

Solving Linear Systems by Graphing

A **linear system** consists of two or more linear equations. We will study systems of two equations with two variables.

Solving a linear system means determining values for the variables that satisfy all of the equations.

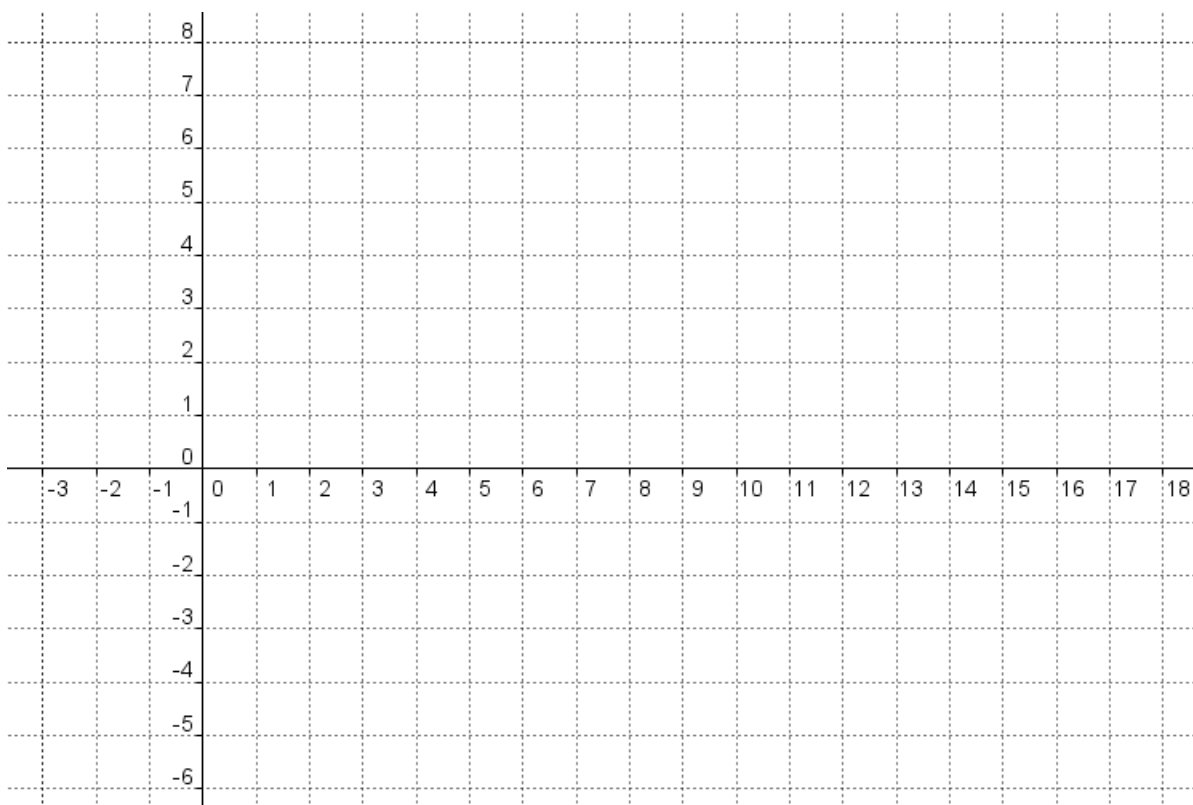
The solution to a system of two equations with two variables can be represented by the **point of intersection** of two linear relations.

Steps to Solve a Linear System by Graphing

1. Graph **each** line using slope and a point (or using x-intercept and y-intercept).
2. Locate and state the point of intersection (x, y) .

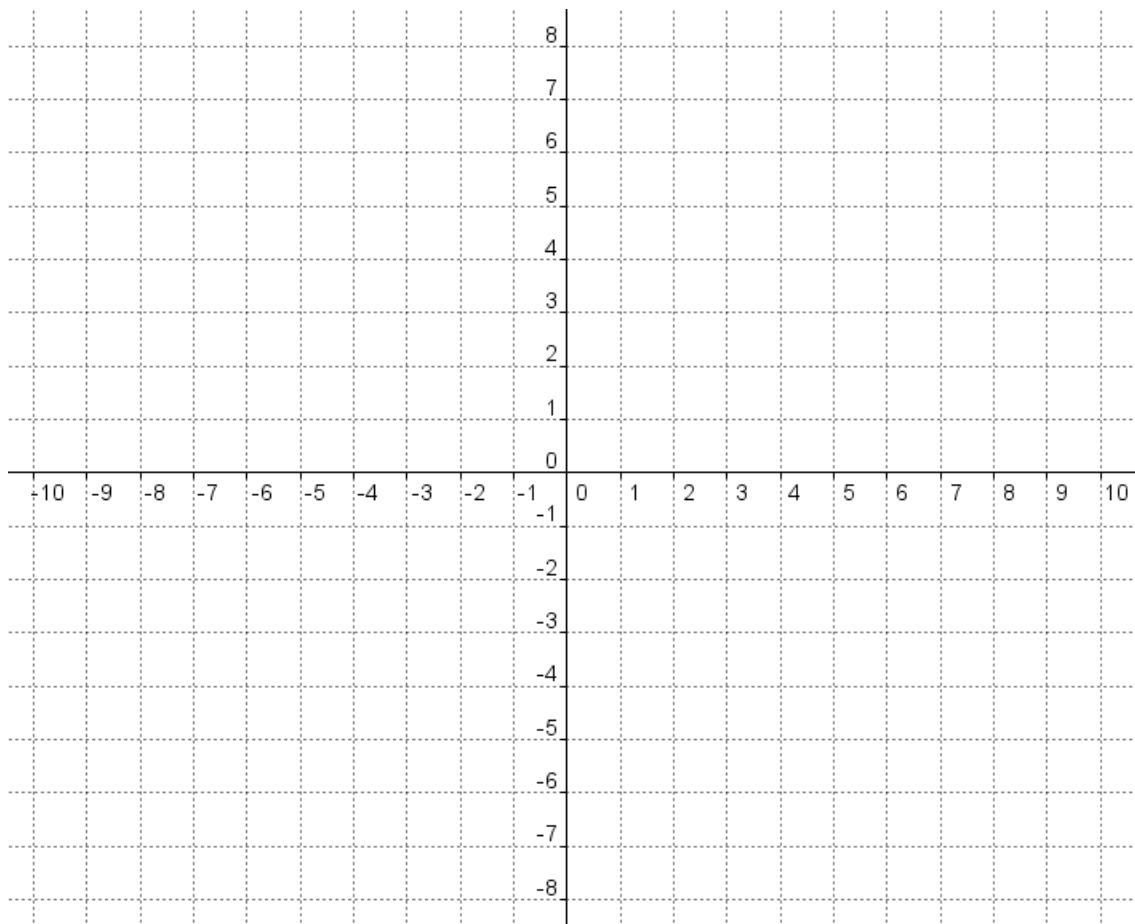
Example – Solve the linear system below by graphing.

$$x + y = 7 \quad \text{and} \quad x - 3y = 15$$



Example – Solve the linear system below by graphing.

$$2x + 5y - 20 = 0 \quad \text{and} \quad 3x + 2y + 14 = 0$$



In order to check the solution to a linear system, we can substitute the point of intersection into **each** of the original linear relations.

Example – Determine whether or not $(-1, -3)$ is the point of intersection for the lines $y = 4x + 3$ and $y = -x - 2$.

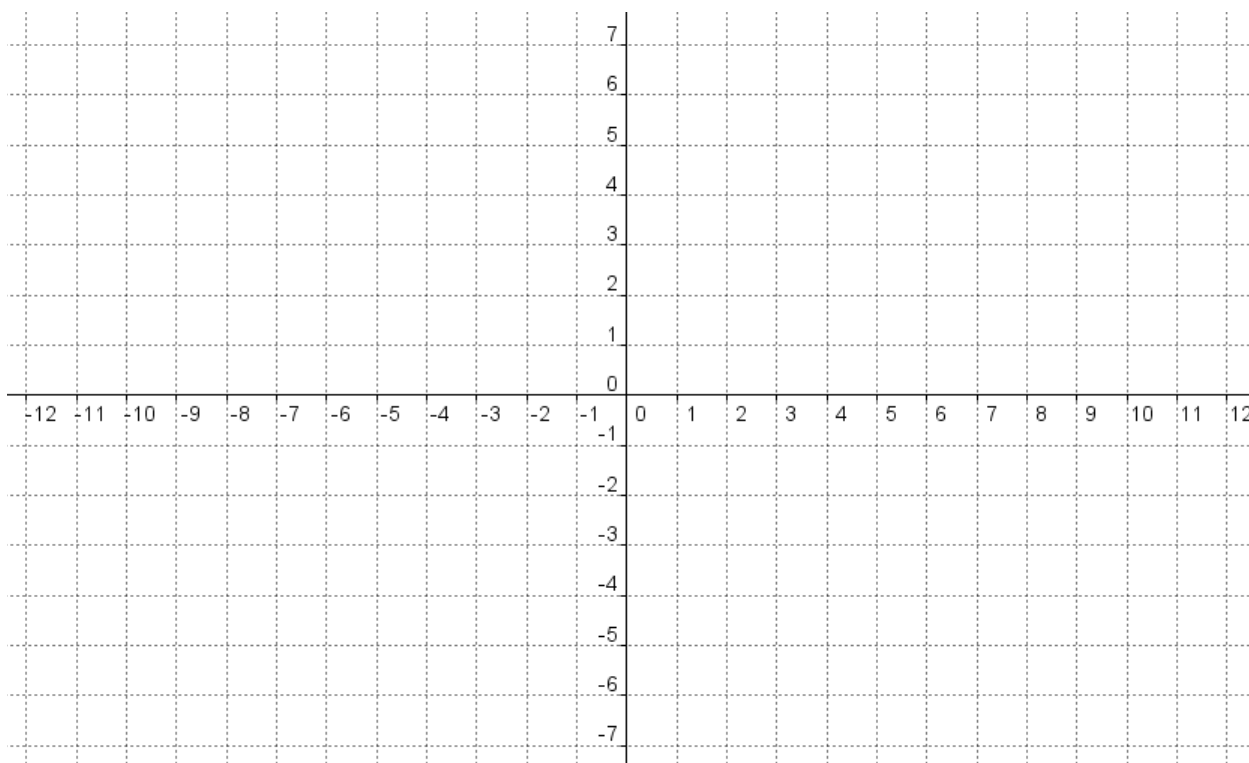
Example – Determine whether or not $(3, 7)$ is the point of intersection for the lines

$$y = 4x - 5 \text{ and } y = \frac{2}{3}x + 5.$$

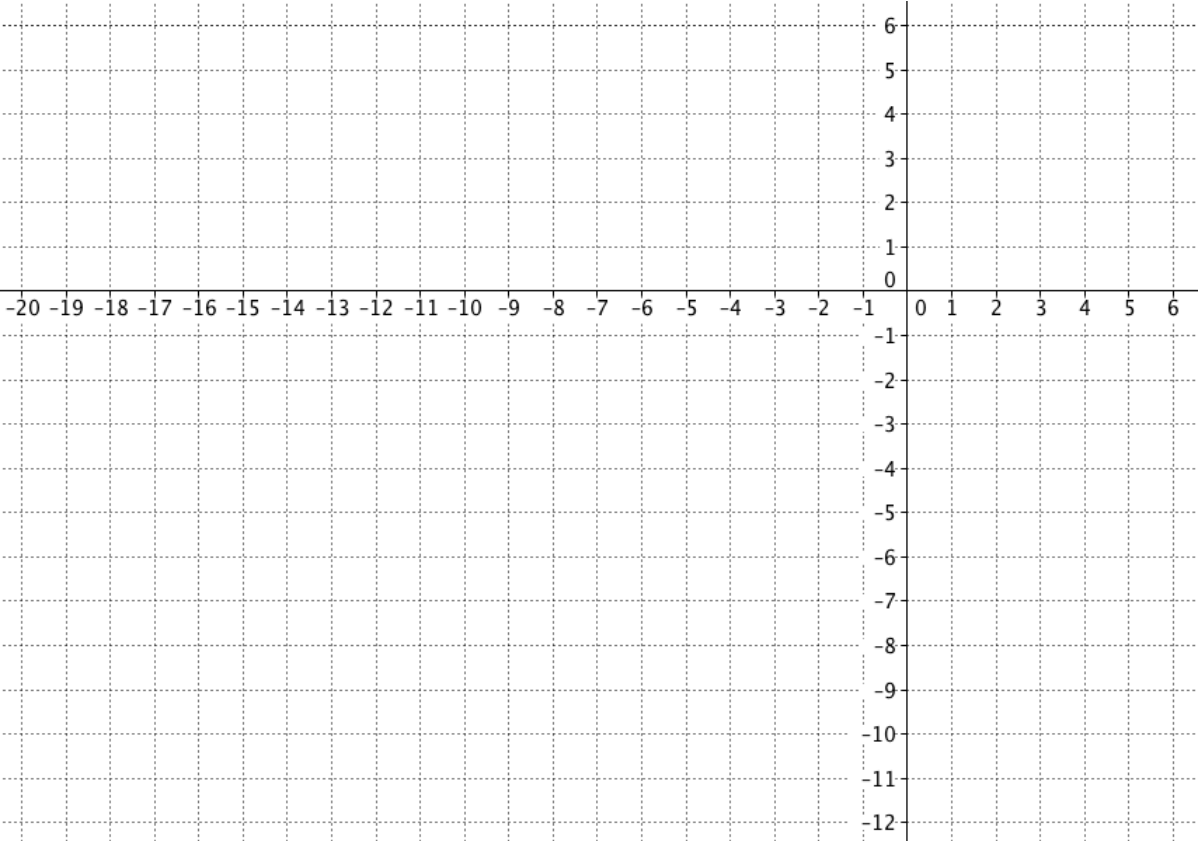
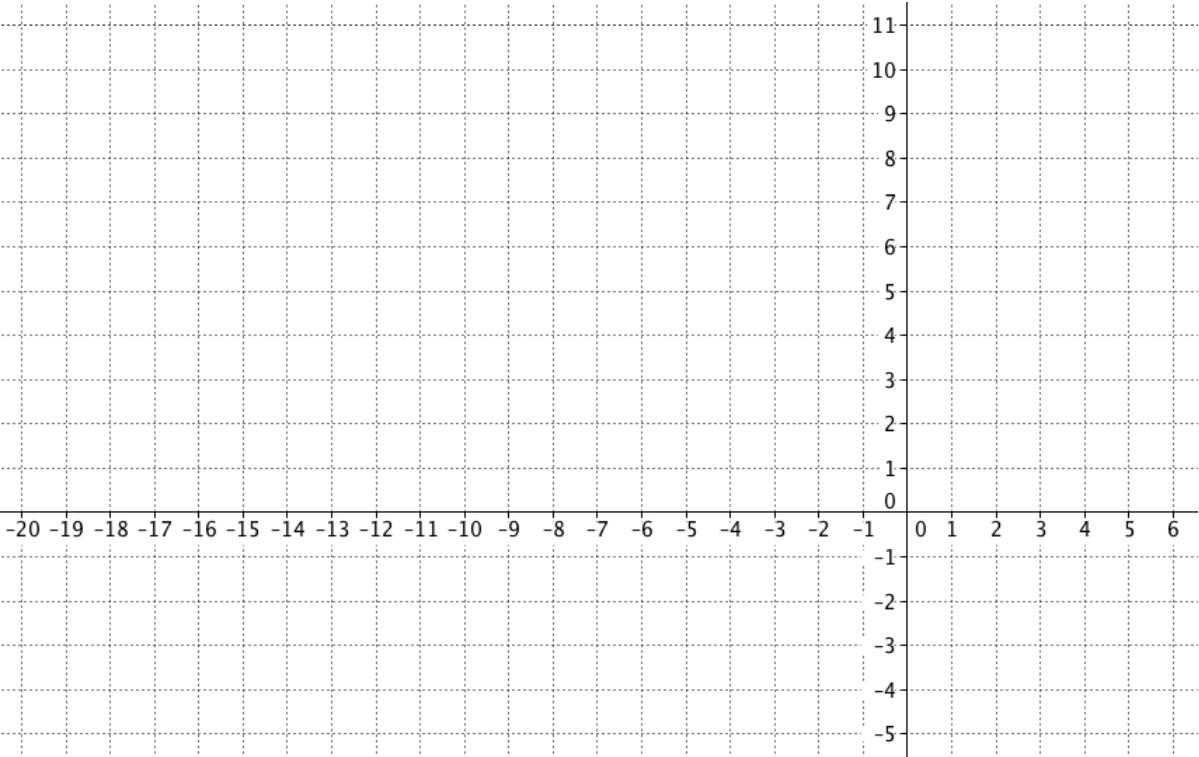
Homework – Please complete the question below and #7, 8ac, 9ac, 11, and 12 on pages 17-18.

1. Solve the following linear system by graphing.

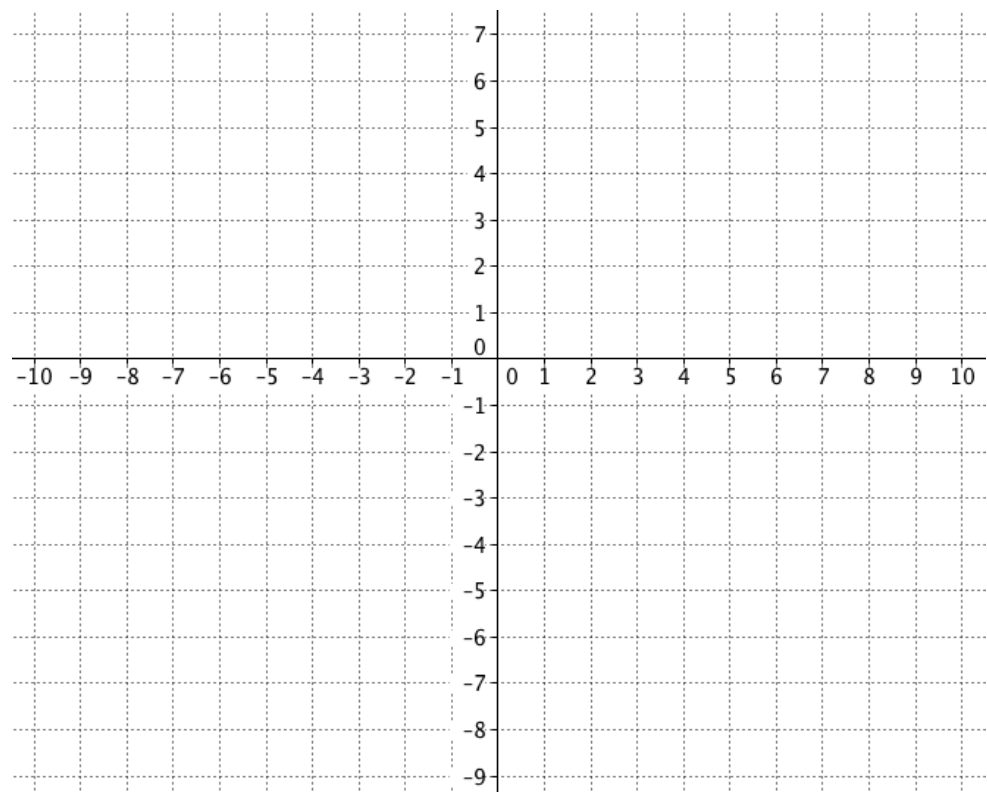
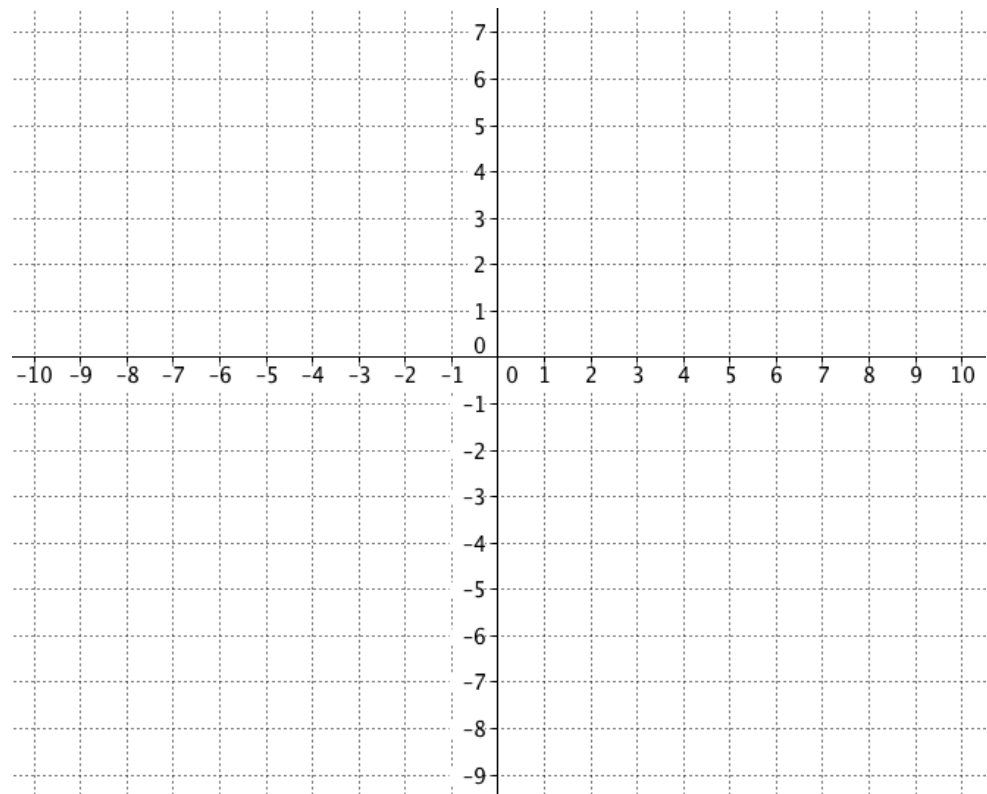
$$2x - 3y + 15 = 0 \quad \text{and} \quad x + 2y + 11 = 0$$



Blank grids for #8ac on page 17:



Blank grids for #9ac on page 17:



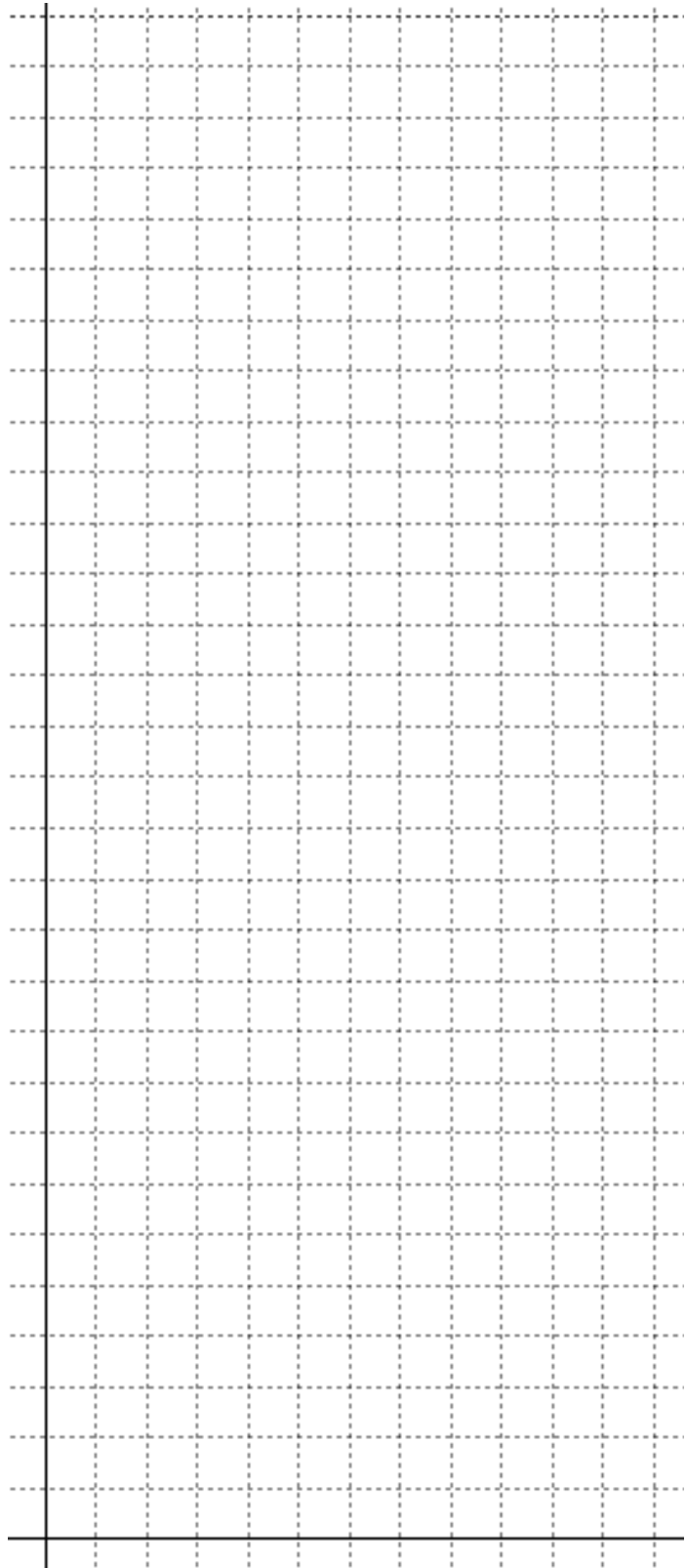
Tables of values and blank grid for #11 on page 18:

Fitness Club CanFit

Months	Cost
0	
1	
2	
3	
4	
5	
6	
7	
8	

Fitness 'R' Us

Months	Cost
0	
1	
2	
3	
4	
5	
6	
7	
8	



Tables of values and blank grid for #12 on page 18:

LC Video

Games	Cost
0	
1	
2	
3	
4	
5	
6	
7	
8	

Big Vid

Games	Cost
0	
1	
2	
3	
4	
5	
6	
7	
8	

