Chapter 6

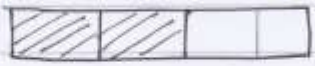
Fractions

Fraction is a part of a whole or part of a collection. A fraction has 2 parts Numerator and denominator

$\frac{2}{6}$ → Numerator
6 → Denominator

Equivalent Fractions

Fractions having same values are called equivalent fractions.



$\frac{2}{4}$

$\frac{4}{8}$

$\frac{2}{4}$ and $\frac{4}{8}$ are equivalent fractions

To find equivalent fractions we have to multiply or divide the numerator and the denominator by the same no.

for eg $\frac{2}{4} \div \frac{2}{2} = \frac{1}{2}$ $\frac{2}{4}$ $\frac{1}{2}$ are equivalen

Reducing a fraction to its lowest term

A fraction is in its lowest term if the numerator and denominator have only 1 as a common factor. We can reduce a fraction to lowest term by dividing the numerator and denominator by their common factor eg $\frac{9}{15} \div \frac{3}{3} = \frac{3}{5}$ → lowest term

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Exercise 6.1

Q1: Fill in the blanks.

1. $\frac{2}{5} = \frac{4}{10} = \frac{8}{20} = \frac{6}{15}$

2. $\frac{1}{3} = \frac{3}{9} = \frac{4}{12} = \frac{5}{15}$

3. $\frac{3}{8} = \frac{\square}{16} = \frac{\square}{32} = \frac{15}{\square}$

Q2 Find 5 equivalent fractions of

1. $\frac{3}{4}$

$\frac{3}{4} = \frac{6}{8} = \frac{9}{12} = \frac{12}{16} = \frac{15}{20} = \frac{18}{24}$

2. $\frac{6}{7}$

$\frac{6}{7} = \frac{12}{14} = \frac{18}{21} = \frac{24}{28} = \frac{30}{35} = \frac{36}{42}$

3. $\frac{5}{6}$

4. $\frac{2}{9}$

Q3 Simplify the following fractions to the lowest term

1. $9/15$

$\frac{9}{15} \div 3 = \frac{3}{5}$ Ans The lowest term is $\frac{3}{5}$

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b 55/80

b $\frac{55 \div 5}{80 \div 5} = \frac{11}{16}$ Ans The lowest term of $\frac{55}{80} = \frac{11}{16}$

c. 8/24

d. 10/60

Like and Unlike fractions

1. Like fractions - Fractions which have same denominators are called like fractions eg 7/5, 3/5
2. Unlike fractions - Fractions which have different denominators are called unlike fractions 3/4, 4/5

Comparing like fractions

To compare fractions → compare the numerator The fraction with the greater numerator is greater eg $\frac{8}{25} > \frac{5}{25}$

Exercise 6.2

Use >, < or = to compare

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

2 $\frac{9}{20} > \frac{7}{20}$

3 $\frac{7}{11} < \frac{9}{11}$

4. $\frac{2}{5} < \frac{7}{5}$

5 $\frac{2}{33}$ — $\frac{7}{33}$

6. $\frac{8}{25}$ — $\frac{7}{25}$

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Arrange the following in ascending order

1. $\frac{13}{17}, \frac{9}{17}, \frac{21}{17}, \frac{12}{17}$

Sol $\frac{9}{17}, \frac{12}{17}, \frac{13}{17}, \frac{21}{17}$

2. $\frac{22}{45}, \frac{7}{45}, \frac{11}{45}, \frac{8}{45}$

Soln

3. $\frac{9}{13}, \frac{15}{13}, \frac{5}{13}, \frac{8}{13}$

3/5
ver
4/5

Soln

Arrange in descending order

1. $\frac{9}{19}, \frac{18}{19}, \frac{3}{19}, \frac{5}{19}$

ator
is

Soln $\frac{18}{19}, \frac{9}{19}, \frac{5}{19}, \frac{3}{19}$

2. $\frac{5}{14}, \frac{9}{14}, \frac{3}{14}, \frac{8}{14}$

Soln

Addition and Subtraction of like fractions

Addition → To add like fractions add the numerator and write the sum over the same common denominators eg $\frac{3}{14} + \frac{5}{14} = \frac{8}{14}$

Subtraction → To subtract two like fractions subtract the numerator & write the diff on same de
eg $\frac{18}{35} - \frac{14}{35} = \frac{4}{35}$

Note- S.A. -I (Syllabus of unit I,II & III)

Exercise 6.3

Q1: Add the following

1. $\frac{2}{15} + \frac{7}{15} = \frac{7}{15}$
2. $\frac{4}{9} + \frac{1}{9} + \frac{2}{9} = \frac{7}{9}$
3. $\frac{5}{13} + \frac{2}{13} + \frac{1}{13} =$ ____

Q2 Subtract -

1. $\frac{7}{11} - \frac{3}{11} = \frac{4}{11}$
2. $\frac{13}{21} - \frac{8}{21} = \frac{5}{21}$
3. $\frac{15}{27} - \frac{8}{27} =$ ____

Word Problems

Nina needs $\frac{5}{8}$ kg of sugar ..... items together?

Soln Quantity of sugar reqd for cake = 5/8 kg
Quantity of sugar reqd for pudding = 3/8 kg
Total Quantity of sugar reqd = $\frac{5}{8} + \frac{3}{8} = \frac{8}{8} = 1$ kg

∴ Ans = 1 kg sugar is reqd.

Arjun ate $\frac{5}{8}$ of the choco ..... how much?

Soln Fraction of chocolate ate on Monday = $\frac{5}{8}$
Fraction of chocolate ate on Tuesday = 3/8

$\frac{5}{8} > \frac{3}{8}$

Fraction eaten more on monday = $\frac{5}{8} - \frac{3}{8} = \frac{2}{8}$.

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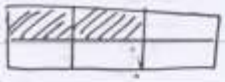
7 Nikhil travels $\frac{3}{11}$ ..... transportatio

8. Dinesh reads $\frac{2}{9}$ ..... read altogethe

Types of fractions

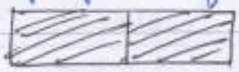
Proper fraction - A fraction in which the numerator is less than denominator is called proper fraction

eg $\frac{2}{6}$, $\frac{3}{7}$



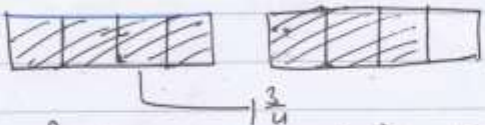
Value of a proper fraction is less than one.

Improper fractions - A fraction in which the numerator is greater than or equal to the denom is called an improper fraction eg $\frac{4}{3}$, $\frac{2}{2}$



Value of an improper fraction is more than or equal to one.

Mixed fraction A fraction which is a combinatio of a whole number and a proper fraction is called a mixed fraction eg $1\frac{3}{4}$



Converting Improper fraction to mixed fractio

eg $\frac{23}{5} = 5\overline{)23}\ (4$ -20 03 $= 4\frac{3}{5}$

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Converting mixed fraction to improper fraction

$4\frac{3}{5} = \frac{4\times5+3}{5} = \frac{20+3}{5} = \frac{23}{5}$

Exercise 6.4

Q1: In book

Q2: Convert the following into mixed fractions

1. $\frac{17}{9}$

$9\overline{)17}\ (1$, -9, 8

$\frac{17}{9} = 1\frac{8}{9}$

2) $\frac{17}{2}$

$2\overline{)17}\ (8$, -16, 1

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

3. $\frac{22}{3}$

4) $\frac{19}{3}$

Q3 Convert into Improper fractions

1 $3\frac{1}{3} = \frac{3\times3+1}{3} = \frac{9+1}{3} = \frac{10}{3}$

2 $11\frac{1}{5} = \frac{11\times5+1}{5} = \frac{55+1}{5} = \frac{56}{5}$

3 $9\frac{1}{9}$

4. $5\frac{3}{4}$

Note- S.A. -I (Syllabus of unit I,II & III)

Chapter 7
The World of Shapes

Definitions

1. **Point** - A point is a basic unit of geometry. It is represented by a dot. We name it with a capital letter.

2. **Line** - A line is a collection of points, extending endlessly in both the directions along a straight path.

Types of Lines

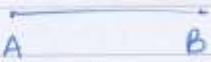
There are 3 different types of lines

1. **Horizontal line**

2. **Vertical line**

3. **Slanting line**

Line Segment - Line segment is a part of a line with a starting point and an end point. It has a definite length.



Face - The surface of a solid figure is called a face.

Edge - An edge is a line segment where

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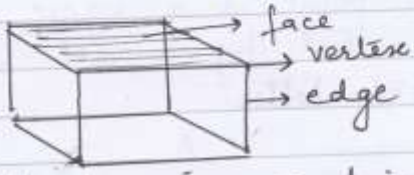
two faces meet.

Vertex - A vertex is a point where 2 edges meet



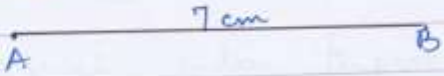
Measuring and drawing a line segment

We use ruler to measure and draw line segment 1 big division on scale represents 1 cm. 1 small division represent 1mm.

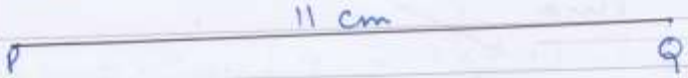
Exercise 7.1

Draw line segment of given length

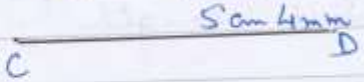
1. 7 cm



2. 11 cm



3. 5 cm 4 mm



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Exercise 7.2

Curve

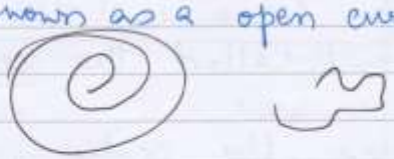
1. A line that is not straight is called a curve

Closed Curve

If a curve begins and end at the same point it is known as a closed curve ex

Open Curve

If a curve doesnot end at the starting point it is known as a open curve eg



Simple closed curve

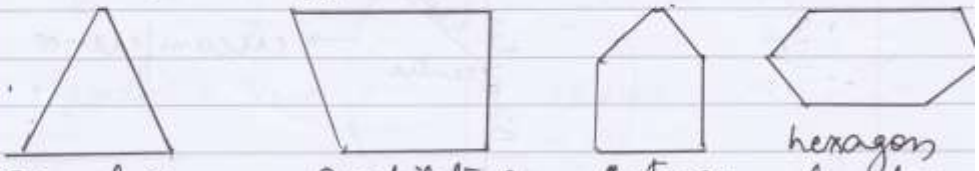
If a closed curve does not cross itself it is a simple closed curve.

Polygons -

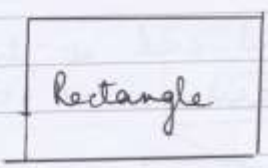
A closed plane figure made up of three or more line segments is called polygons

Q3: Draw four polygons with different no. of sides

Ans



Q5 What is Quadrilateral? Give 2 examples of a quadrilateral



Circle

A circle is a simple closed curve.

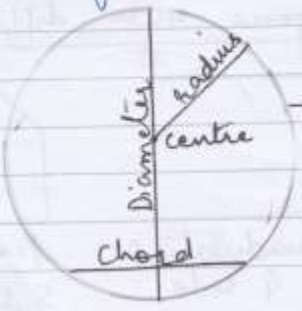
Every point on the curve is at the same distance from a fixed point called the centre.

Distance between the centre and any point on the circle is called radius.

The line segment joining any 2 points on the circle is called chord.

The chord passing through the centre is called diameter.

The length of the boundary of a circle is called circumference.



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Relation between radius and diameter

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

$$\text{diameter} = 2 \times \text{radius}$$

Exercise 7.3

Q1: Find the diameter for the given radii

a) 8 cm

diameter = 2 × radius
= 2 × 8 cm
= 16 cm

b) 34 m

d = 2 × radius
d = 2 × 34 m
d = 68 m

c) 17 cm

d = 2 × r

d) 30 cm

Q2: Find the radius for the given diameters

a) 6 cm

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

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

radius = 3 cm

b) 70 cm

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

$r = \frac{70}{2}$

radius = 35 cm

c) 34 m

To be done by students

d) 50 cm

Note- S.A. -I (Syllabus of unit I,II & III)

Q3 A round clock has radius 15 cm. Find its diameter.

Soln $R = 15$ cm

$d = 2 \times$ radius

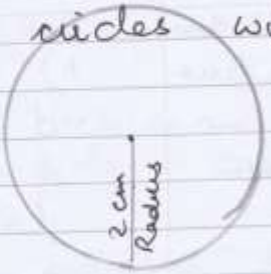
2×15

diameter = 30 cm.

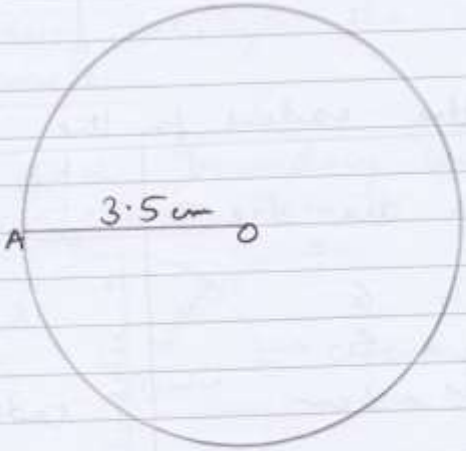
Q4 The diameter of a wheel is 70cm. Find radius

Q5 Draw circles with the given radii

1. 2 cm



2. 3.5 cm



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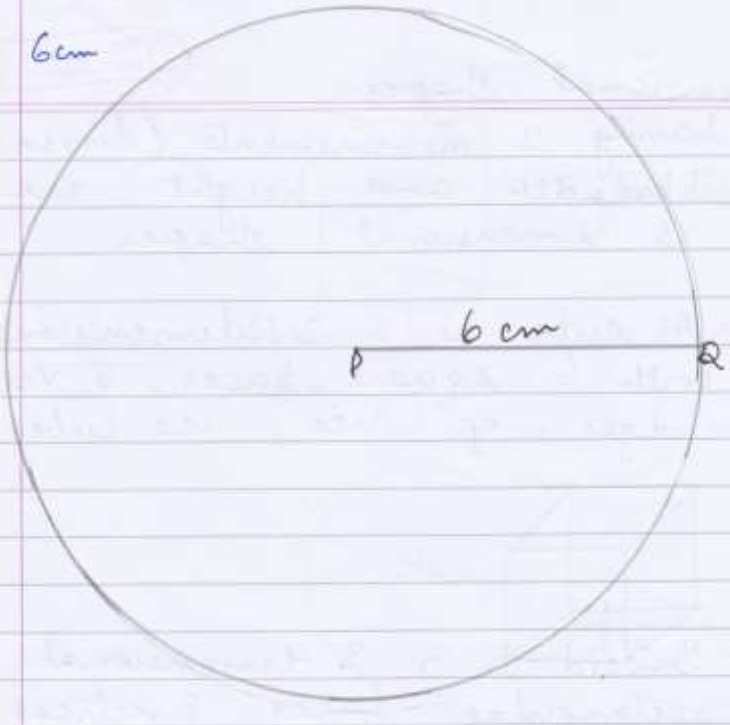
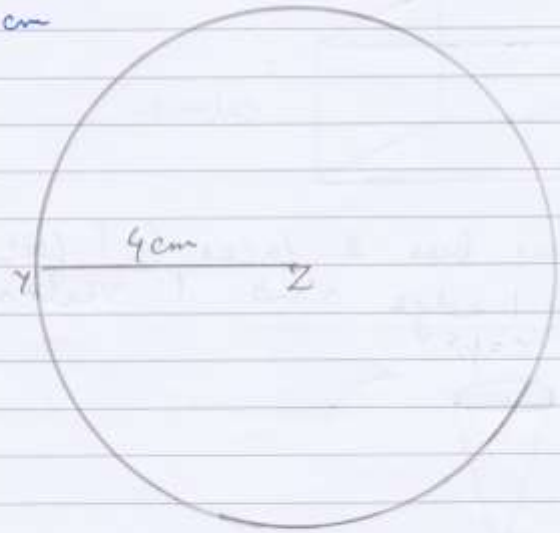
3 6cm



4 4 cm



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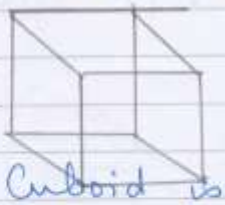
3 dimensional shapes

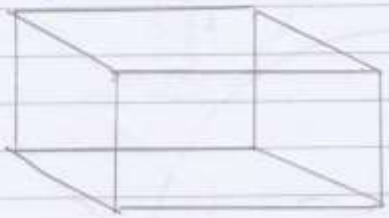
Objects having 3 measurements (dimensions) length, breadth and height are called 3 dimensional shapes.

1. **Cube** - A cube is a 3 dimensional objects with 6 square faces, 8 vertices and 12 edges. eg dice, ice cube.



cube

2. **Cuboid** - Cuboid is a 3 dimensional object with 6 rectangular faces 8 vertices and 12 edges. eg Book Cupboard.



cuboid

3. **Cone** A cone has 2 faces (1 flat and 1 curved) 1 edge and 1 vertex
eg joker's cap

4. **Cylinder** - A cylinder has 3 faces (2 flat and 1 curved) 2 edges and no vertex
eg water tank

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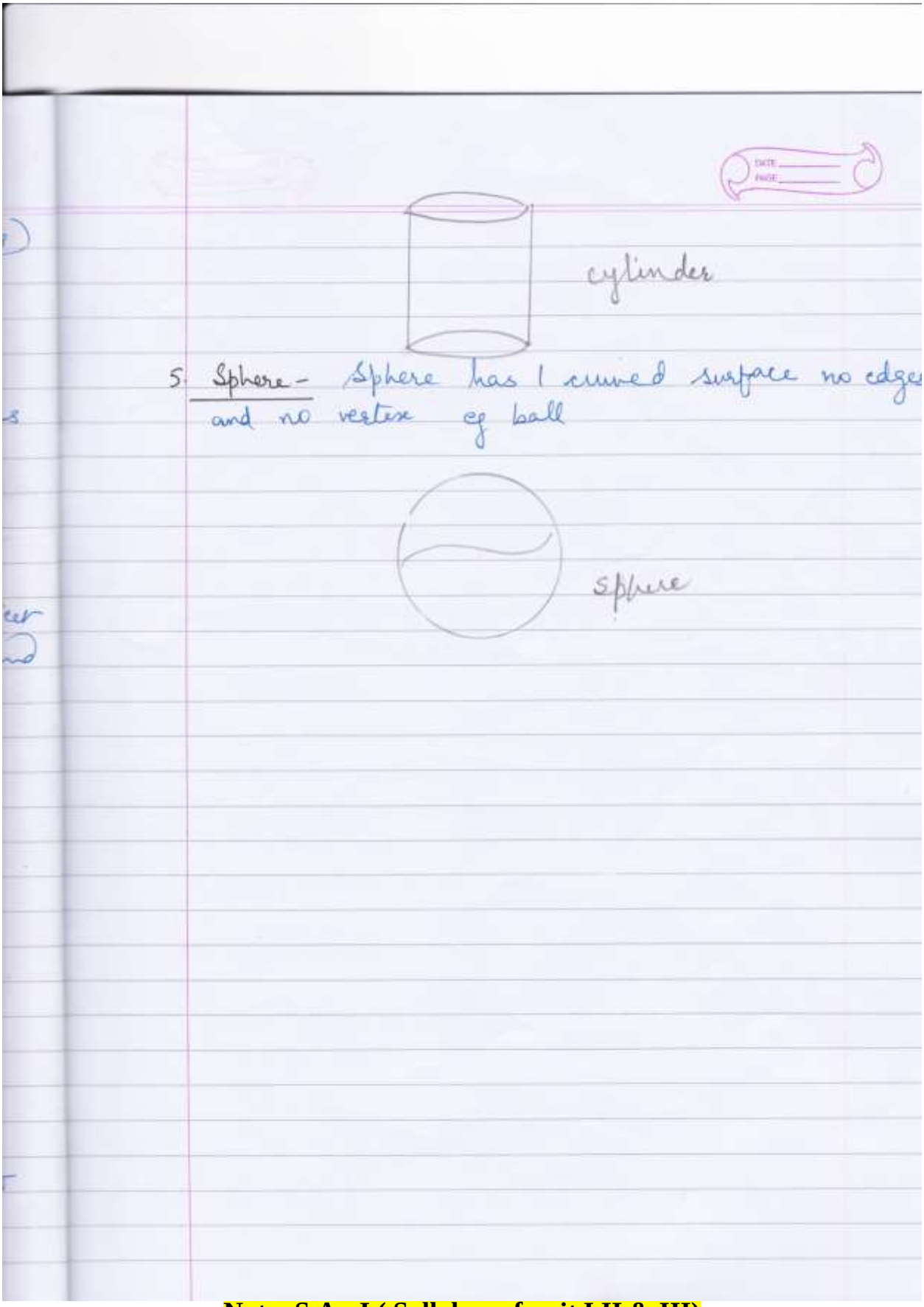

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