



CHAPTER 4 : ANOTHER PEEK BEYOND THE POINT



SUMMARY OF CONCEPTS

1. DECIMALS – A QUICK RECAP

Decimals are an extension of our place value system to represent decimal fractions like $\frac{1}{10}$, $\frac{1}{100}$, $\frac{1}{1000}$, ...

Example: 27.53

Tens	Ones		Tenths	Hundredths
2	7	.	5	3

27.53 = 2 Tens + 7 Ones + 5 Tenths + 3 Hundredths

Fractions with denominators 10, 100, 1000, ... can be written as decimals.

Examples:

$$\frac{254}{1000} = 0.254 \quad \frac{847}{10000} = 0.0847 \quad \frac{173}{100} = 1.73$$

2. MULTIPLICATION OF DECIMALS

- Multiply the numbers as whole numbers.
- In the product, place the decimal point so that the number of digits after decimal = sum of digits after decimal in multiplier and multiplicand.

Example:

$$\begin{array}{r} 5.8 \times 1.24 \\ \times 1.24 \\ \hline 232 \\ 580 \\ 696 \\ \hline 7192 \end{array}$$

1 digit after decimal 2 digits after decimal

Product as whole numbers

Total decimal digits = 3

Product Comparison

- Both > 1 → Product > both numbers
- Both between 0 and 1 → Product < both numbers
- One > 1 and other between 0 and 1 → Product is between the two numbers

3. DIVISION BY 10, 100, 1000, ...

Move the decimal point to the LEFT by as many places as there are zeroes in the divisor.

Number	÷ 10	÷ 100	÷ 1000
18.7	1.87	0.187	0.0187
21.1	2.11	0.211	0.0211
2.146	0.2146	0.02146	0.002146
0.306	0.0306	0.00306	0.000306

4. DIVISION USING PLACE VALUE (LONG DIVISION)

- Same method as for whole numbers.
- After Ones, regroup to Tenths, Hundredths, Thousandths, ...
- Place the decimal point in the quotient when we start dividing the Tenths.

Example: $1325 \div 4 = 331.25$

$$\begin{array}{r} 4 \overline{) 1325} \quad 1325 \div 4 = 331.25 \\ \underline{-12} \\ 12 \\ \underline{-12} \\ 5 \\ \underline{-4} \\ 10 \\ \underline{-8} \\ 20 \\ \underline{-20} \\ 0 \end{array}$$

→ Hundreds
→ Tens
→ Ones
→ Tenths
→ Hundredths

5. DIVISION WITH DECIMAL DIVISOR

- Make the divisor a whole number by multiplying both dividend and divisor by 10, 100, 1000, ...
- Then divide using place value method.

Example: $4.68 \div 0.13$

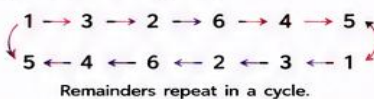
$$\begin{aligned} &= \frac{4.68}{0.13} = \frac{4.68 \times 100}{0.13 \times 100} = \frac{468}{13} \\ &= 36 \text{ (remainder 0)} = 36 \end{aligned}$$

6. RECURRING (NEVER ENDING) DECIMALS

- Some divisions do not end. The remainders repeat in a cycle.

Example: $\frac{10}{3} = 3.33333 \dots$

$\frac{1}{7} = 0.142857142857 \dots$
(block 142857 repeats)

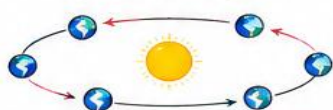


7. LEAP YEAR & GREGORIAN CALENDAR

The Earth takes 365.2422 days to go around the Sun.

We consider 365 days in a calendar year.

Extra each year = 0.2422 days.



Rules for Leap Year (Gregorian Calendar)

A year is a leap year if:

- It is divisible by 400 → Leap year (366 days)
- OR divisible by 4 but NOT by 100 → Leap year
- Otherwise → Common year (365 days)



Why these rules?

- Add 1 day every 4 years.
- Don't add in every 100th year.
- Again add in every 400th year.
- This keeps our calendar in sync with the Earth's revolution.

8. IMPORTANT PATTERNS & PROPERTIES

HCF (Highest Common Factor)

- Highest among common factors.
- Using prime factors → take the MINIMUM power of each prime.
- If one number is a factor (or multiple) of the other → HCF is the smaller number.

LCM (Lowest Common Multiple)

- Lowest among common multiples.
- Using prime factors → take the MAXIMUM power of each prime.
- If one number is a multiple of the other → LCM is the larger number.

Relationship between HCF and LCM (for two numbers a and b)

$$\text{HCF}(a, b) \times \text{LCM}(a, b) = a \times b$$

Example: For 12 and 18

$$\begin{aligned} 12 &= 2^2 \times 3 & 18 &= 2 \times 3^2 \\ \text{HCF} &= 2 \times 3 = 6 & \text{LCM} &= 2^2 \times 3^2 = 36 \\ 6 \times 36 &= 216 & 12 \times 18 &= 216 \end{aligned}$$

If both numbers are multiplied by the same number k:

HCF → multiplied by k
LCM → multiplied by k

9. QUICK REFERENCE – FORMULAS

Decimal multiplication:

Multiply as whole numbers. Decimal places in product = sum of decimal places in the numbers.

Division by 10, 100, 1000, ...:

Move decimal point LEFT by number of zeroes.

Division by a decimal divisor:

Make divisor whole by multiplying both numbers by the same power of 10.

Fraction to decimal:

Make denominator 10, 100, 1000, ... and convert.

Fraction division:

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c}$$

Recurring decimal detection:

Look for repeating remainders.



10. UNIT CONVERSIONS (QUICK GUIDE)

- 1 m = 100 cm = 1000 mm
- 1 kg = 1000 g = 1000 mg
- 1 l = 1000 ml
- 1 km = 1000 m



11. REAL-LIFE APPLICATIONS

Shopping & Money



Cost, profit, total amount

Travel



Distance, speed, fuel usage

Sharing & Packing



Equal sharing, packing items

Measurements



Length, weight, capacity

Calendars



Leap years & time

12. KEY TAKEAWAYS

- Decimals extend our place value system.
- Understand place value → do the operations with ease.
- Rules for decimals are natural extensions of whole number rules.
- Practice, observe patterns, and check your answers!



REMEMBER!

Understand



Practice



Observe patterns



Apply in real life

Excel in Maths!



ANOTHER PEEK BEYOND THE POINT

WORKSHEET-1

Section A: MCQs(Part-1) ($10 \times 1 = 10$ marks)

1. What does the decimal 27.53 represent in terms of place value?

- A) 2 tens, 7 units, 5 tenths, 3 hundredths B) 2 hundreds, 7 tens, 5 units, 3 tenths
C) 2 units, 7 tenths, 5 hundredths, 3 thousandths D) 2 tens, 7 hundredths, 5 units, 3 tenths

2. What does the decimal 27.53 represent in terms of place value?

- A) 2 tens, 7 units, 5 tenths, 3 hundredths B) 2 hundreds, 7 tens, 5 units, 3 tenths
C) 2 units, 7 tenths, 5 hundredths, 3 thousandths D) 2 tens, 7 hundredths, 5 units, 3 tenths

3. Which of the following equals 0.254?

- A) $254/100$ B) $254/10$ C) $254/1000$ D) $254/10000$

4. To divide 123 by 10, how many places do you move the decimal point?

- A) 2 places right B) 1 place right C) 1 place left D) 2 places left

5. To divide 123 by 10, how many places do you move the decimal point?

- A) 2 places right B) 1 place right C) 1 place left D) 2 places left

6. What is 9.5×5 ?

- A) 45.5 B) 47.5 C) 47 D) 45

7. How many decimal digits will the product 9.5×5 have?

- A) 0 B) 1 C) 2 D) 3

8. If $596 \times 248 = 147808$, then $5.96 \times 24.8 = ?$

- A) 14780.8 B) 1478.08 C) 147.808 D) 14.7808

9. To divide a decimal by 1000, the decimal point moves:

- A) 3 places right B) 3 places left C) 1 place left D) 1 place right

10. To divide a decimal by 1000, the decimal point moves:

- A) 3 places right B) 3 places left C) 1 place left D) 1 place right

MCQs(Part-2) ($10 \times 1 = 10$ marks)

11. Riddhi is rewriting a number because the decimal point blurred out. She knows the digit 4 is in the hundredths place. Which of the following could be her number?
A) 432.1 B) 32.41 C) 2.143 D) 0.413
12. A map uses a scale where 1 cm represents 10 km. If the distance between two towns on the map is measured as 3.5 cm, what is the actual distance?
A) 0.35 km B) 35 km C) 350 km D) 3.5 km
13. John multiplied 0.3×0.4 on his homework and wrote the answer as 1.2. Why is John incorrect?
A) He should have added the numbers instead of multiplying.
B) The product must have two digits after the decimal point (0.12).
C) The product must have no decimal point at all (12).
D) He multiplied the whole numbers incorrectly.
14. A piece of ribbon is 0.8 meters long. If it is cut exactly into 4 equal smaller strips, what is the length of each strip?
A) 0.2 cm B) 2.0 meters C) 0.02 meters D) 0.2 meters
15. Four students ran a 100-meter dash. Their recorded times in seconds are listed below:
• Amit: 14.35 s, Bhavna: 14.05 s, Chirag: 14.30 s, Divya: 14.50 s
Who won the race?
A) Amit B) Bhavna C) Chirag D) Divya
16. A bottle contains 2.75 L of juice. If 0.85 L is poured out, how much juice remains in the bottle?
(A) 1.80 L (B) 1.90 L (C) 2.60 L (D) 1.70 L
17. Which of the following decimals is equal to $\frac{405}{1000}$?
(A) 4.05 (B) 0.405 (C) 40.5 (D) 0.0405
18. A runner completes 12 laps, each of length 0.75 km. What total distance does the runner cover?
(A) 8 km (B) 9 km (C) 9.5 km (D) 10 km
19. Which of the following numbers is the smallest?
(A) 3.507 (B) 3.570 (C) 3.57 (D) 3.705
20. A shopkeeper divides 18.9 kg of rice equally into 9 bags. How much rice is packed in each bag?
(A) 2.01 kg (B) 2.1 kg (C) 21 kg (D) 1.9 kg

WORKSHEET-2

Section B: Short Answer ($10 \times 2 = 20$ marks)

1. Convert 50 g, 25 g, and 250 g each to kilograms as decimals.

2. Given $756 / 36 = 21$, find $75.6 / 3.6$.

3. Fill the boxes $\square \times \square = 3.6$

4. Write 5500 m in km as a decimal.

5. Give the first five digits of the decimal expansion of $1 / 7$

6. Find the product of 5.8×1.24 using the standard rule.

7. A 4 m wooden block is cut into 5 equal pieces. Length of each piece?

8. Write $527/10000$ as sum of fractions and also as decimal.

9. Find 14.24×6.46 .

10. Find the value of $6.24/0.35$.

Section C: Short Answer ($6 \times 3 = 18$ marks)

11. If 33 meters of ribbon is shared equally among 5 people how much ribbon does each person receive ?

12. Find the following product a) 82×6 tenths b) 19×5 hundredths

13. Convert 0.079 m in cm and mm.

14. Represent 3.7 on the number line.

15. A regular polygon has 12 sides with perimeter 208.8 cm. Find each side's length.

16. A school tailor uses 1.85 meters of cloth to stitch one student's uniform. How many meters of cloth will he require to stitch uniforms for a class of 25 students?

Section D: Long Answer ($4 \times 5 = 20$ marks)

17. Shyamala buys 3 kg bananas at Rs. 30/kg and counts 35 bananas. She sells each at Rs. 4.5. How much profit does she make?

18. An airplane covers a distance of 2408.5 km in 3.5 hours. Assuming it flies at a constant speed, how much distance does it travel in just 1 hour?

19. Preeti ran 3.25km on Monday, km on Tuesday, and a certain distance on Wednesday. If her total running distance for the three days was 10.1 km, how far did she run on Wednesday?

20. Arshad visits a stationery shop. One pen costs Rs. 9.5, one notebook costs Rs. 23.6, and one eraser costs Rs. 2.75. He buys 5 pens, 3 notebooks, and 4 erasers. Find the total money he has to pay to the shopkeeper.

Case Study Based Questions ($2 \times 4 = 8$ marks)

21. The Leap Year Problem

In Geography class teacher presented the fact that The Earth takes 365.2422 days per revolution around the Sun. Calendar designers use leap years to synchronise the calendar. After knowing this fact Manu and Panu have these questions in their minds help them to solve.

- (a) How many extra days accumulate after 4 calendar years without any leap year?
- (b) How many calendar days are in 100 years with a leap year every 4th year?
- (c) Why is the year 2100 not a leap year?

22. The Bookshelf

A teacher places textbooks (2.5 cm thick each) on a shelf 160 cm long. The teacher wants to place 80 textbooks.

- (a) How many books can actually fit on the shelf?
- (b) How much space would 80 books require?
- (c) How many extra shelves of the same length are needed to place all 80 books?

Self Assessment:

I understood all the concepts:

☐ Yes

☐ No

I need more practice:

☐ Yes

☐ No

Name of Concepts having doubts/Not Cleared: _____

Parent's Assessment:

My ward understood all the concepts:

☐ Yes

☐ No

He/She need more practice:

☐ Yes

☐ No

Name of Concepts having doubts/Not Cleared: _____

Signature of Parent:

Teacher's Assessment:

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Answers of Worksheet-1

Q.No.	1	2	3	4	5	6	7	8	9	10
Ans.	A	A	C	C	C	B	B	C	B	B
Q.No.	11	12	13	14	15	16	17	18	19	20
Ans.	B	B	B	D	B	B	B	A	B	

Answers of Worksheet-2

Q.No.	1	2	3	4	5
Ans.	0.05 kg, 0.025 kg, 0.25 kg	21	0.36	5.5 km	0.14285
Q.No.	6	7	8	9	10
Ans.	7.192	0.8 m	0.0527	91.9904	17.83
Q.No.	11	12	13	14	15
Ans.	6.6 m	(a)49.2 (b)0.95	7.9 cm, 79 mm	3.7 on number line	17.4 cm
Q.No.	16	17	18	19	20
Ans.	46.25 m	₹67.50 profit	688.14 km	6.85 km	₹129.50
Q.No.	21	22			
Ans.	(a)0.9688 days (b)36525 days (c)Divisible by 400	(a)64 books (b)200 cm (c)1 extra shelf			