

Line Plot Lab

Turn rules, tables, and stories into straight-line graphs.

GRADE 8 • 8.PFA.3.c

8.PFA.3.c "Graph a linear function given a table, equation, or a situation in context."

NAME _____

DATE _____

GRAPHING A LINE

A linear function makes a straight line. For an equation, choose x-values and substitute them to find y-values, then plot the ordered pairs and draw a straight line through them.

WORKED EXAMPLE

Graph $y = 7x + 12$ using $x = -4, -1,$ and 2 .

1. Substitute $x = -4$: $y = 7(-4) + 12 = -16$.
2. Substitute $x = -1$: $y = 7(-1) + 12 = 5$.
3. Substitute $x = 2$: $y = 7(2) + 12 = 26$.
4. Plot $(-4, -16)$, $(-1, 5)$, and $(2, 26)$, then draw a straight line.

**Answer: Plot $(-4, -16)$, $(-1, 5)$, and $(2, 26)$.
Draw a straight line through the points.**

PRACTICE 6 problems

- 1** Graph $y = 3x + 6$ using $x = -3, 1,$ and 4 .

ANSWER _____

- 2** Graph $y = -3x + 9$ using $x = -5, 3,$ and 6 .

ANSWER _____

- 3** Graph the linear function in the table. x : -6, 3, 6 y : 20, 11, 8

ANSWER _____

- 4** Graph the linear function in the table. x : -5, 3, 4 y : -30, 18, 24

ANSWER _____

- 5** Graph $y = \frac{4}{5}x + 6$ using $x = -10, 5,$ and 10 .

ANSWER _____

- 6** A line has a y-intercept of 9 and a slope of -4. Graph the line using $x = -6, 0,$ and 6 .

ANSWER _____

APPLY IT Show your work

- 1** At the start of a gaming tournament, a team has 30 points. The team earns 6 points each round. Let x be the number of rounds and let y be the total points. Write an equation and graph the function using $x = 0, 2, 4$, and 6 .

WORK SPACE

ANSWER _____

- 2** A bike-share ride costs \$4 to unlock the bike and \$3 for each hour ridden. Let x be the number of hours and let y be the total cost in dollars. Write an equation and graph the function using $x = 0, 2, 4$, and 6 .

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A linear function passes through $(-6, 15)$ and $(4, -5)$. Graph the function. Then explain how you can check whether $(0, 3)$ is on the line.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Graph $y = 3x + 6$ using $x = -3, 1$, and 4 .	Plot $(-3, -3)$, $(1, 9)$, and $(4, 18)$. Draw a straight line through the points.
2	Graph $y = -3x + 9$ using $x = -5, 3$, and 6 .	Plot $(-5, 24)$, $(3, 0)$, and $(6, -9)$. Draw a straight line through the points.
3	Graph the linear function in the table. x : $-6, 3, 6$ y : $20, 11, 8$	Plot $(-6, 20)$, $(3, 11)$, and $(6, 8)$. Draw a straight line through the points.
4	Graph the linear function in the table. x : $-5, 3, 4$ y : $-30, 18, 24$	Plot $(-5, -30)$, $(3, 18)$, and $(4, 24)$. Draw a straight line through the points.
5	Graph $y = \frac{4}{5}x + 6$ using $x = -10, 5$, and 10 .	Plot $(-10, -2)$, $(5, 10)$, and $(10, 14)$. Draw a straight line through the points.
6	A line has a y -intercept of 9 and a slope of -4 . Graph the line using $x = -6, 0$, and 6 .	The equation is $y = -4x + 9$. Plot $(-6, 33)$, $(0, 9)$, and $(6, -15)$, then draw a straight line through the points.

PART 2 • APPLY IT

- $y = 6x + 30$. Plot $(0, 30)$, $(2, 42)$, $(4, 54)$, and $(6, 66)$. Draw a straight line through the points.** The team starts with 30 points, and the total increases by 6 points for each round. Substitute each given x -value into $y = 6x + 30$.
- $y = 3x + 4$. Plot $(0, 4)$, $(2, 10)$, $(4, 16)$, and $(6, 22)$. Draw a straight line through the points.** The \$4 unlock fee is the y -intercept, and the cost rises by \$3 per hour. Substitute each given x -value into $y = 3x + 4$.

CHALLENGE

The equation is $y = -2x + 3$. Plot $(-6, 15)$, $(0, 3)$, and $(4, -5)$, then draw a straight line. From $(-6, 15)$ to $(4, -5)$, x increases by 10 while y decreases by 20, so the slope is -2 . Moving 6 units right from $(-6, 15)$ makes y decrease by 12, giving $(0, 3)$, so $(0, 3)$ is on the line.

Accept any correctly plotted points with a straight line through them, even if students use additional valid points. For contextual graphs, accept equivalent equations and appropriate axis labels with units.