📘 Class 9 Maths – Ganita Manjari Part II

Chapter 13: Two Variables, One Line

Exercise Set 13.3 – Complete Solutions

Q1. The following diagrams represent ski hills. Rank the hills in order of their steepness, from least to greatest.

Slope:

Slope = Vertical rise / Horizontal run

Hill A

Rise = 60 m
Run = 70 m

Slope = 60/70 = **6/7 ≈ 0.857**

Hill B

Rise = 60 m
Run = 110 m

Slope = 60/110 = **6/11 ≈ 0.545**

Hill C

Rise = 80 m
Run = 100 m

Slope = 80/100 = **4/5 = 0.8**

Comparing:

6/11 ≈ 0.545

4/5 = 0.8

6/7 ≈ 0.857

Therefore, from least to greatest steepness:

B < C < A

✅ Answer:

B, C, A

Q2. The ramp at a loading dock rises 2.5 metres over a run of 4 metres. Find the slope of the ramp.

Given:

Rise = 2.5 m

Run = 4 m

Slope = Rise / Run

= 2.5/4

= 25/40

= **5/8**

= **0.625**

✅ Answer:

Slope = 5/8 or 0.625

Q3. Find the slope of the line l in each of the following diagrams.

(i)

The line is horizontal.

For a horizontal line:

Rise = 0

Therefore,

Slope = Rise / Run

= 0/Run

= 0

✅ Answer:

0

(ii)

The line falls from left to right.

From the graph, for every 1 unit increase in x, y decreases by 1 unit.

Therefore,

Slope = −1/1

= −1

✅ Answer:

−1

(iii)

Take the two marked points on the line.

From the first point to the second point:

Rise = 4 units

Run = 6 units

Therefore,

Slope = Rise / Run

= 4/6

= **2/3**

✅ Answer:

2/3

(iv)

The line is vertical.

For a vertical line, the horizontal change is zero:

Run = 0

Therefore,

Slope = Rise / 0

which is **not defined**.

✅ Answer:

The slope is undefined.

Q4. An accessibility ramp for wheelchairs is to be made alongside the staircase. The guidelines given for the slope of the ramp

is 1 cm vertical rise to 12 cm horizontal length. What should be the horizontal length of the ramp if the total height of the stairs is 18 cm?

Given:

Vertical rise = 1 cm

Horizontal length = 12 cm

Therefore,

Slope = 1/12

The total vertical rise is 18 cm.

Let the required horizontal length be x cm.

Then:

1/12 = 18/x

Cross-multiplying:

x = 18 × 12

x = **216 cm**

Therefore, the horizontal length of the ramp should be:

✅ Answer:

216 cm

or

2.16 m

🔢 Final Answers

Question	Answer
Q1	B < C < A
Q2	5/8 = 0.625
Q3(i)	0
Q3(ii)	−1
Q3(iii)	2/3
Q3(iv)	Undefined
Q4	216 cm = 2.16 m