

Lesson 6.5: General Form

Specific Outcome: 6.1 – Express a linear relation in different forms, and compare the graphs. 6.2 – Rewrite a linear relation in slope-intercept or general form. 6.3 – Generalize and explain strategies for graphing a linear relation in general form. 6.4 – Graph, with and without technology, a linear relation given in general form, and explain the strategy used to create the graph. 6.5 – Identify equivalent linear relations from a set of linear relations. 7.5 – Graph linear data generated from a context, and write the equation of the resulting line. 7.6 – Solve a problem, using the equation of a linear relation.

General Form: $Ax + By + C = 0$

where: $A \in W$

$B, C \in I$

*NOTE: We are **not** able to write an equation of a line in general form directly from its graph.

CHANGING SLOPE-INTERCEPT INTO GENERAL FORM and vice versa

1a) $y = 3x - 4$

b) $y = -\frac{2}{3}x + 4$

c) $y = \frac{5}{4}x + 10$

d) $y = -\frac{7}{3}x - \frac{1}{2}$

2a) $3x - 2y - 4 = 0$

b) $0 = 2x + 4y + 7$

c) $x + 8y - 15 = 0$

CHANGING SLOPE-POINT INTO GENERAL FORM

1a) $y - 1 = -2(x + 6)$

b) $y + 3 = \frac{2}{3}(x - 5)$

c) $y - 2 = -4\left(x - \frac{1}{2}\right)$

d) $y + 9 = \frac{2}{5}(x + 4)$

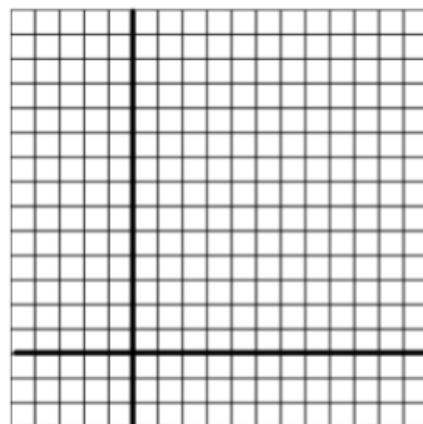
**NOTE: We do not change slope-intercept or general form equations into slope-point form.

GRAPHING A LINE IN GENERAL FORM

Method 1: Find the intercepts from the equation

Method 2: Change from general form to slope-intercept form

Use Method 1 to graph: $3x + 2y - 18 = 0$

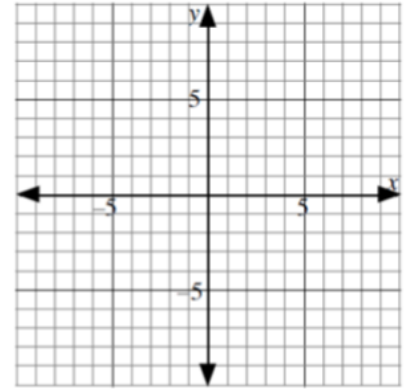


Use Method 2 to graph: $3x - 2y - 2 = 0$

Practice: Graph the following equations. Use the method you like.

a) Line 1: $2x - 3y + 12 = 0$

b) Line 2: $4x - 4y - 32 = 0$



Problem Solving:

1. A line passes through the points A(7,5) and B(6,1). Find the equation of the line in all 3 forms.

Use the following information to answer the next question.

Consider the following statements about all the lines in the form $kx + 4y - 8 = 0$, where $k \in \mathbb{R}$.

Statement 1: The lines have the same slope.

Statement 2: The lines have the same y -intercept.

Statement 3: The lines have the same x -intercept.

2. Which of the above statement(s) is/are true?

A. 1, 2, and 3

B. 1 only

C. 2 only

D. 3 only

3. What is the equation of the line, in slope-intercept and general form, that is parallel to $3x - 6y - 12 = 0$ and has the same y -intercept as $5x + 15y + 30 = 0$?