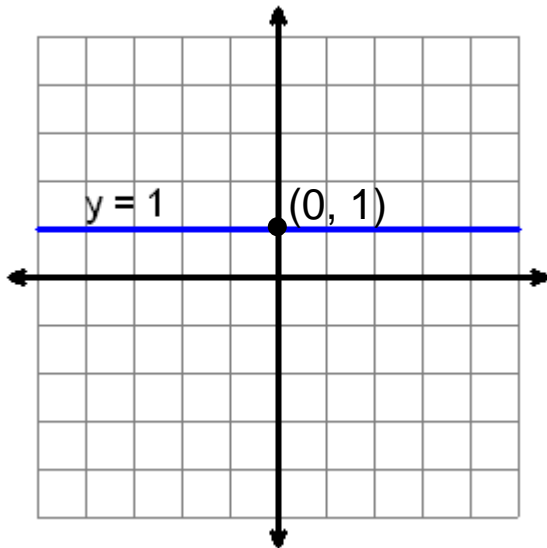# LESSON PLAN

LessonTitle: *Identifying Linear Functions from Graphs*	**Course:** *Algebra*

Utah State Core Content and Process Standards:
Standard 2 Objective 1

Lesson Objective(s): *What will you be teaching? (List content and language objectives)*
Students will be able to identify necessary characteristics of linear graphs. They will need to know terms associated with the graphs.

Enduring Understanding (Big Ideas): Students will demonstrate their ability to deconstruct the graph of a line into its parts.	**Essential Questions:** How do you determine which graph and equation of a function is correct given characteristics about that function?
Skill Focus: Understanding the different terms related to a linear graph.	**Vocabulary Focus:** *y*-intercept, parallel, perpendicular, intersect

Materials:
20 different graphs associated with the activity, transparencies of the graphs (optional), grid paper

Assessment (Traditional/Authentic): *How will you know students have learned the content?*
The teacher will know learning is taking place by the students' involvement in the activity.

Ways to Gain/Maintain Attention (Primacy): *How will you gain and maintain students' attention? Consider need, readiness, learning style, novelty, meaning, or emotion.*
Students will be working in cooperative groups, they will remain attentive because they will not know when their turn will come in the activity.

Written Assignment: Write their own model activity containing 4 graphs.
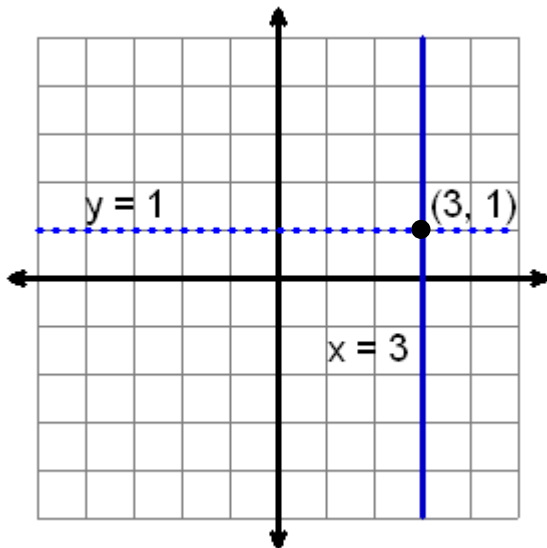
Instructions:
Place the students in 10 groups. Each group will receive 2 different graphs with a phrase for each one. The student with the first graph will start and read their question aloud to the entire class. The teacher will place and overhead transparency of this graph on the overhead. The group that has the graph that answers the question will respond next by showing their graph. If the class agrees that they are right then they will read their question. This will continue until all the graphs have been used.

As each groups reads their "who has" phrase, have the students sketch this on the grid sheet. This will help the students to stay involved and will help them identify their graphs. This also allows for communication among the groups.

★

y = 1 (0, 1)

I have $y = 1$.

Who has a line perpendicular to this and intersects it at (3, 1)?

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y = 1 (3, 1)

x = 3

I have $x = 3$.

**Who has a line parallel to this containing the point (1, 3)?**

I have $x = 1$.

Who has the point of intersection of this line and the line $y = x$?

I have (1, 1).

Who has a line through this with a slope of 2?

I have $y = 2x - 1$**.**
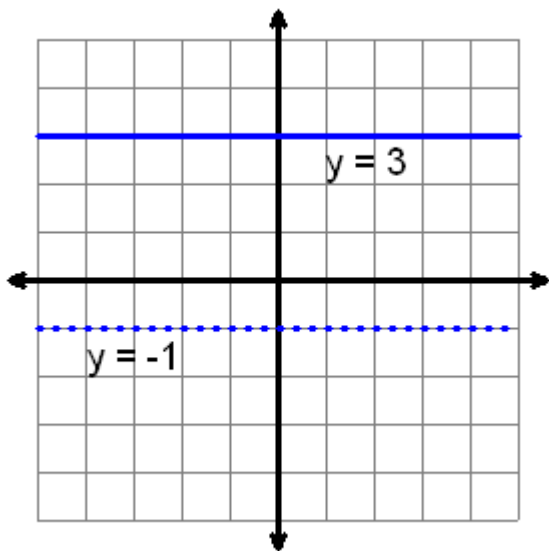
Who has the *y*-intercept of this line?

I have (0, -1).

Who has a horizontal line through this point?

y = -1
(0, -1)

I have $y = -1$.

Who has a line with the same slope of this line and a y-intercept of 3?

y = 3
y = -1

I have $y = 3$.

Who has a line with the same y-intercept and a slope of $-\dfrac{1}{2}$?

Card 1

y = 3

(0, 3)

y = -1/2 x + 3

I have $y = -\dfrac{1}{2}x + 3$.

Who has a line parallel to this line passing through (2, -1)?

Card 2

y = -1/2 x + 3

(2, -1)

y = -1/2 x

I have $y = -\dfrac{1}{2}x$.

Who has a line perpendicular to this containing the origin?

Card 1:

y = 2x

(0, 0)

y = -1/2 x

I have $y = 2x$.

Who has the value of this function when x is -1?

Card 2:

(-1, -2) y = f(x) = 2x
f(-1) = 2(-1)
f(-1) = -2

I have -2.

Who has a vertical line with this as its x-intercept?

(-2, 0)

I have $x = -2$.

Who has a line with the same slope, passing through (-1, -2)?


$x = -2$ $x = -1$

(-1, -2)

I have $x = -1$.

Who has a line perpendicular to this passing through (2, 4)?

I have _y_ = 4.

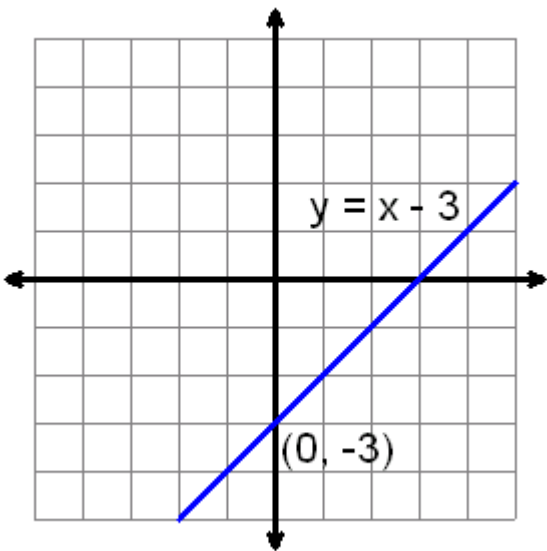**Who has a line with the same slope, passing through (2, -3)?**
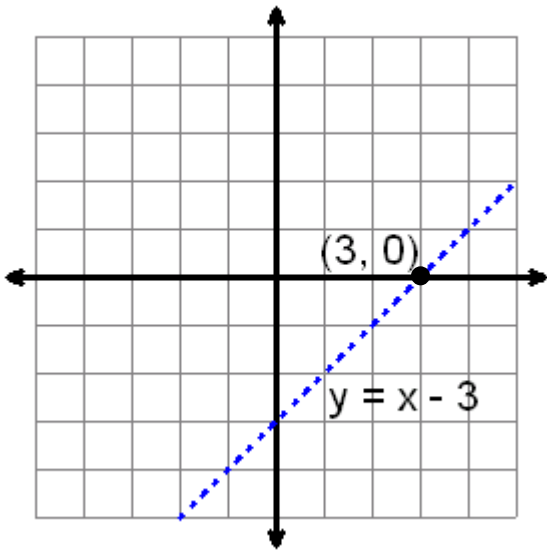

I have _y_ = -3.

Who has the _y_-intercept of this line?

y = -3   **(0, -3)**

I have (0, -3) as a y-intercept.

Who has a line with this y-intercept and a slope of 1?
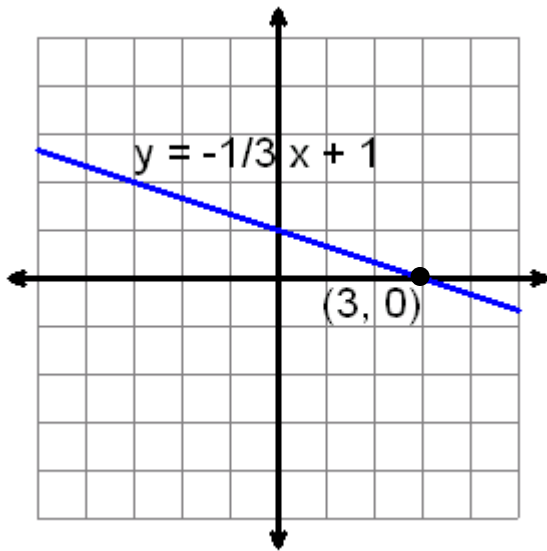
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y = x - 3

(0, -3)

I have $y = x - 3$.

Who has the x-intercept of this line?

I have (3, 0).

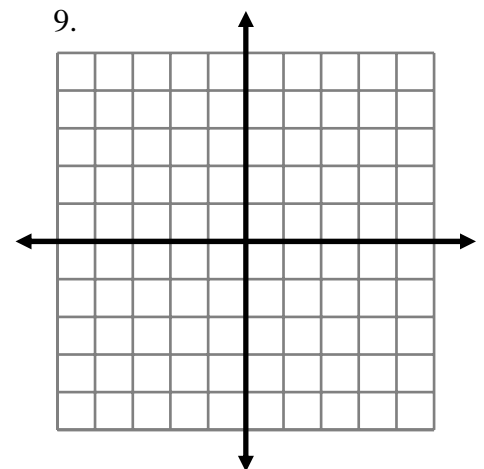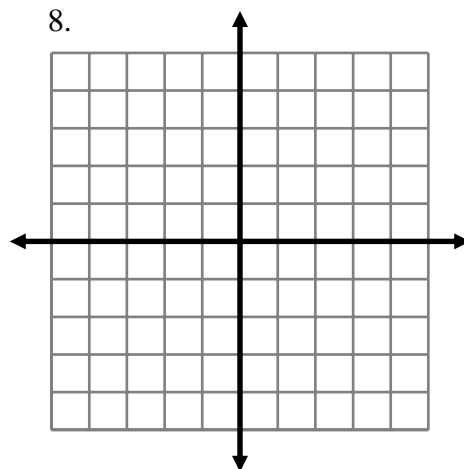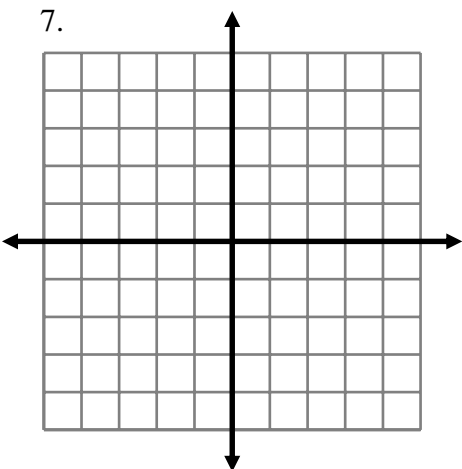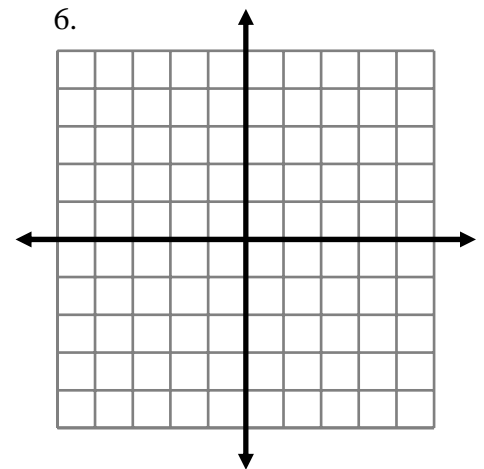**Who has a line with this *x*-intercept and a slope of $-\dfrac{1}{3}$?**

I have $y = -\dfrac{1}{3}x + 1$.

Who has a horizontal line with the same *y*-intercept?

Linear Equations Recording Sheet

Name _____ Date _____

1.

2.

3.

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12.

13.

14.

15.

16.

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19.

20.

21.

Teacher Answer Sheet

I have $y = 1$. Who has a line perpendicular to this and intersects it at (3, 1)?

I have $x = 3$. Who has a line parallel to this containing the point (1, 3)?
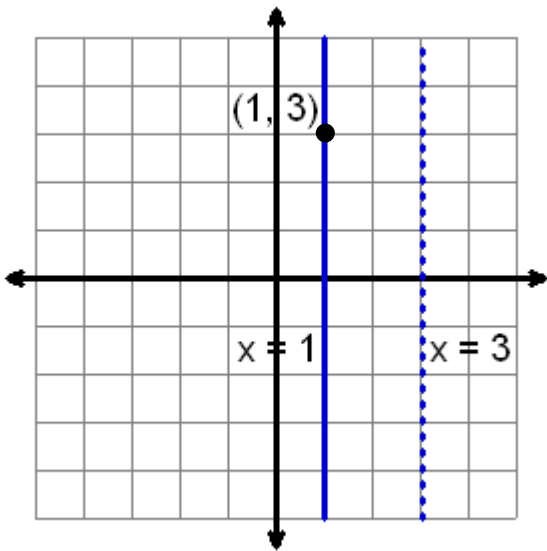
I have $x = 1$. Who has the point of intersection of this line and the line $y = x$?
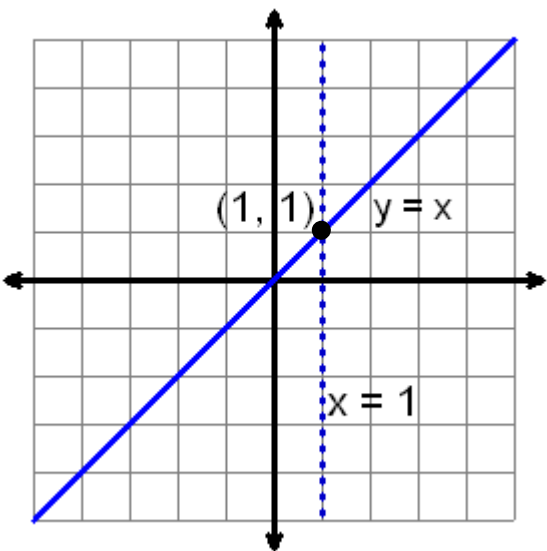
I have (1, 1). Who has a line through this with a slope of 2?
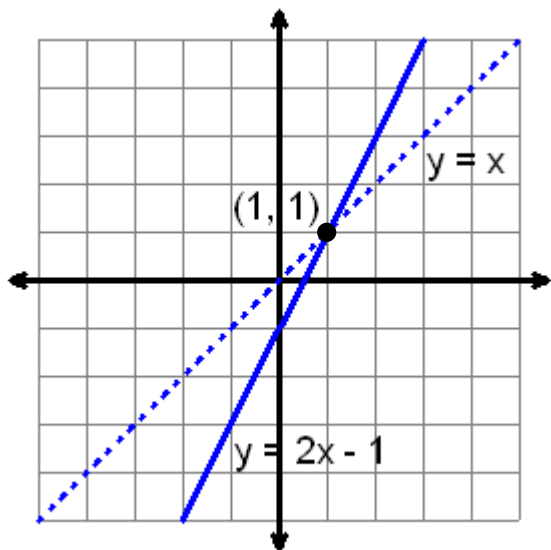
I have $y = 2x - 1$. Who has the y-intercept of this line?
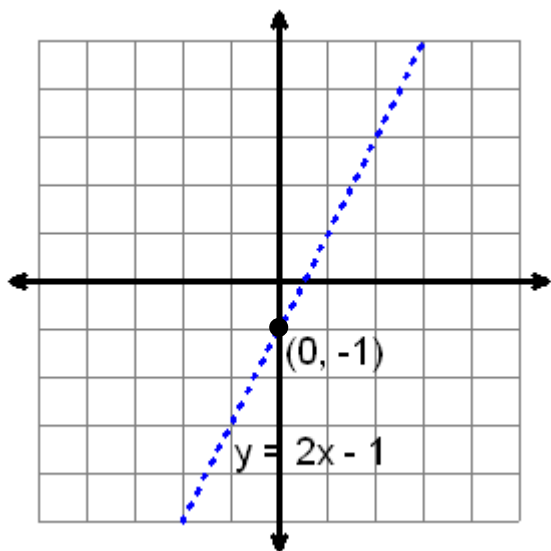
I have (0, 1). Who has a horizontal line through this point?
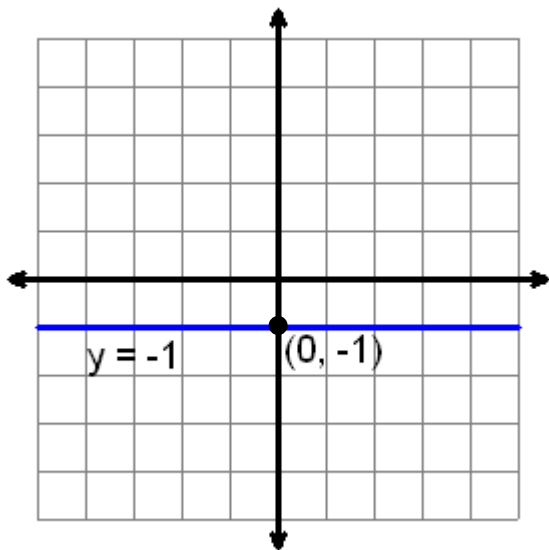
I have $y = -1$. Who has a line with the same slope of this line and a y-intercept of 3?

I have $y = 3$. Who has a line with the same y-intercept and a slope of $-\dfrac{1}{2}$?
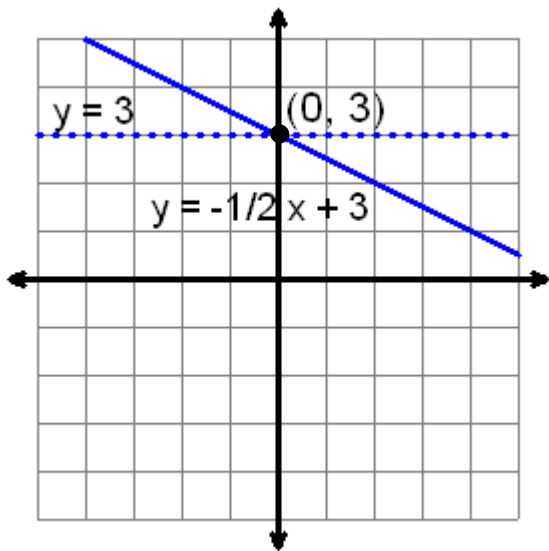
I have $y = -\dfrac{1}{2}x + 3$. Who has a line parallel to this line passing through (2, -1)?
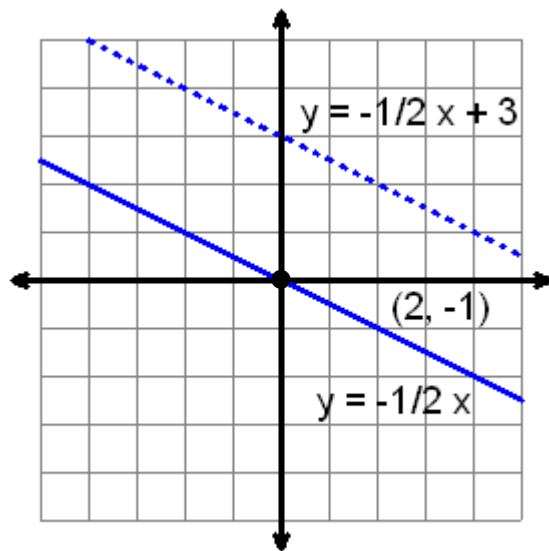
I have $y = -\dfrac{1}{2}x$. Who has a line perpendicular to this containing the origin?
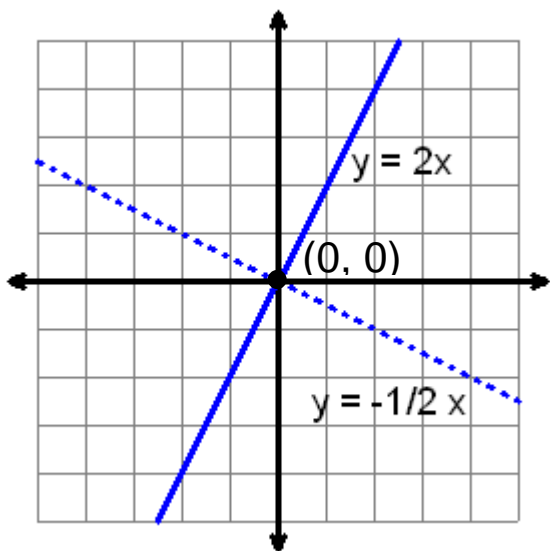
I have $y = 2x$. Who has the value of this function when x is -1?
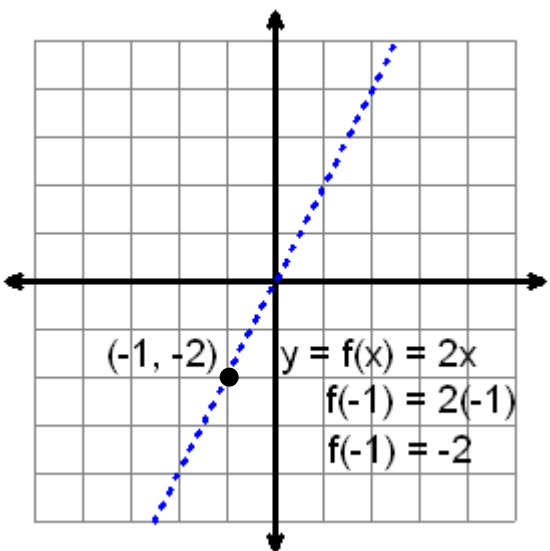
I have -2. Who has a vertical line with this as its x-intercept?
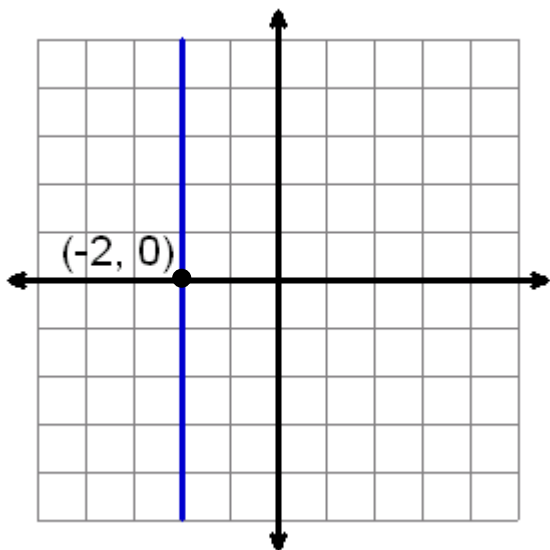
I have $x = -2$. Who has a line with the same slope, passing through (-1, -2)?
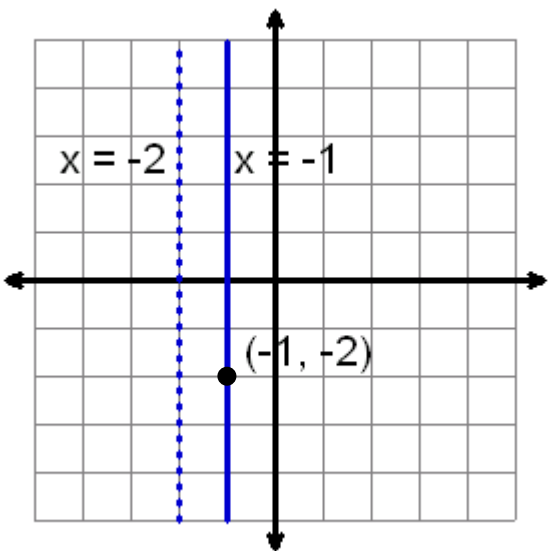
I have $x = -1$. Who has a line perpendicular to this passing through (2, 4)?
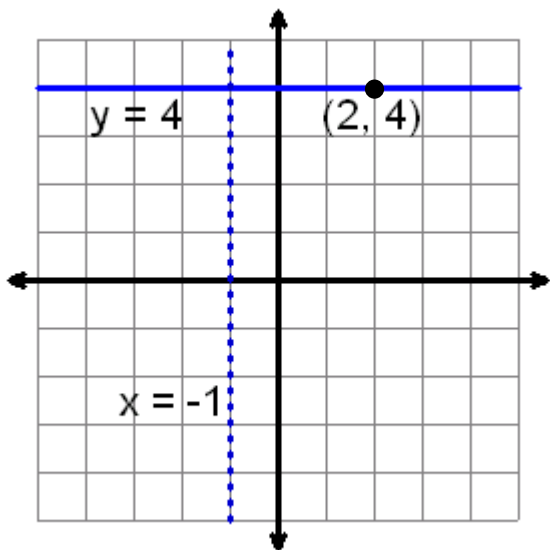
I have $y = 4$. Who has a line with the same slope, passing through (2, -3)?
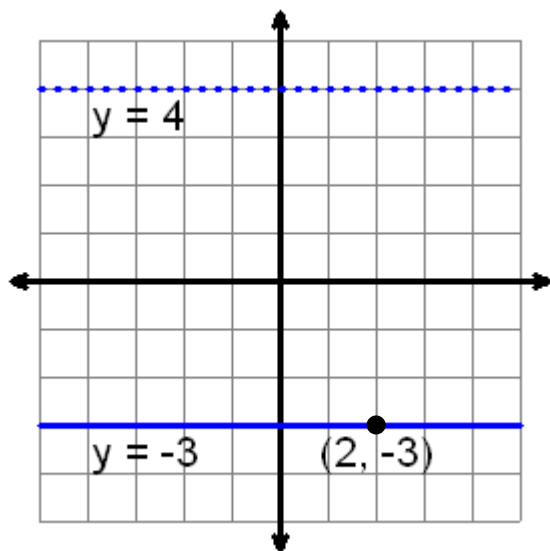
I have $y = -3$. Who has the y-intercept of this line?
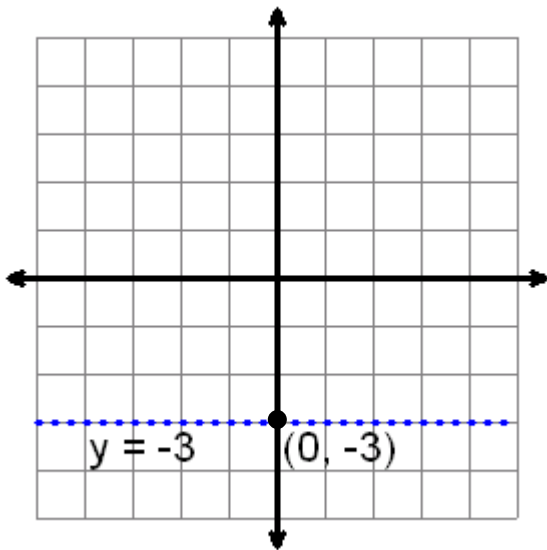
I have (0, -3) as a y-intercept. Who has a line with this y-intercept and a slope of 1?

I have $y = x - 3$. Who has the x-intercept of this line?

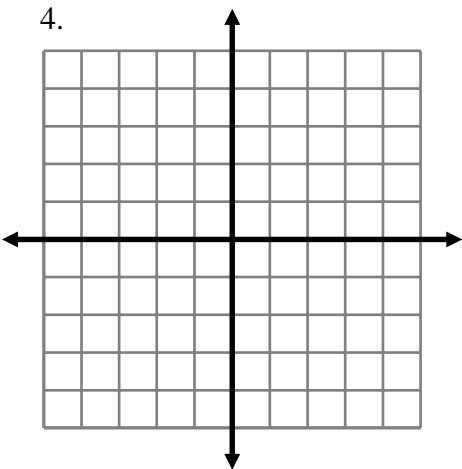I have (3, 0). Who has a line with this x-intercept and a slope of $-\dfrac{1}{3}$?
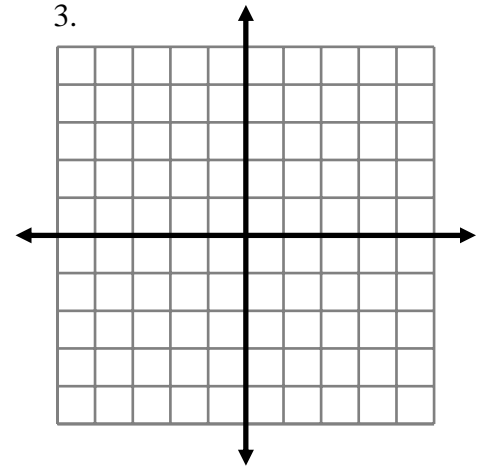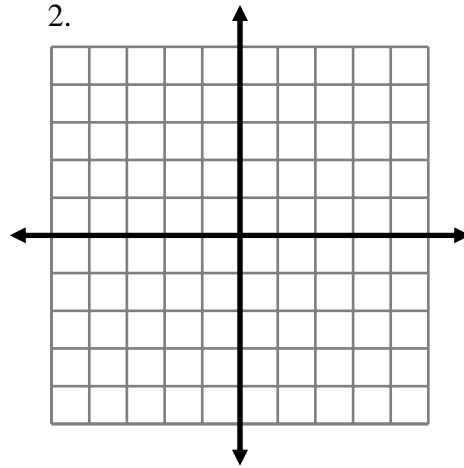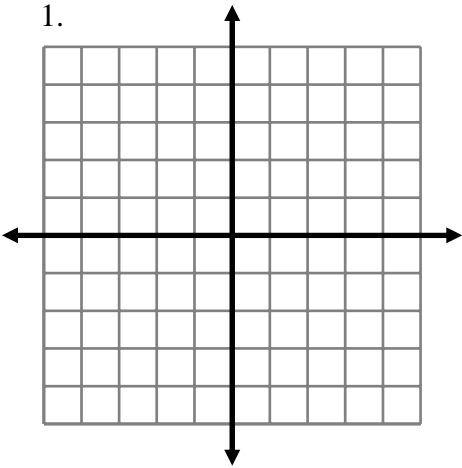
I have $y = -\dfrac{1}{3}x + 1$. Who has a horizontal line with the same y-intercept?