



This worksheet examines linear functions and their graphs, focusing on the interpretation of the slope–intercept form in practical terms. You will explore how to represent linear functions algebraically and graphically, interpret their parameters, and apply these ideas to real-life contexts.

Easy Questions

1. Write the linear equation $y = 2x + 3$ in slope–intercept form and state the slope and the y –intercept clearly.
2. Plot the graph of the linear function $y = -x + 5$. Label the x –intercept and y –intercept.
3. A straight line has a y –intercept of 2 and a slope of 1. Write its equation in slope–intercept form.
4. For the linear function $y = 4x - 7$, determine the y –intercept.
5. Decide whether the linear function $y = 0.5x + 1$ is increasing or decreasing, and explain your reasoning.

Intermediate Questions

6. Rewrite the equation $3x - y = 6$ into slope–intercept form. Identify the slope and the y –intercept.
7. Given the function $y = -2x + 9$, find the value of y when $x = 4$.
8. A taxi service charges according to the function $y = 3.50 + 2.00x$, where x is the distance in kilometres and y is the total fare. State the fixed cost and the cost per kilometre.
9. For the linear function $y = 5 - 2x$, determine the x –intercept.
10. A line has a y –intercept of -2 and passes through the point $(3, 4)$. Calculate the slope and write the equation of the line in slope–intercept form.
11. Determine the gradient and the y –intercept of the function $y = -3x + 8$.
12. Find the equation of the line that has the same slope as $y = 3x - 2$ and passes through the point $(-2, 1)$.

13. The line passing through the points $(1, 2)$ and $(4, 8)$ is to be determined. Calculate its slope and express its equation in slope–intercept form.
14. Consider the linear function $y = kx + 5$. Find the value of k if the point $(2, 11)$ lies on the graph.
15. For the function $y = 0.5x + 3$, compute the value of y when x is twice the y –intercept.
16. Determine the point at which the line $y = 2x + 1$ intersects the y –axis.
17. A linear function has a slope of 0. Describe the appearance of its graph.
18. Write the equation of a horizontal line that passes through the point $(4, -3)$.
19. The line passing through $(0, 2)$ and $(5, y)$ has a slope of 1. Find the value of y .
20. In the function $y = 4x + 7$, where x represents time in hours and y represents distance in kilometres, explain the practical meaning of the slope.

Hard Questions

21. Graph the linear function $y = \frac{5}{2}x - 3$ using its slope–intercept form. On labelled axes, indicate at least two key points (including the y –intercept) to demonstrate accuracy.
22. Show that the equations $y = 2x + 3$ and $2x - y = -3$ represent the same line. Explain your reasoning.
23. The cost of printing is given by the function $C = 0.75n + 20$, where n is the number of pages printed. Explain the meaning of the slope and the y –intercept in this context.
24. For a linear function $y = mx + c$ that passes through the points $(1, 4)$ and $(2, 7)$, determine the values of m and c .
25. A mobile phone plan charges a fixed fee of \$15 and \$0.10 per minute of call time. Write the linear function representing the total cost and use it to calculate the cost for 250 minutes.
26. A straight line has gradient 7 and x –intercept 4. Write the equation of the line in slope–intercept form. Clearly state the gradient and the y –intercept.
27. The function $y = -3x + k$ passes through the point $(4, -5)$. Find the value of k .
28. A line in slope–intercept form passes through the point $(0, 3)$. If the slope of the line is -2 , determine the y –coordinate of the point on the line when $x = 5$.
29. A warming trend is modelled by the linear function $y = 0.03x + 14$, where x represents the number of years since 2000 and y represents the average temperature in degrees Celsius. Explain what the gradient signifies and predict the average temperature 50 years after 2000.

30. A survey found a linear relationship between hours studied and test scores. If a student who studies for 4 hours scores 68, and another who studies for 8 hours scores 80, determine the linear function that models the relationship between hours studied and the test score.