Writing Linear Equations in Slope - Intercept Form

Method 1: Given the Slope & y - Intercept

Method 2: Given the Graph of the Line

Method 3: Given the Slope & a Point

Method 4: Given Two Points

Play Jeopardy!

Slope - Intercept Form

$y = mx + b$

m = slope

b = y - intercept

Step 1

Step 2

Exercise 1: Drag the numbers into the correct position so that your result is an equation in slope - intercept form.

1) The slope is 5 and the y - intercept is -3 .

$y =$ $x +$

Check

2) The slope is -3/4 and the y - intercept is 2 .

$y =$ $x +$

Check

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Continue to Exercise 2

Exercise 2: Drag each equation to its sentence.

1) An equation with a slope of 3 and y - intercept of 4. Drag text here

2) An equation with a slope of -4 and a y - intercept of 3. Drag text here

3) An equation with a slope of -3 and a y - intercept of -4. Drag text here

4) An equation with a slope of 4 and a y - intercept of 3. Drag text here

5) An equation with a slope of 3 and a y - intercept of -4. Drag text here

Equations

$y = -4x + 3$

$y = 4x + 3$

$y = 3x + 4$

$y = 3x - 4$

$y = -3x - 4$

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Continue to Exercise 3

Exercise 3: Application

Suppose that you purchase a cell phone for $60 and pay a monthly service charge of $22. Write an equation to model the total cost, y, of maintaining cell phone service for x months. Use the model below to help you.

Total Cost	=	Monthly Fee	•	Number of Months	+	Cost of the Phone

Use your equation above to determine the total cost of maintaining a cell phone for one year. Erase the price tag to check your answer!

END

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Slope - Intercept Form

$y = mx + b$

$m = \frac{\text{rise}}{\text{run}}$

$b = y\text{-intercept}$

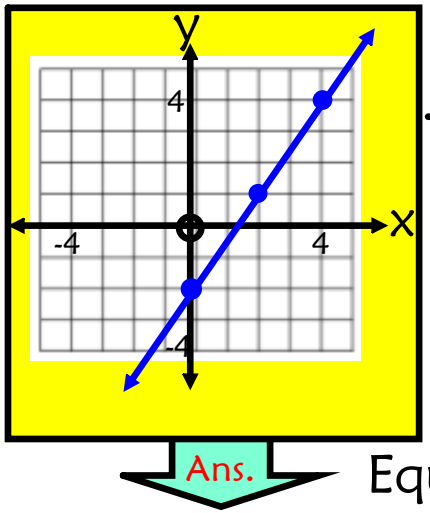
Step 1

Step 2

Step 3

Exercise 1: Write the equation for each line graphed below.

1)



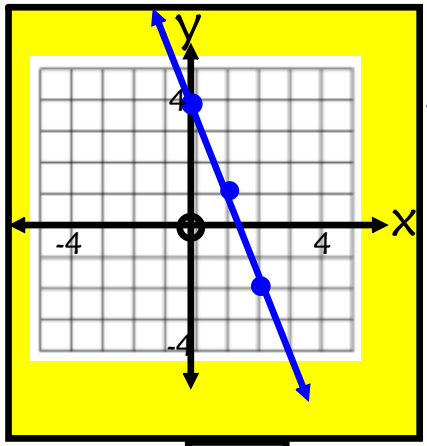
$\frac{\text{Rise}}{\text{Run}} = \_\_$

y - Int =

Ans.

Equation:_____

2)



$\frac{\text{Rise}}{\text{Run}} = \_\_$

y - Int =

Ans.

Equation:_____

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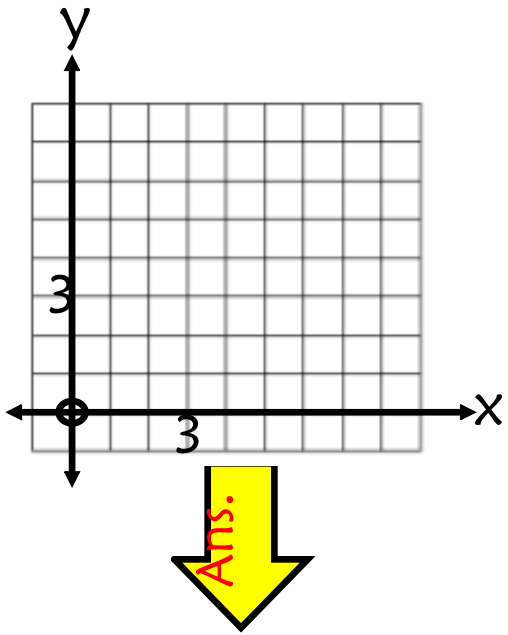
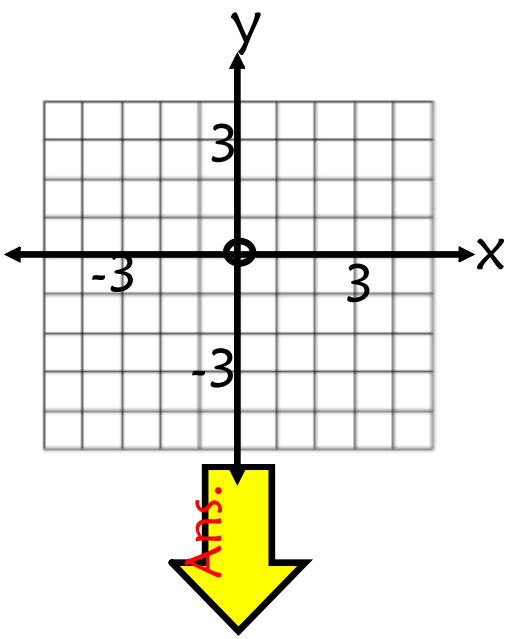
Continue to Exercise 2

Exercise 2: Plot the two points the coordinate plane and write the equation for the line that passes through the two points.

1) (0,3) and (4,2)



2) (0,-2) and (1,1)



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Continue to Exercise 3

Exercise 3: Use your knowledge of the previous two exercises to write an equation of the line with the given slope and passes through the given point. Pull the graph paper out if needed to help you.

1)Slope = -3; (0,4)

Graph Paper

2) Slope = 4; (0,-5)

Graph Paper

END

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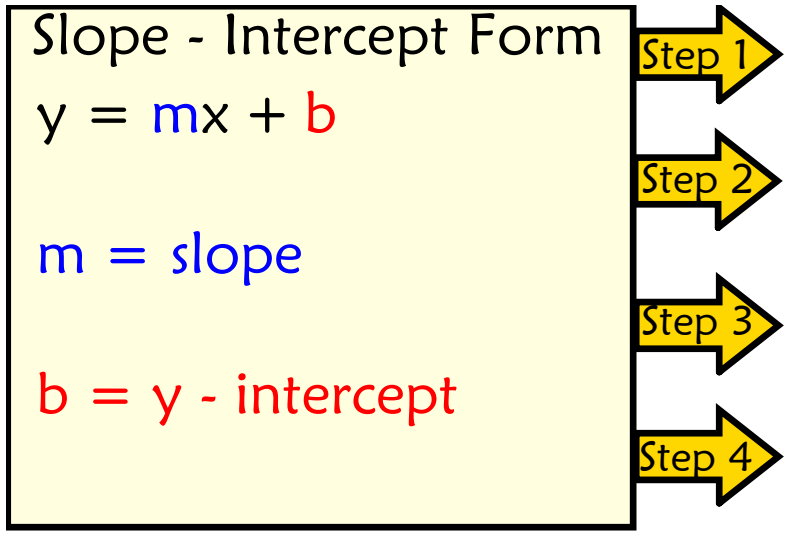

Exercise 1: Write an equation for the line that passes through the given point and has the given slope. (Begin by dragging and dropping the numbers into their correct position)

1) (-1 , 3) Slope = -4

y = mx + b

= ( )+

2) (6 , 3) Slope = 2

y = mx + b

= ( )+

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Continue to Exercise 2

Exercise 2: Pretend you are a teacher! You assigned two questions for your students to complete. One student handed in the following paper. Determine if they did each question correctly. Mark each correct step with a check mark and each incorrect step with an x. ✓ ✗

Write an equation of the line that passes through the given point and has the given slope.

1) (5,1) and Slope = 2

$y = mx + b$

$1 = 2(5) + b$

$1 = 10 + b$

$+10 = +10$

$11 = b$

$y = 2x + 11$

2) (-4,7) and Slope = -5

$y = mx + b$

$-4 = -5(7) + b$

$-4 = -35 + b$

$+35 = +35$

$39 = b$

$y = -5x + 39$

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Continue to Exercise 3

Exercise 3: Application

A gym charges $35 per month after an initial membership fee. A member has paid a total of $250 after 6 months. Write an equation that gives the total cost of a gym membership in terms of the length of the membership. Use the model below to help you.

Total Cost	=	Cost Per Month	•	Number of Months as a Member	+	Initial Membership Fee

Use the equation above to find the total cost of being a member for 8 months.

END

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Slope - Intercept Form

$y = mx + b$

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$b = y\text{-intercept}$

Step 1

Step 2

Step 3

Step 4

Step 5

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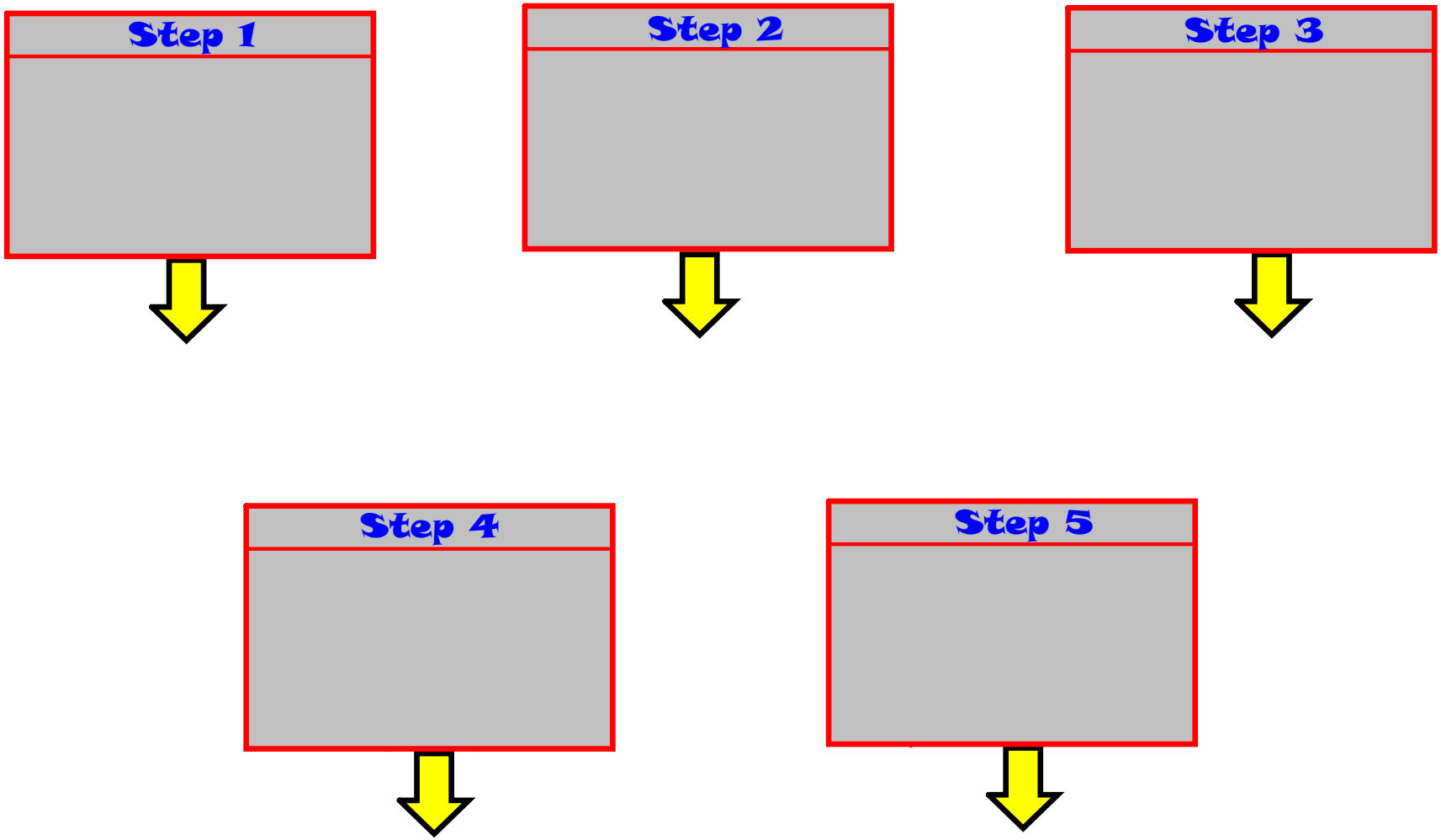
Continue to Exercise 1

Exercise 1: Inside each box, complete each of the above steps. Your result will be the equation of the line that passes through the two points (1,4) and (2,7).



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Continue to Exercise 2

Exercise 2: Fill in the missing verbal/mathematical steps in the chart below. Your goal is to end with an equation in slope intercept form that passes through the points (5,3) and (4,-3).

Mathematical Steps	Verbal Steps
	1) Calculate the slope.
(5,3)	2)
	3) Substitute the slope and the point into $y = mx + b$.
	4) Solve the Equation
$y = 6x - 27$	

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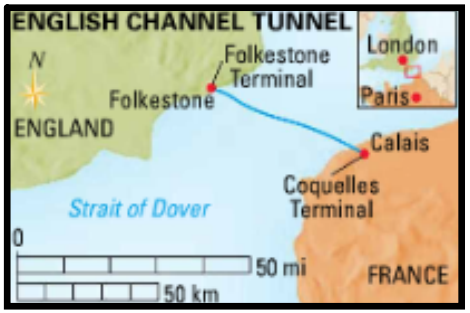
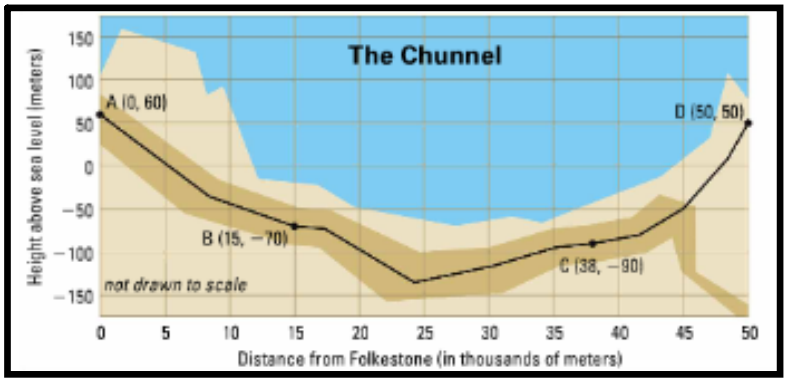
Continue to Exercise 3

Exercise 3: Application

The diagram below represent the Chunnel, a railroad tunnel built under the English channel which connects England to France.



The graph below compares the distance from England and the height above sea level.



A) Draw line segments connecting Point A to Point B and from Point C to Point D. Using the ordered pairs on the graph, write the equations for the lines from point A to point B and then from point C to point D.

B) Is the Chunnel steeper on the French side or on the English side?

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END

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