

Grid Lines: The vertical and horizontal lines which form the grid on graph paper.

Grid Point: Any point of intersection of two dimensional plane on graph paper.

Slope: A number which represents the steepness or tilt/incline of a line.

AMOUNT OF SLOPE:

Moderate Slope:makes an angle of 45° with the horizontal.

Gentle Slope:makes an angle between 0° and 45° with the horizontal.

Steep Slope:makes an angle between 45° and 90° with the horizontal.

Zero slope:makes an angle of 0° with the horizontal.

DIRECTION OF SLOPE: Lines may be *vertical, horizontal, uphill* or *downhill* in direction.

Uphill: Ascending, increasing or rising to the right.

Downhill: descending, decreasing or dropping to the right.

Steps For Finding A Numerical Value For Slope:

1. Find two **grid points** on the line and mark them with dots.
2. Start at the left grid point.
3. Use a ruler to draw a horizontal line to the right from this point until you are vertically above or below the second grid point. This horizontal line is the **run**.
4. Now draw a vertical line from the right end of the **run** either up or down to connect to the second grid point. This vertical line is the **rise**.
5. Count the graph squares to determine the length of the **run** and the **rise**.
6. The **run** is always positive.
7. The **rise** is positive if it is going upwards from the **run**, or is negative if the **rise** is going downwards from the **run**.

$$SLOPE = \frac{rise}{run}$$

9. Reduce the answer for slope to a fraction in lowest terms – avoid decimals or mixed numbers.

SUMMARY:

Uphill Slope:corresponds to slope values which are positive.

Downhill Slope:corresponds to slope values which are negative.

Moderate Slope:corresponds to a slope value of 45° or half-way

Gentle Slope:corresponds to slope values which are less than 45°.

Steep Slope:corresponds to slope values which are greater than 45°.

Zero slope:corresponds to a slope value of 0°.

Graph # 11 has the **steepest slope** of all because its slope value is -7.

Graph # 7 has the **gentlest slope** of all because its slope value is 0.17.

Mathematics 9
The Slope of a Line

Date: _____

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| <p>1. amount of slope: STEEP direction of slope: UP (+) slope = $\frac{2}{1} = 2$</p> | <p>2. amount of slope: EXTREME direction of slope: DOWN (-) slope = $\frac{-2}{4} = -\frac{1}{2} = -0.5$</p> | <p>3. amount of slope: EXTREME direction of slope: UP (+) slope = $\frac{2}{3} = 0.67$</p> |
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| <p>4. amount of slope: STEEP direction of slope: UP (+) slope = $\frac{5}{2} = 2.5$</p> | <p>5. amount of slope: STEEP direction of slope: UP (+) slope = $\frac{2}{2} = 1$</p> | <p>6. amount of slope: ZERO direction of slope: slope = $\frac{0}{3} = 0$</p> |
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| <p>7. amount of slope: STRONG direction of slope: DOWN slope = $\frac{-1}{6} = -0.17$</p> | <p>8. amount of slope: STEEP direction of slope: DOWN slope = $\frac{-1}{1} = -1$</p> | <p>9. amount of slope: STEEP direction of slope: DOWN slope = $\frac{-4}{1} = -4$</p> |
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| <p>10. amount of slope: STEEP direction of slope: DOWN slope = $\frac{-3}{4} = -0.75$</p> | <p>11. amount of slope: STEEP direction of slope: DOWN slope = $\frac{-7}{1} = -7$</p> | <p>12. amount of slope: STEEP direction of slope: UP slope = $\frac{9}{2} = 4.5$</p> |