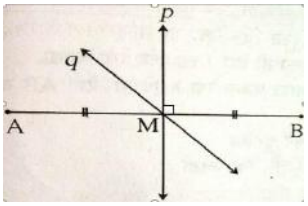
Sub-topic – Perpendicular bisector of a line segment **Day – 43rd**

Learning outcome – Do basic construction.



Let's understand a little bit

Perpendicular bisector of a line segment



Line *p* and line *q* pass through the point M on seg AB.

Line *p* and line *q* are bisectors of the segment AB.

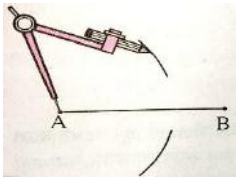
Measure the angle between line *p* and seg AB.

Of the two lines *p* and *q*, line *p* is a bisector and also perpendicular to seg AB. Hence, line *p* is called the perpendicular bisector of seg AB.

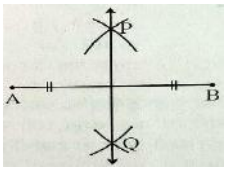


Let's practice

Drawing the perpendicular bisector of a segment, using a compass.



- Draw seg AB
- Place the compass point A and taking a distance greater than half the length of seg AB,draw two arcs, one below and one above seg AB.
- Place the compass point at Band using the same distance draw arcs to intersect the previous arcs at P and Q. Draw line PQ.
- Line PQ is perpendicular bisector of seg AB.





Let's solve it

1) Bisect the segment given below using compass and ruler.



2) Draw a line segment AB of length 6 cm. Bisect it using a compass and ruler

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A little help (Link)

I understand this:

The perpendicular bisector of the line segment can be drawn.

Name of the field: Geometry **Topic: Three dimensional shapes**

Sub-topic - Cuboid and pyramid **Day – 44th**

Learning outcome – Identifies three-dimensional objects found in the surrounding such as sphere, cube, cuboid, cylinder, cone 2) Recognizes,. describes the edges, vertices, and surfaces of a three-dimensional object with examples.

Let's understand a little bit



Cuboid

All the surfaces of cuboid are rectangular and opposite surfaces are alike.

Cube

A cuboid whose all surfaces are square of same size is called as cube.

quadrangular pyramid

The shape whose base is quadrilateral and vertical faces are triangular, called as quadrangular pyramid.

Triangular Prism

The figure having triangular top and triangular bottom and vertical faces are rectangle is called as triangular prism.

Triangular pyramid

The figure having all faces triangular is called as triangular pyramid.

Remember

The top and the bottom faces of a prism are identical and remaining faces are rectangular while top of pyramid is a point and the standing faces of a pyramid are triangular. The name of a prism or a pyramid depends upon the shape of its base.

Cylinder

You must have seen a tall box with a circular base. A tin like this is a familiar example of a cylinder. If the tin is closed, it is a closed cylinder. The base of such is circular hence it is called as cylinder.

Cone

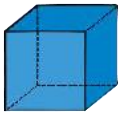
The shapes like icecream cone, Clown's cap are called cone. An open cone has a curved face and a circular edge, no flat face.

Sphere

The shape of a ball is called sphere.

Let's practice

Study

Shape	Figure	Vertices	Plane faces	Edges	Circular edges	Curved faces
Cuboid		8	6	12	-	-
Cube		8	6	12	-	-
Quadrangular pyramid		5	5	8	-	-
Triangular prism		6	5	9	-	-
Triangular prism		4	4	6		
Cylinder		-	2	-	2	1
Cone		1	1	-	1	1
Sphere		-	-	-	-	1

Let's solve it

1) Write difference between prism and pyramid.

   .....

   .....

2) Draw the net of quadrangular pyramid.

3) Draw the net of triangular pyramid.

4) Write the number of faces, edges and vertices of each shape in the table.

Name of shape	Vertices	Faces	Edges
Quadrangular prism			
Quadrangular pyramid			
Pentagonal prism			
Pentagonal pyramid			
Hexagonal prism			
Hexagonal pyramid			

A little help (Link)

https://diksha.gov.in/play/collection/do_31252820928973209615332 2?referrer=utm_source%3Dmobile%26utm_campaign%3Dshare_content&contentId=do_3130140096377159681261

https://diksha.gov.in/play/collection/do_31252820928973209615332 2?referrer=utm_source%3Dmobile%26utm_campaign%3Dshare_content&contentId=do_3130140096523960321262

https://diksha.gov.in/play/collection/do_31252820928973209615332 2?referrer=utm_source%3Dmobile%26utm_campaign%3Dshare_content&contentId=do_3130140096783810561253

https://diksha.gov.in/play/collection/do_31252820928973209615332 2?referrer=utm_source%3Dmobile%26utm_campaign%3Dshare_content&contentId=do_3130140096953876481198

I understand this:

Understood the difference between prism and pyramid. Identify the faces, edges, vertices of prism, pyramid, cylinder, cone and sphere.

Test No. 3 STD: Seventh Subject: Mathematics

Name of Student – ..... Marks: 30

Day 45th

Instruction: 1. All questions are compulsory.
2. Numbers in bracket to the right indicate marks.

Q. No.1. Match the pairs. (2)

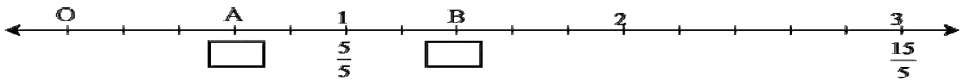
Measure of angle	Type of angle
1) 2400	A) Acute angle
2)1800	B) Reflex angle
	C) Straight angle

Q. No.2. Write proper symbol< , > , = in the box. (2)

1) - 5 ☐ 5

2) 7 ☐ - 8

Q. No.3.Write the fractions which are indicated by points A and B. (2)



Q. No.4. Draw quadrilateral ABCD and answer the following. (4)

i) Write pairs of opposite angles.

ii) Write diagonals of quadrilateral.

Q. No.5. Solve the following sub questions. (2 marks each) (8)

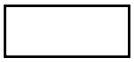
1. Find the LCM and HCF of 48, 84.
2. Find ratio of first quantity with second quantity.
   25 Lit, 10 Lit
3. Draw a segment PQ of length 7 cm and bisect it using compass and ruler.
4. Find the numbers divisible by 3 from 12, 23, 36, 48, 52, 57, 47, 35.
5.

Q. No.6. Solve the following word problems. (4 marks each) (12)

1. Armaan exercises walking on a circular path on the field every day. If he walks 3.252 km in 6 rounds every day, how much distance does he walk in one round?
2. If 5 chocolates cost Rs. 25, what is the price of 3 such chocolates?

Answer Key (Test No.1)

Q. No.1.

Figure	Name of figure
1. Line segment	
2. Ray	
3. Plane	
4. Line	

Q. No.2. Opposite number of -48 is 48, Opposite number of 15 is -15 ,

Opposite number of -99 is 99

Q. No.3. 1) Positive numbers 9, 23 Negative numbers -5, -2 3) i) 5 ii) $\frac{89}{10}$

4) i) 0.9 ii) 1.125

Answer Key (Test No.2)

Q. No.1. Three digit numbers which are divisible by 4: 312, 436, 612

Q. No.2. Solve (2 marks each)

1) 81.802 2) 24.063 3) 3.5

Q. No.3. (2 marks each)

1) 10 Kilograms 2) 210 Sheeps 3) $\frac{6}{5}$

Answer Key (Test No.3)

Q. No.1. 1) 240^0 - Reflex angle 2) 180^0 - Straight angle

Q. No.2. 1) -5 < 5 2) 7 > -8

Q. No.3. A = $\frac{3}{5}$, B = $\frac{7}{5}$

Q. No.4. 1) Pairs of opposite angles: ∠A, ∠C and ∠D ,∠B.

2) Names of diagonals of quadrilateral: Diagonal AC and Diagonal BD

Q. No.5. 1. LCM of 48 and 84 is 336 and HCF 12

2. Ratio of 25 lit and 10 lit : $\frac{5}{2}$

4. 12, 36, 48, 57

Q. No.6.

1. 0.542 Km
2. 15 Rupees
3. 90 %