Foundation GCSE: Equations of Straight-Line Graphs

Name: _____ Class: _____

Instructions: Answer all questions. Questions are ordered from easiest (1) to hardest (20). Working out should be shown where appropriate.

1. Write down the equation of a line with gradient 3 and y-intercept 4.
2. Write down the equation of a line with gradient -2 and y-intercept 5.
3. Find the equation of the line with gradient 4 passing through $(0, -3)$.
4. Find the equation of the line with gradient 1 passing through $(2, 5)$.
5. Find the equation of the line passing through $(0, 2)$ and $(3, 11)$.
6. Rearrange $2x + y = 6$ into the form $y = mx + c$.
7. Find the equation of the line with gradient -3 passing through $(1, 4)$.
8. Rearrange $3x - y = 5$ into the form $y = mx + c$.
9. Find the equation of the line passing through $(1, 5)$ and $(3, 11)$.
10. Find the equation of the line parallel to $y = 2x + 3$ passing through $(0, 7)$.
11. Rearrange $4x + 2y = 10$ into the form $y = mx + c$.
12. Find the equation of the line passing through $(2, 7)$ with gradient 4.
13. Find the equation of the line passing through $(-1, 2)$ and $(2, 8)$.
14. Find the equation of the line parallel to $y = -4x + 1$ passing through $(2, 5)$.
15. Rearrange $3x + 2y - 8 = 0$ into the form $y = mx + c$.
16. Find the equation of the line passing through $(3, 1)$ and $(5, 9)$.
17. Find the equation of the line with gradient 0 passing through $(4, -2)$.
18. Find the equation of the line passing through $(0, 0)$ and $(4, 12)$.
19. Find the equation of the line passing through $(2, 3)$ and parallel to the x-axis.
20. Find the equation of the line passing through $(-2, 4)$ and $(4, 4)$.

Answers & Worked Solutions

1. $y = 3x + 4$ – Standard $y = mx + c$ form.
2. $y = -2x + 5$ – Substitute $m = -2$ and $c = 5$.
3. $y = 4x - 3$ – Gradient 4, y-intercept -3.
4. $y = x + 3$ – $5 = 1(2) + c \implies c = 3$.
5. $y = 3x + 2$ – Gradient $m = \dfrac{11-2}{3-0} = 3$, y-intercept $c = 2$.
6. $y = -2x + 6$ – Subtract $2x$ from both sides.
7. $y = -3x + 7$ – $4 = -3(1) + c \implies c = 7$.
8. $y = 3x - 5$ – Add y, subtract 5.
9. $y = 3x + 2$ – $m = \dfrac{11-5}{3-1} = 3$, then $5 = 3(1) + c \implies c = 2$.
10. $y = 2x + 7$ – Same gradient 2, y-intercept 7.
11. $y = -2x+5$ – $2y = -4x+10 \implies y = -2x+5$.
12. $y = 4x - 1$ – $7 = 4(2) + c \implies c = -1$.
13. $y = 2x + 4$ – $m = \dfrac{8-2}{2-(-1)} = 2$, then $2 = 2(-1) + c \implies c = 4$.
14. $y = -4x + 13$ – $5 = -4(2) + c \implies c = 13$.
15. $y = -1.5x + 4$ – $2y = -3x + 8 \implies y = -1.5x + 4$.
16. $y = 4x-11$ – $m = \dfrac{9-1}{5-3} = 4$, $1 = 4(3)+c \implies c = -11$.
17. $y = -2$ – Gradient 0 means a horizontal line at $y = -2$.
18. $y = 3x$ – $m = \dfrac{12}{4} = 3$, $c = 0$.
19. $y = 3$ – Parallel to x-axis means y is constant at 3.
20. $y = 4$ – Horizontal line passing through $y = 4$.