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GRAPHING LINEAR EQUATIONS DIAGNOSTIC

MATH HUB CLUB

LIVE ZOOM GROUP

(2 - 10 STUDENTS)

GRAPHING LINEAR EQUATIONS

Complete the table of values.

1) $x - 2y = 8$

x	y
-4	
	-3
-2	
	-4

2) $7x - y = -2$

x	y
1	
	9
-12	
	2

3) $x - y = -3$

x	y
5	
	9
-8	
	-11

Write the equation of a line passing through the given points. Give the answers in slope-intercept form and standard form.

1) $(-9, 0)\ and\ (0, 7)$

The equation of the line in slope-intercept form:

The equation of the line in standard form:

2) $(3, 1)\ and\ (2, -1)$

The equation of the line in slope-intercept form:

The equation of the line in standard form:

3) $(5, 1)\ and\ (4, -2)$

The equation of the line in slope-intercept form:

The equation of the line in standard form:

Write the equation of a line in slope-intercept from the given slope and passes through the given order pair.

1) $m = 3;\ (4,1)$ 2) $m = 1;\ (13,6)$ 3) $m = -4;\ (1,-7)$

Parallel lines have the _____ slope.

Perpendicular lines have _____ slopes

For the given pair of equation, give the slopes of the line, then determine whether the two lines are parallel, perpendicular, or neither.

1) $3x + 4y = 2$ Slope:
$12x + 16y = 1$ Slope:

2) $4x - 12y = 6$ Slope:
$4x + 6y = -4$ Slope:

3) $17x - 5y = 10$ Slope:
$5x + 17y = 34$ Slope:

Create a line that is parallel to the given line and crosses through the given point.

1) $y = 3x - 7;\ (3,4)$

Parallel:

2) $y = -\frac{2}{3}x + 5;\ (3,4)$

Parallel:

Create a line that is perpendicular to the given line and crosses through the given point.

1) $y = 3x - 9;\ (3,-3)$

Perpendicular:

2) $y = \frac{1}{2}x - 5;\ (-2,6)$

Perpendicular:

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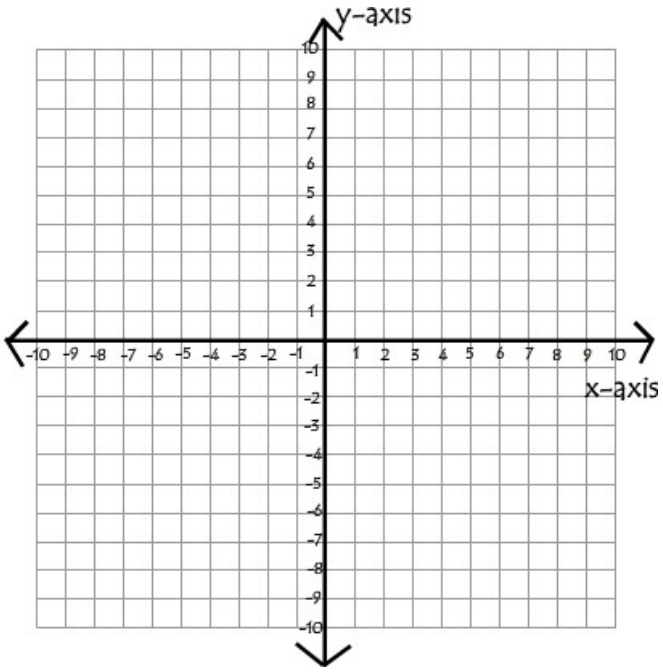
Identify the slope and y-intercept of the line and graph with the following equations

1) $y = \frac{1}{3}x - 6$

The slope is: _____

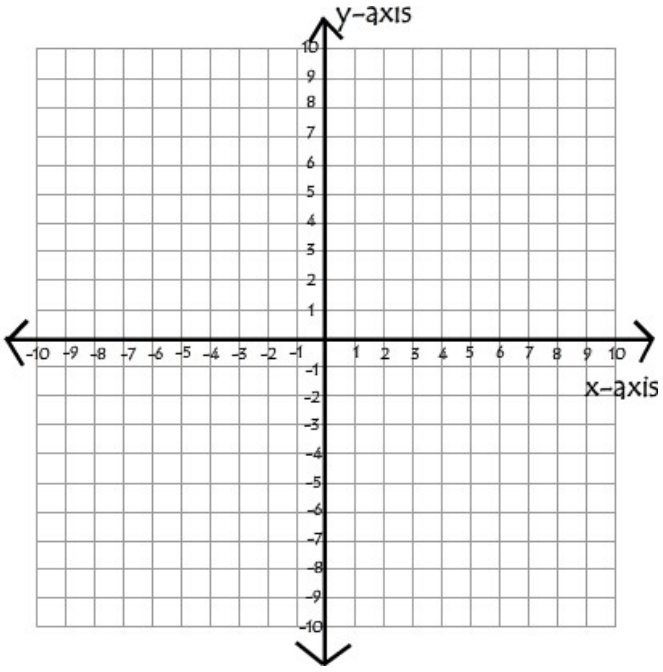
The y-intercept is: _____



2) $y = -2x + 5$

The slope is: _____

The y-intercept is: _____

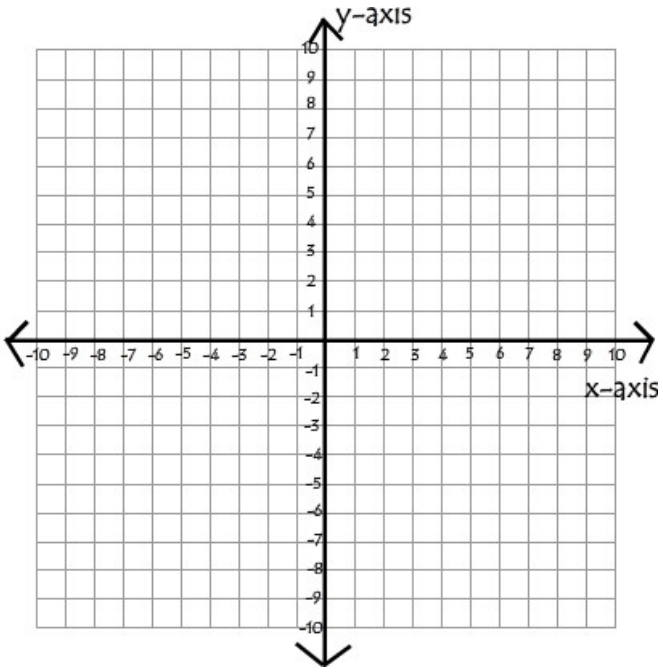


Identify the slope and y-intercept of the line and graph with the following equations

3) $2x - 5y = 10$

The slope is: _____

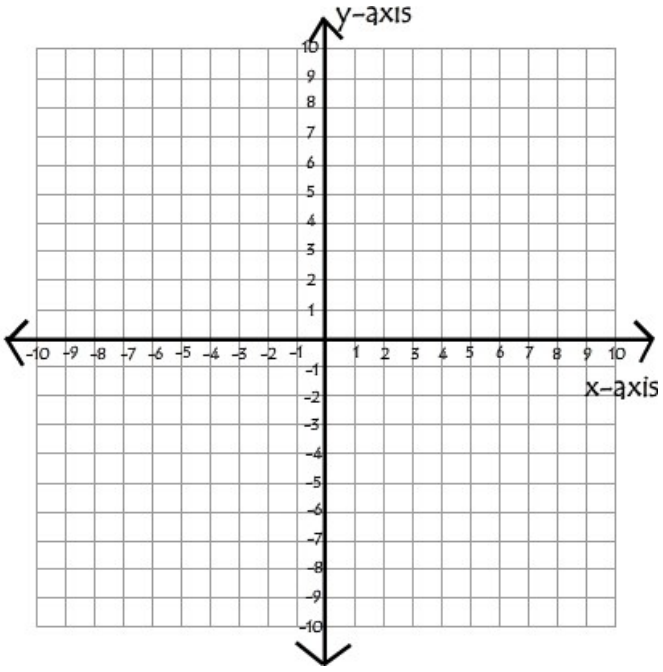
The y-intercept is: _____



4) $y = -\frac{2}{3}x + 8$

The slope is: _____

The y-intercept is: _____

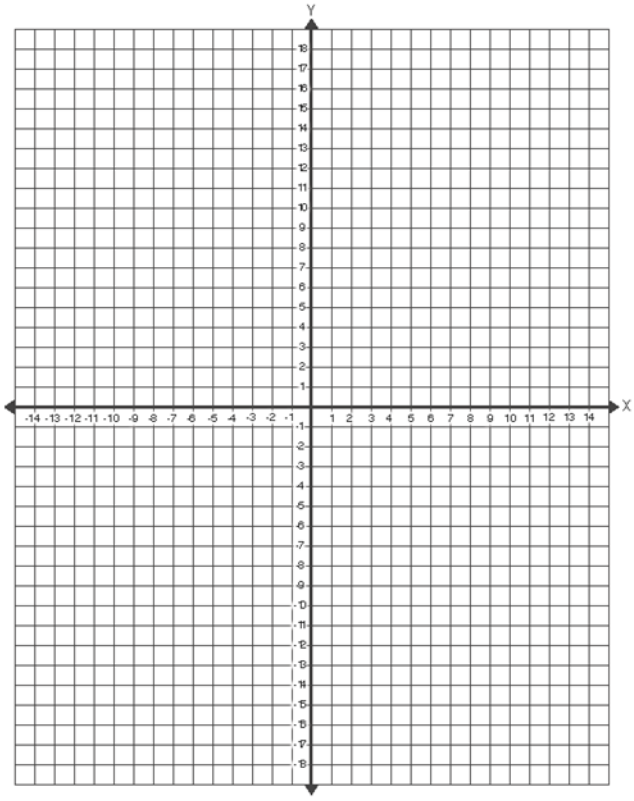


Identify the slope and y-intercept of the line and graph with the following equations

5) $y = -\frac{5}{7}x + 5$

The slope is: _____

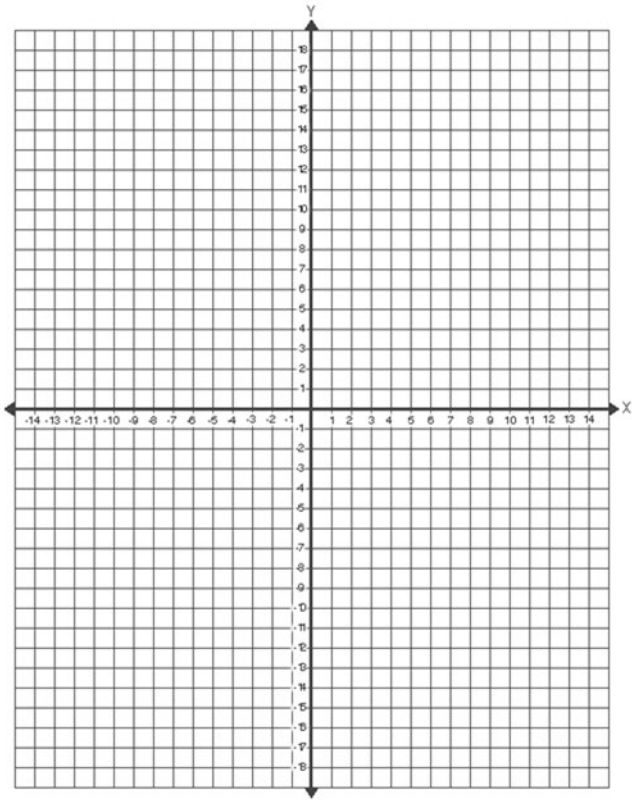
The y-intercept is: _____



6) $y = -9x - 1$

The slope is: _____

The y-intercept is: _____



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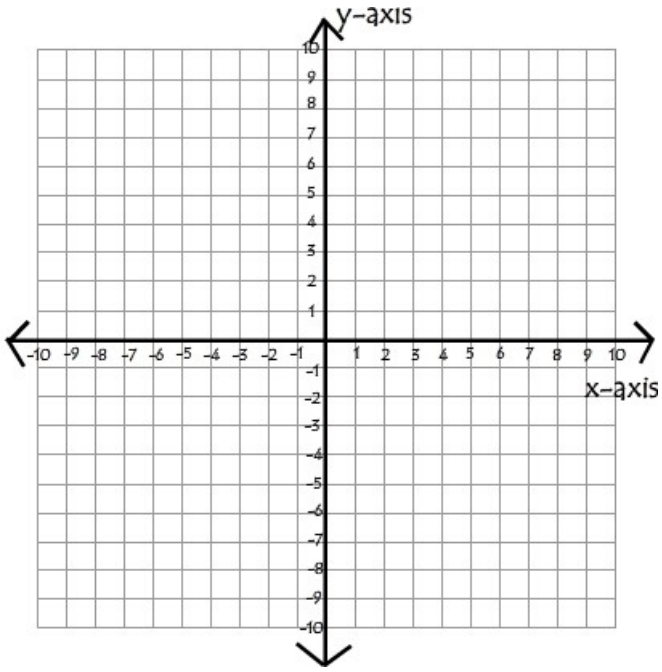
Identify the slope, y-intercept, and if it is dotted or solid line and graph with the following inequalities.

1) $y < \frac{2}{5}x - 3$

The slope is: _____

The y-intercept is: _____

The line is: _____

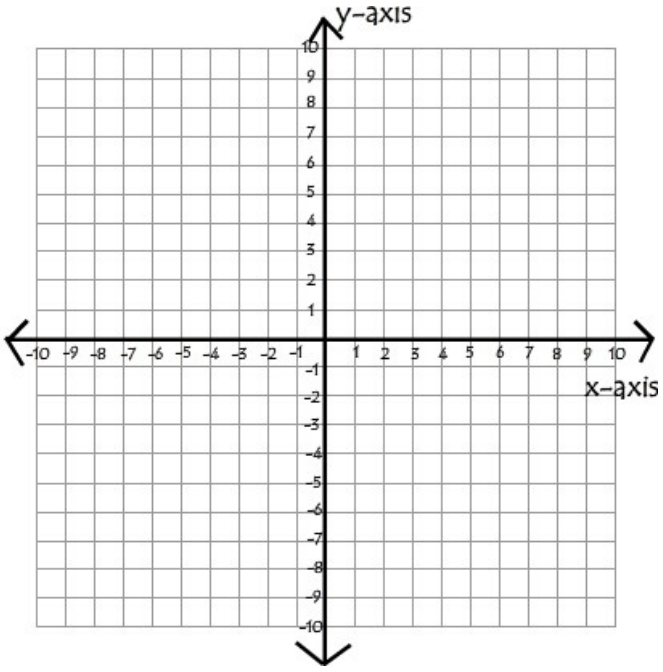


2) $y \geq 4x - 2$

The slope is: _____

The y-intercept is: _____

The line is: _____



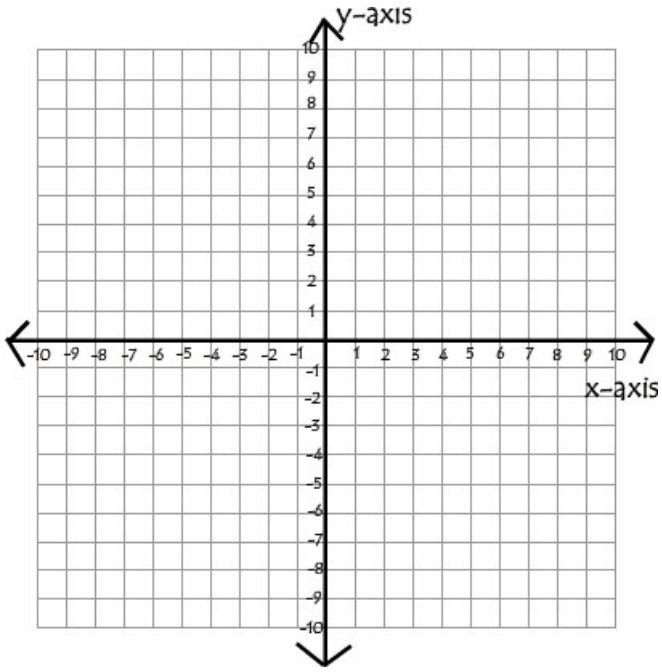
Identify the slope, y-intercept, and if it is dotted or solid line and graph with the following inequalities.

3) $y < -x + 7$

The slope is: _____

The y-intercept is: _____

The line is: _____

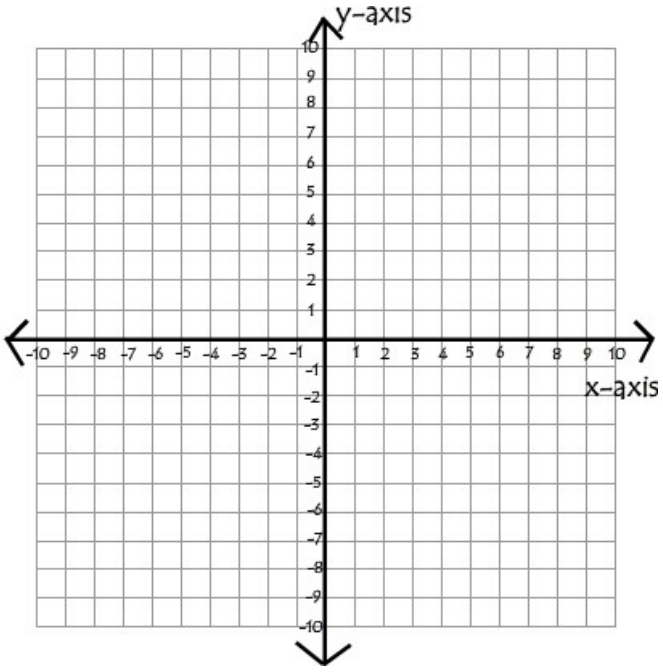


4) $6x - 7y \geq 42$

The slope is: _____

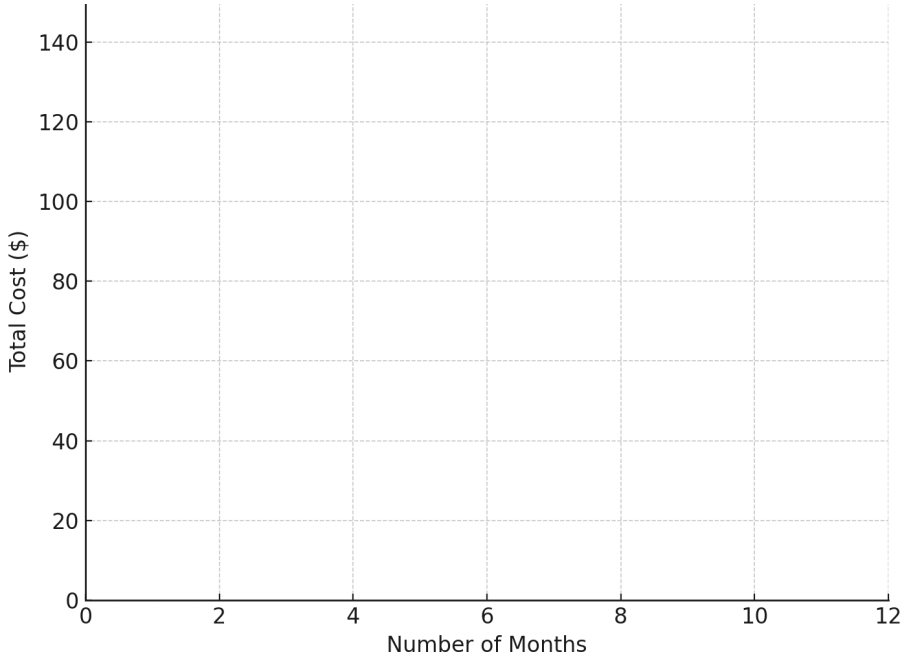
The y-intercept is: _____

The line is: _____



A person buys a gardening toolkit for $5 and signs up for a monthly gardening club membership that includes 20 seeds every month. The membership costs $20 per month. Write an equation to determine the total cost, y, of this membership for x months. Find the equation, graph, and use the graph to answer the questions.

Equation for Total Cost:



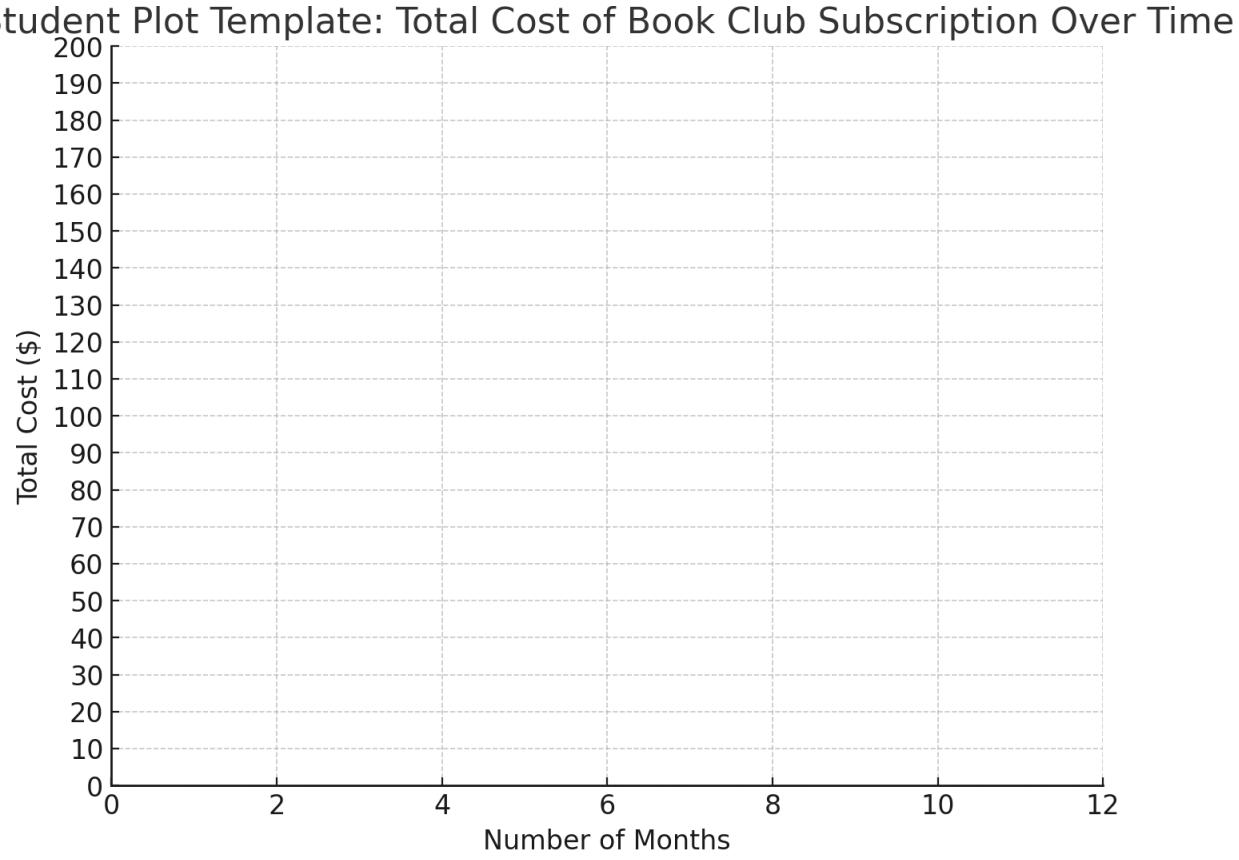
Find the cost for 3 months.

Find the cost for 10 months.

Find the cost for 16 months.

A local community center offers a monthly book club subscription. The initial registration fee for joining the book club is $10, and each month's subscription costs $15. Write an equation to determine the total cost, yy, of being in the book club for xx months. Create a graph to represent the equation and use it to find the cost for attending the book club for 6 months.

Equation for Total Cost:



Find the cost for 4 months.

Find the cost for 8 months.

Find the cost for 12 months.

Complete the table of values.

1) $x - 2y = 8$

x	y
-4	$\mathbf{-6}$
$\mathbf{2}$	-3
-2	$\mathbf{-5}$
$\mathbf{0}$	-4

2) $7x - y = -2$

x	y
1	$\mathbf{3}$
$\mathbf{7}$	9
-12	$\mathbf{-18}$
$\mathbf{0}$	2

3) $x - y = -3$

x	y
5	$\mathbf{8}$
$\mathbf{6}$	9
-8	$\mathbf{-5}$
$\mathbf{-14}$	-11

Write the equation of a line passing through the given points. Give the answers in slope-intercept form and standard form.

1) $(-9, 0)\ and\ (0, 7)$

The equation of the line in slope-intercept form: $y = \frac{7}{9}x + 7$

The equation of the line in standard form: $7x - 9y = -63$

2) $(3, 1)\ and\ (2, -1)$

The equation of the line in slope-intercept form: $y = 2x - 5$

The equation of the line in standard form: $2x - y = 5$

3) $(5, 1)\ and\ (4, -2)$

The equation of the line in slope-intercept form: $y = 3x - 14$

The equation of the line in standard form: $3x - y = 14$

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Write the equation of a line in slope-intercept from the given slope and passes through the given order pair.

1) $m = 3;\ (4,1)$ $\quad\quad$ **$y = 3x - 11$**

2) $m = 1;\ (13,6)$ $\quad\quad$ **$y = x - 7$**

3) $m = -4;\ (1,-7)$ $\quad\quad$ **$y = x - 7$**

Parallel lines have the same slope.

Perpendicular lines have negative reciprocal slopes

For the given pair of equation, give the slopes of the line, then determine whether the two lines are parallel, perpendicular, or neither.

1) $3x + 4y = 2$ Slope: $-\frac{3}{4}$
$12x + 16y = 1$ Slope: $-\frac{3}{4}$ **parallel**

2) $4x - 12y = 6$ Slope: $\frac{1}{3}$
$4x + 6y = -4$ Slope: $-\frac{2}{3}$ **neither**

3) $17x - 5y = 10$ Slope: $\frac{17}{5}$
$5x + 17y = 34$ Slope: $-\frac{17}{5}$ **perpendicular**

Create a line that is parallel to the given line and crosses through the given point.

1) $y = 3x - 7;\ (3,4)$

Parallel: **$y = 3x - 5$**

2) $y = -\frac{2}{3}x + 5;\ (3,4)$

Parallel: **$y = -\frac{2}{3}x + 6$**

Create a line that is perpendicular to the given line and crosses through the given point.

1) $y = 3x - 9;\ (3,-3)$

Perpendicular: **$y = -\frac{1}{3}x + 1$**

2) $y = \frac{1}{2}x - 5;\ (-2,6)$

Perpendicular: **$y = -2x + 2$**

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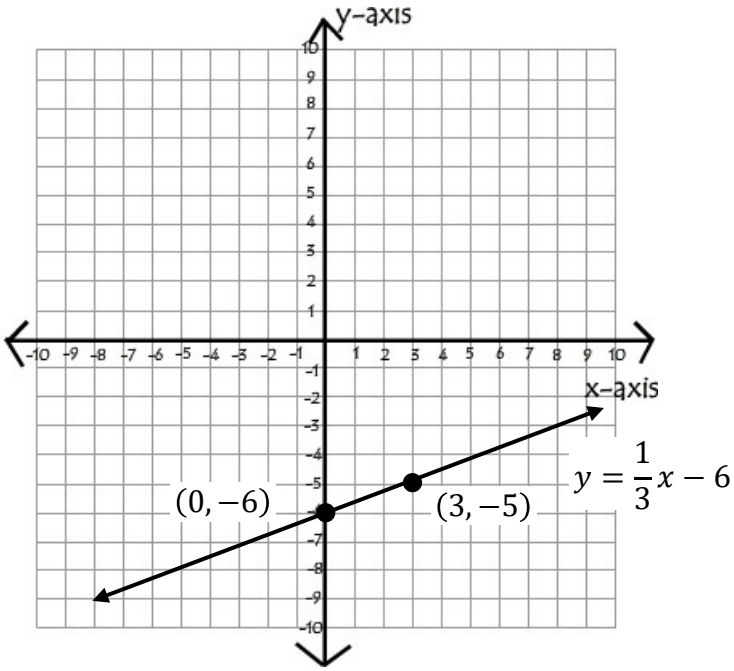
Identify the slope and y-intercept of the line and graph with the following equations

1) $y = \frac{1}{3}x - 6$

The slope is: $\frac{1}{3}$

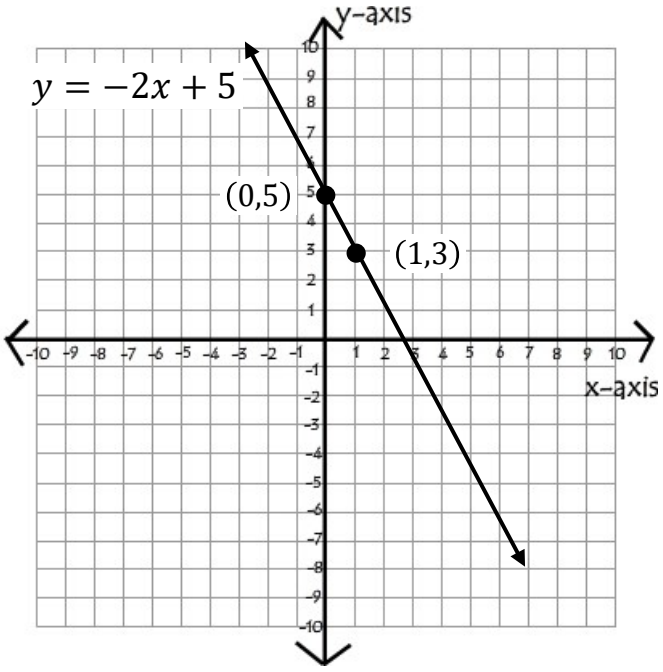
The y-intercept is: -6



2) $y = -2x + 5$

The slope is: -2

The y-intercept is: 5



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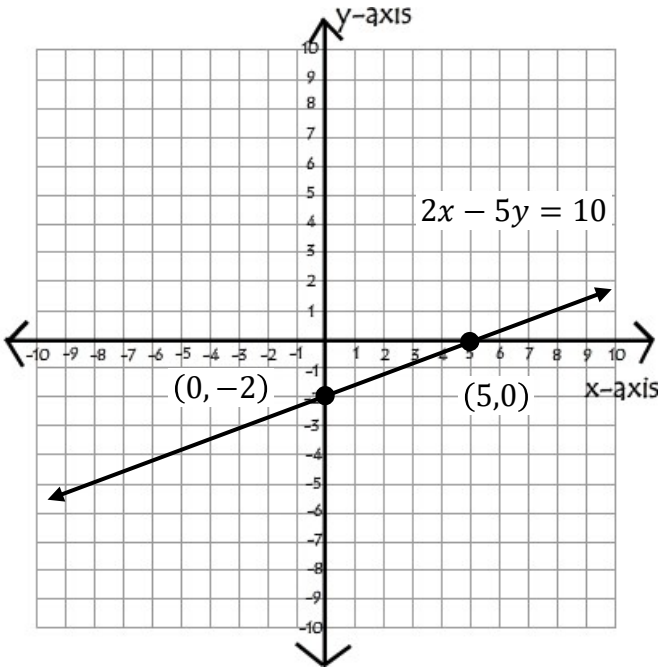
Identify the slope and y-intercept of the line and graph with the following equations

3) $2x - 5y = 10$

The slope is: $\frac{2}{5}$

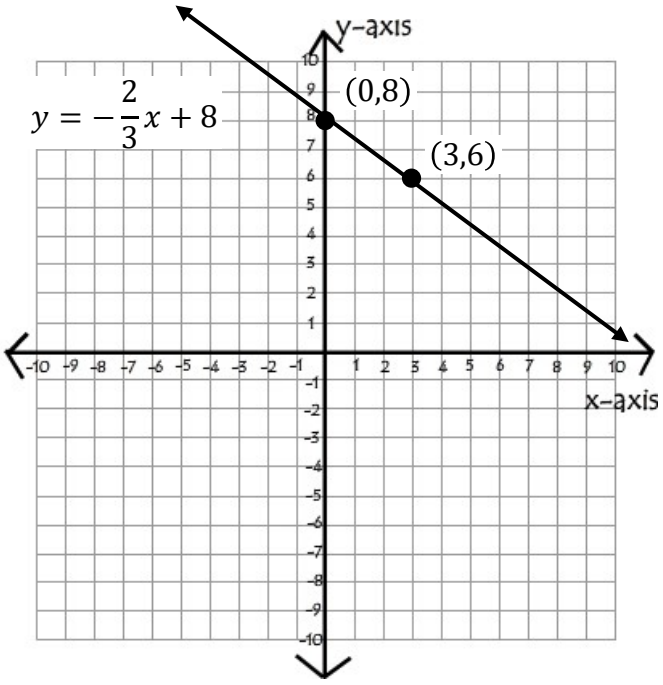
The y-intercept is: -2



4) $y = -\frac{2}{3}x + 8$

The slope is: $-\frac{2}{3}$

The y-intercept is: 8



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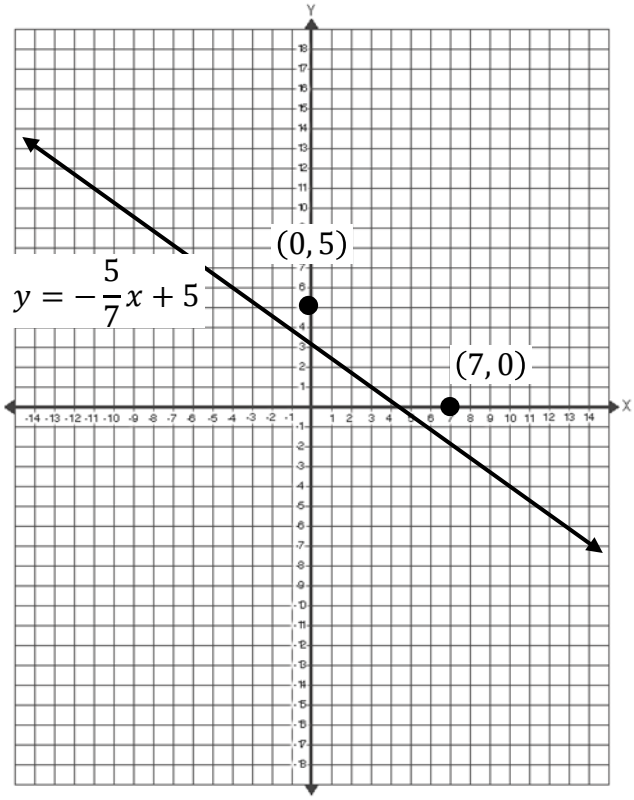
Identify the slope and y-intercept of the line and graph with the following equations

5) $y = -\frac{5}{7}x + 5$

The slope is: $-\frac{3}{5}$

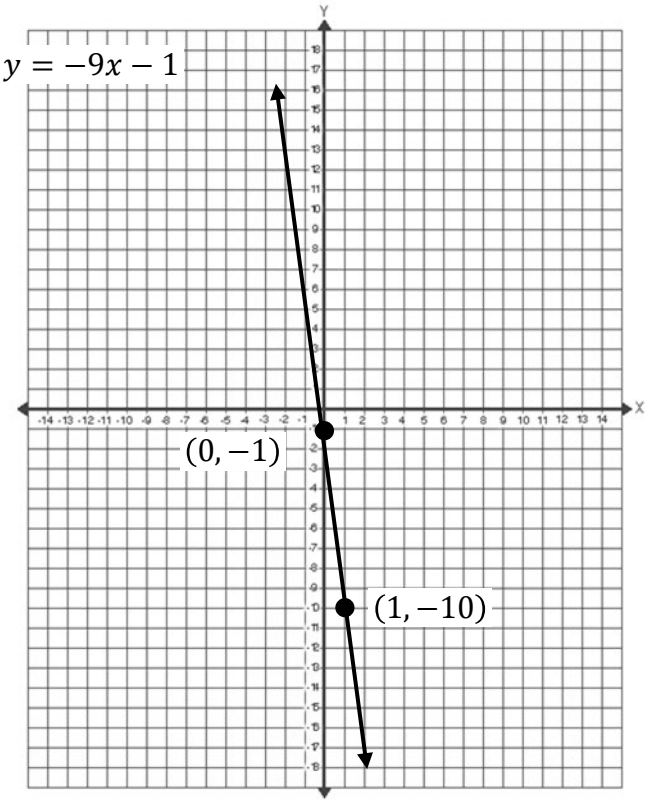
The y-intercept is: 5



6) $y = -9x - 1$

The slope is: -9

The y-intercept is: -1



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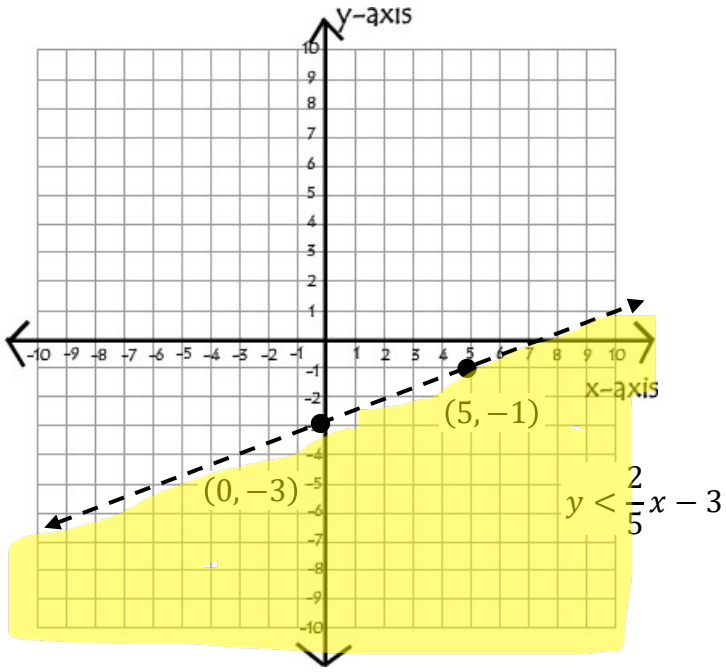
Identify the slope, y-intercept, and if it is dotted or solid line and graph with the following inequalities.

1) $y < \frac{2}{5}x - 3$

The slope is: $\frac{2}{5}$

The y-intercept is: -3

The line is: dotted

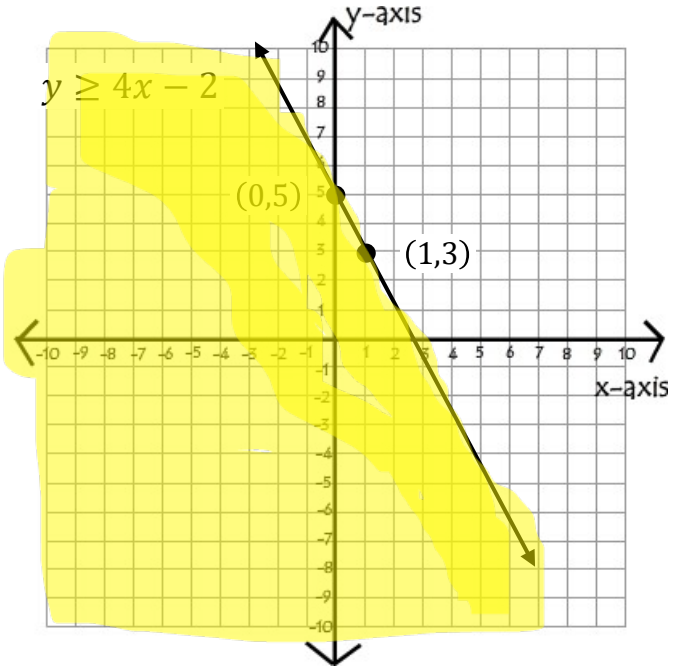


2) $y \geq 4x - 2$

The slope is: 4

The y-intercept is: -2

The line is: solid



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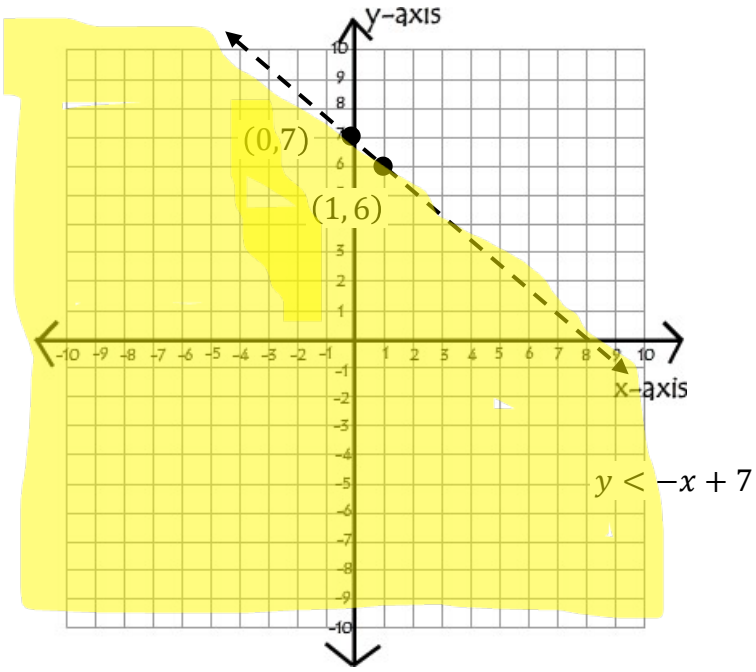
Identify the slope, y-intercept, and if it is dotted or solid line and graph with the following inequalities.

3) $y < -x + 7$

The slope is: -1

The y-intercept is: 7

The line is: dotted

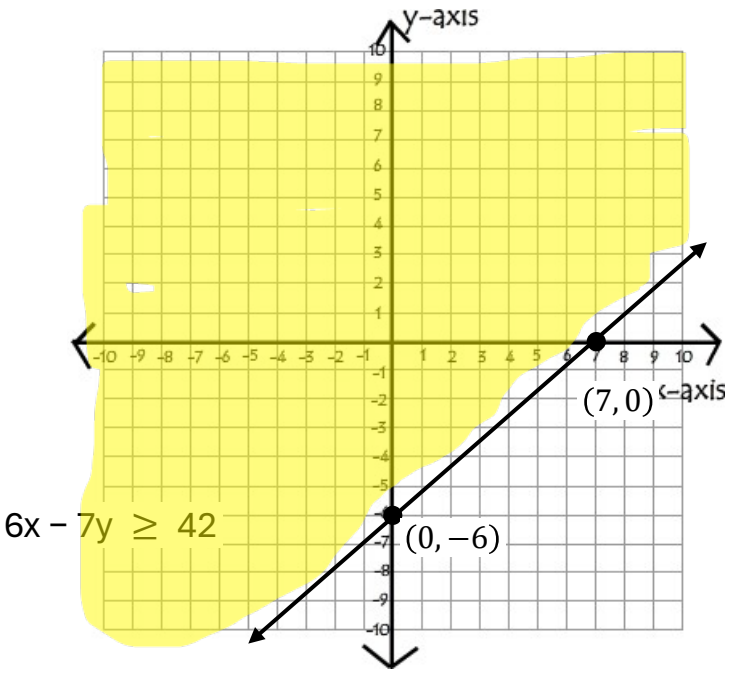


4) $6x - 7y \geq 42$

The slope is: $\frac{6}{7}$

The y-intercept is: -6

The line is: solid



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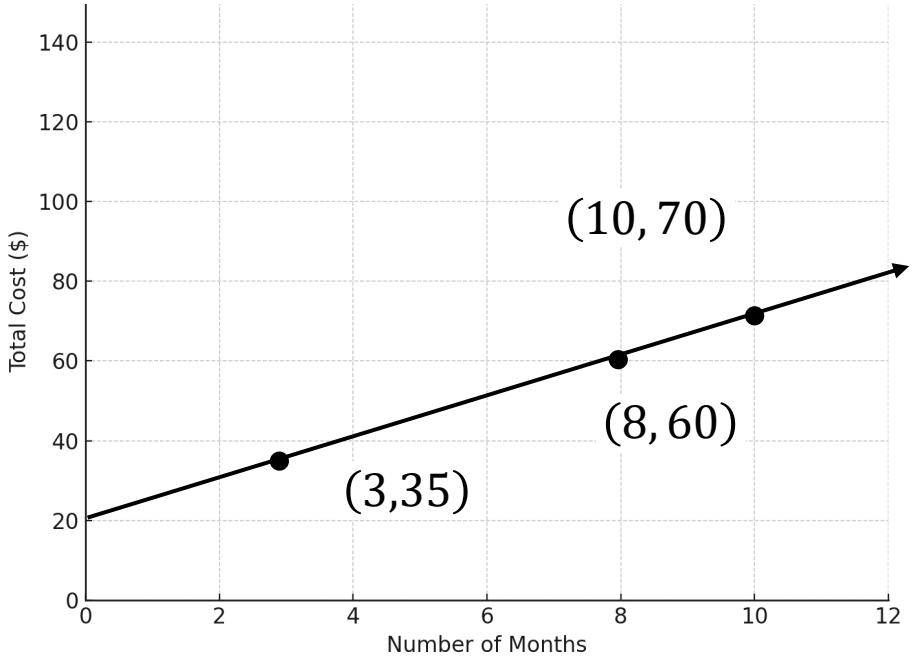
A person buys a gardening toolkit for $5 and signs up for a monthly gardening club membership that includes 20 seeds every month. The membership costs $20 per month. Write an equation to determine the total cost, y, of this membership for x months. Find the equation, graph, and use the graph to answer the questions.

Equation for Total Cost: $\boldsymbol{y = 5x + 20}$



Find the cost for 3 months.

$(3, 35)$ $\$35$

Find the cost for 10 months.

$(8, 60)$ $\$60$

Find the cost for 16 months.

$(10, 70)$ $\$170$

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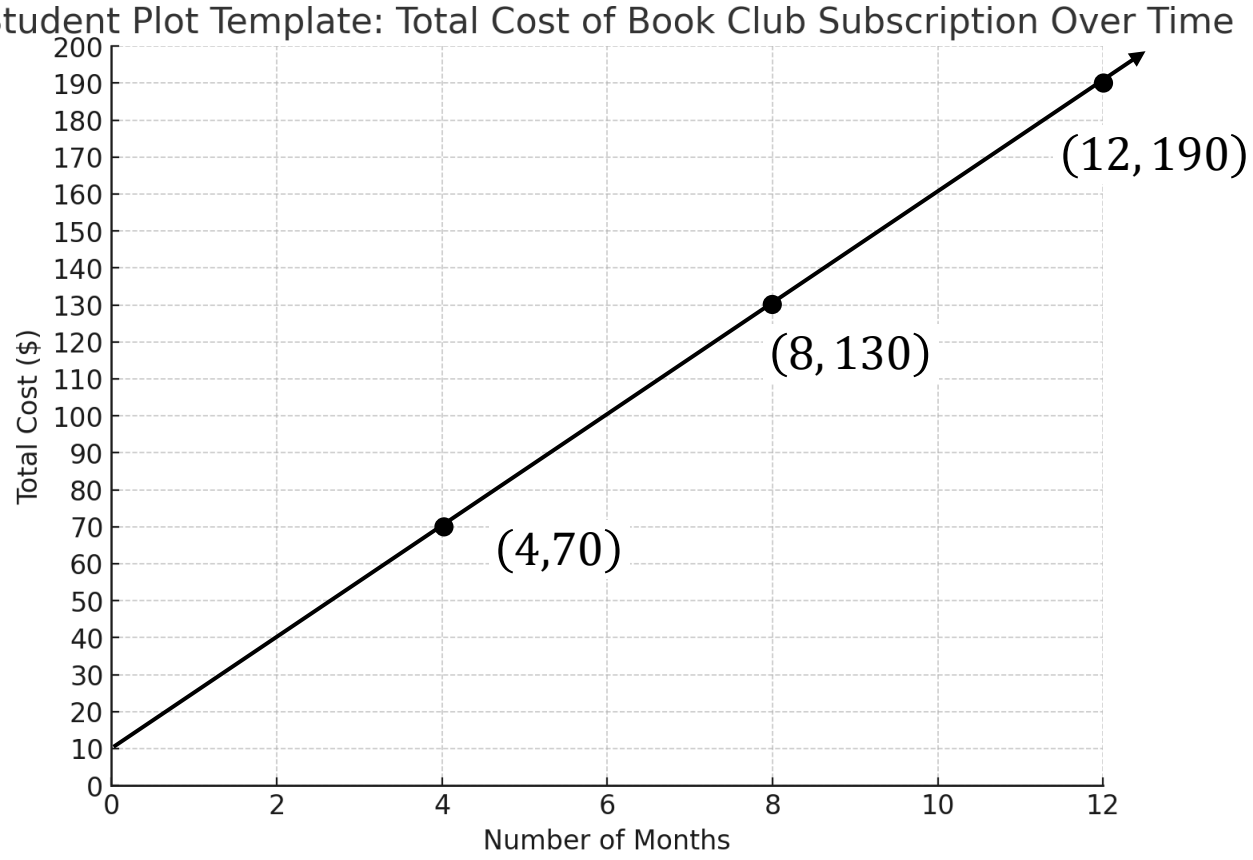
A local community center offers a monthly book club subscription. The initial registration fee for joining the book club is $10, and each month's subscription costs $15. Write an equation to determine the total cost, yy, of being in the book club for xx months. Create a graph to represent the equation and use it to find the cost for attending the book club for 6 months.

Equation for Total Cost: $\boldsymbol{y = 15x + 10}$



Find the cost for 4 months.

$(4, 70)$ $\$70$

Find the cost for 8 months.

$(8, 130)$ $\$130$

Find the cost for 12 months.

$(12, 190)$ $\$190$