



Class 9 Maths Chapter 2 – Exercise 2.4

Linear Relationships

Ganita Manjari | New Syllabus 2026–27

I checked the new Ganita Manjari Chapter 2 structure. Exercise 2.4 is **Linear Relationships** and has **4 questions**.



Question 1 – Plant Growth

A plant has an initial height of **1.75 feet** and grows by **0.5 feet every month**.

(i) Find its height after 7 months.

Initial height = 1.75 ft

Growth per month = 0.5 ft

After 7 months:

$$h = 1.75 + 0.5 \times 7$$

$$h = 1.75 + 3.5$$



Height = 5.25 feet

(ii) Complete the table

Time t (months)	Height h (feet)
0	1.75
1	2.25
2	2.75
3	3.25
4	3.75

5	4.25
6	4.75
7	5.25
8	5.75
9	6.25
10	6.75

(iii) Find the expression relating **h** and **t**.

$$h = 1.75 + 0.5t$$

This is a **linear relationship** because the height increases by the same amount, **0.5 feet**, for every 1-month increase in time.

✓ **Answer:**

$$h = 1.75 + 0.5t$$



Question 2 – Depreciation of a Mobile Phone

A mobile phone is bought for ₹10,000 and its value decreases by ₹800 every year.

(i) Find its value after 3 years.

Initial value = ₹10,000

Decrease per year = ₹800

$$V = 10000 - 800 \times 3$$

$$V = 10000 - 2400$$

✓ **Value = ₹7,600**

(ii) Table of values

Time t (years)	Value V (₹)
0	10,000
1	9,200
2	8,400
3	7,600
4	6,800
5	6,000
6	5,200
7	4,400
8	3,600

(iii) Linear relationship

$$V = 10000 - 800t$$

The relationship represents **linear decay** because the value decreases by the constant amount of ₹800 per year.

✓ **Answer:**

$$V = 10000 - 800t$$



Question 3 – Village Population

A village has an initial population of **5,000** and its population increases by **200 people every year**.

(i) Find the population after 5 years.

$$P = 5000 + 200 \times 5$$

$$P = 5000 + 1000$$

✓ **Population = 6,000**

(ii) Write the linear relationship.

If t is the number of years:

$$P = 5000 + 200t$$

✓ **Answer:**

$$P = 5000 + 200t$$

(iii) What does the coefficient of t represent?

The coefficient **200** represents the **increase in population per year**.

✓ **Answer:**

Population increases by 200 people per year.

Question 4 – Prepaid Mobile Balance

A prepaid mobile account has an initial balance of ₹500 and decreases by ₹25 every day.

(i) Find the balance after 8 days.

$$B = 500 - 25 \times 8$$

$$B = 500 - 200$$

✓ **Balance = ₹300**

(ii) Write the linear relationship.

$$B = 500 - 25t$$

where t represents the number of days.

✓ **Answer:**

$$B = 500 - 25t$$

(iii) What does the negative coefficient represent?

The coefficient -25 represents a decrease of ₹25 per day.

✓ **Answer:**

The balance decreases by ₹25 every day.



Exercise 2.4 – Quick Answer Key

Question	Answer
1(i)	5.25 feet
1(ii)	1.75, 2.25, 2.75, 3.25, 3.75, 4.25, 4.75, 5.25, 5.75, 6.25, 6.75
1(iii)	$h = 1.75 + 0.5t$
2(i)	₹7,600
2(ii)	10,000; 9,200; 8,400; 7,600; 6,800; 6,000; 5,200; 4,400; 3,600
2(iii)	$V = 10000 - 800t$
3(i)	6,000
3(ii)	$P = 5000 + 200t$
3(iii)	200 people/year
4(i)	₹300
4(ii)	$B = 500 - 25t$
4(iii)	Decrease of ₹25/day



Key Concept

Linear relationship = constant rate of change.

-  **Growth:** $y = a + bt$
-  **Decay:** $y = a - bt$

This exercise is important because it prepares students for **Exercise 2.5 – Visualising Linear Relationships**, where these relationships are represented graphically.