

Algebra 1 · Linear Functions: Slope-Intercept, Point-Slope and Standard Form · Worksheet

Common Core F-IF.C.7a, F-LE.A.1a, F-LE.A.2, A-CED.A.2 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

These twenty-two problems practice Common Core standards F-IF.C.7a, F-LE.A.1a, F-LE.A.2 and A-CED.A.2. Find slopes from two points, switch between slope-intercept, point-slope and standard form, graph lines, and write equations of parallel and perpendicular lines.

The last six are word problems that ask for a linear model, a prediction and an interpretation. Work from easiest to hardest and check each equation with a point.

Algebra 1 Common Core: F-IF.C.7a · F-LE.A.1a · F-LE.A.2 · A-CED.A.2

Problem 1: Slope from two points

Find the slope of the line through (2,3) and (6,11).

Problem 2: A negative slope

Find the slope of the line through (−3,5) and (1,−7).

Problem 3: A fractional slope

Find the slope of the line through (−4,−1) and (2,1). Write it as a fraction in simplest form.

Problem 4: Horizontal and vertical lines

Find the slope of each line, or write undefined.

- The line through (2,5) and (9,5)
- The line through (3,−2) and (3,6)

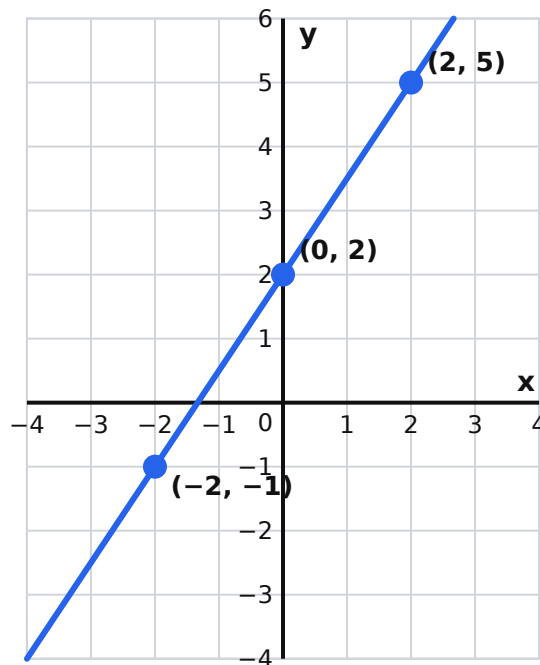
Problem 5: Read slope and intercept

The equation of a line is $y = -\frac{3}{4}x + 5$.

- State the slope and the y-intercept.
- Find y when $x = 8$.

Problem 6: Equation from a graph

Write the equation of the line shown in slope-intercept form.



A line through three marked points.

Problem 7: Slope and a point

A line has slope $\frac{4}{5}$ and passes through $(10,3)$. Write its equation in slope-intercept form.

Problem 8: Point-slope form

Write an equation in point-slope form for the line with slope 3 that passes through $(2,-1)$. Then rewrite it in slope-intercept form.

Problem 9: Line through two points

Write the equation of the line through $(1,3)$ and $(5,11)$ in slope-intercept form.

Problem 10: Standard to slope-intercept

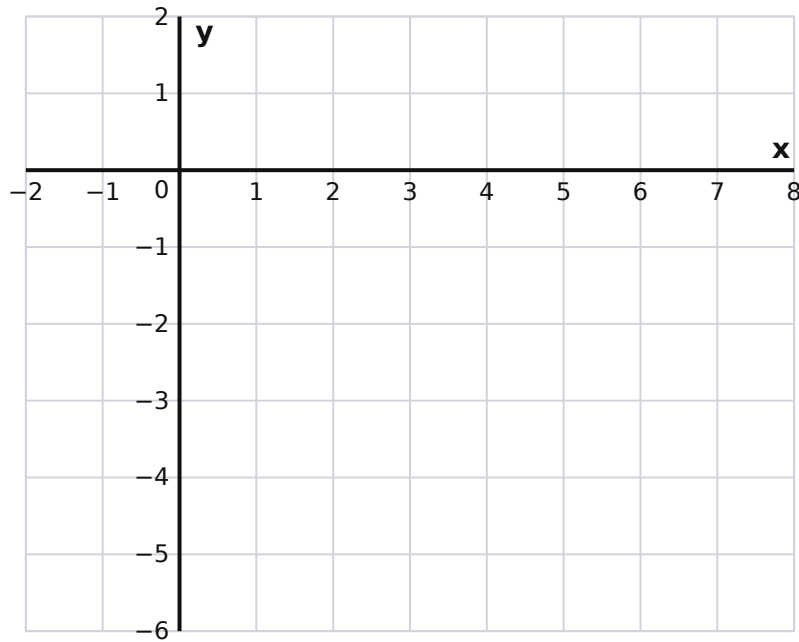
Rewrite $3x+4y=12$ in slope-intercept form and name the slope and y-intercept.

Problem 11: Slope-intercept to standard

Write $y = -\frac{2}{5}x + 4$ in standard form $Ax + By = C$ with integer coefficients and $A > 0$.

Problem 12: Intercepts and graph

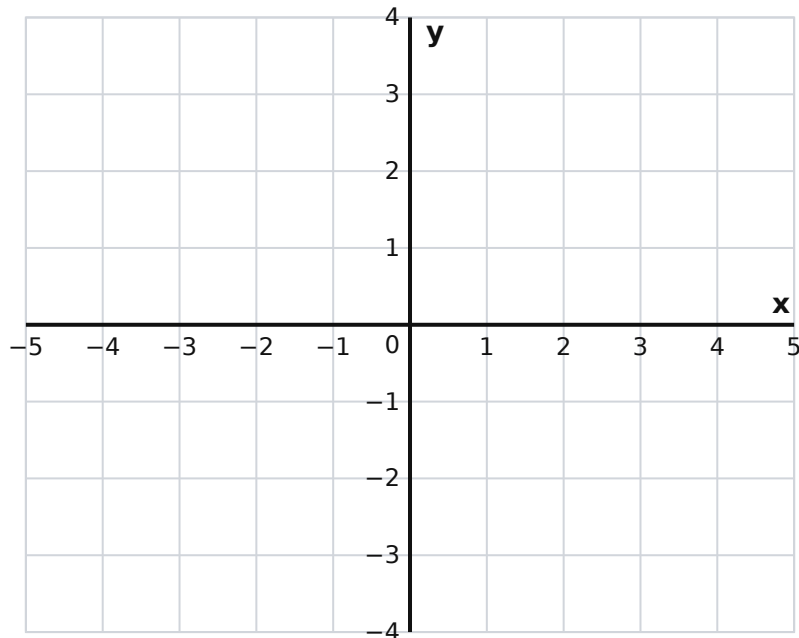
Find the x-intercept and y-intercept of $4x - 6y = 24$, then graph the line.



Blank grid for graphing.

Problem 13: Graph from slope-intercept

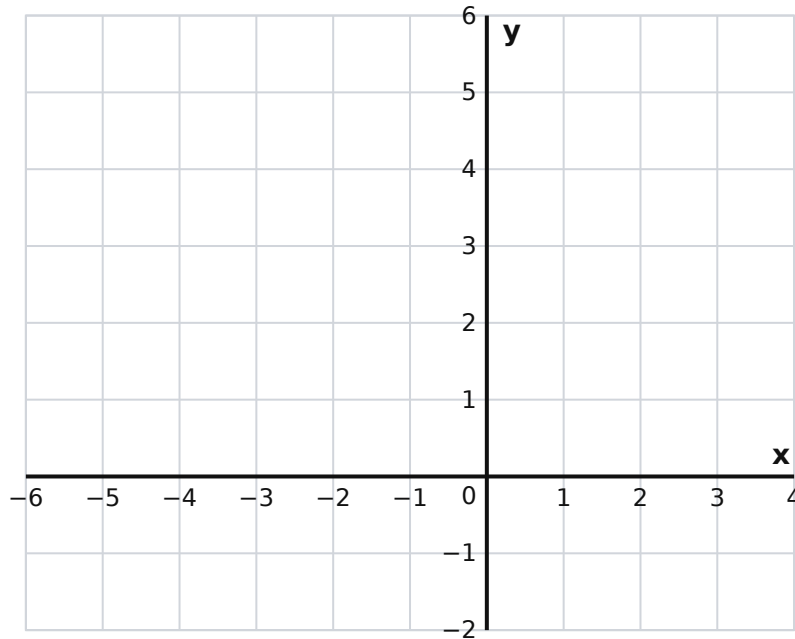
Graph $y = -\frac{2}{3}x + 1$.



Blank grid for graphing.

Problem 14: Graph from point-slope

Graph the line $y - 2 = \frac{1}{2}(x + 3)$.



Blank grid for graphing.

Problem 15: Parallel line

Write, in slope-intercept form, the equation of the line through $(3, -2)$ that is parallel to $y = 4x + 1$.

Problem 16: Perpendicular line

Write the equation of the line through $(4, 1)$ that is perpendicular to $y = 2x - 5$.

Problem 17: Gym membership

A gym charges a one-time sign-up fee of \$25 plus \$18 per month. Let C be the total cost after m months.

- Write an equation for C in terms of m .
- Find the cost after 9 months.
- After how many months has Maya paid a total of \$277?

Problem 18: Data plan table

The table shows the monthly cost y in dollars of a data plan for x gigabytes.

Gigabytes x	2	4	6	8
Cost y	\$31	\$42	\$53	\$64

Cost of a data plan.

- Show that the relationship is linear.
- Write an equation for y .
- Find the cost for 15 gigabytes.

Problem 19: Road trip

On a road trip, Jamal's car is 55 miles from his home after 1 hour and 145 miles from home after 3 hours. The car drives at a constant speed. Let d be the distance from home in miles after t hours.

- Find the speed of the car.
- Write an equation for d .
- Find the distance after 5 hours.

Problem 20: Temperature conversion

Water freezes at 0°C (32°F) and boils at 100°C (212°F). Assume Fahrenheit temperature F is a linear function of Celsius temperature C .

- Write an equation for F in terms of C .
- Convert 25°C to Fahrenheit.
- Convert 77°F to Celsius.

Problem 21: Notebooks and binders

Sofia has \$60 to spend at the school store. Notebooks cost \$3 each and binders cost \$5 each. The equation $3x + 5y = 60$ describes the purchases that use all \$60, where x is the number of notebooks and y is the number of binders.

- Find both intercepts and explain what each means.
- If Sofia buys 5 notebooks, how many binders can she buy?

Problem 22: Two savings plans

Priya has \$20 saved and adds \$8 each week. Ethan has \$50 saved and adds \$5 each week. Let w be the number of weeks and s the savings in dollars.

- Write an equation for each person.
- After how many weeks do they have the same amount, and how much is it?