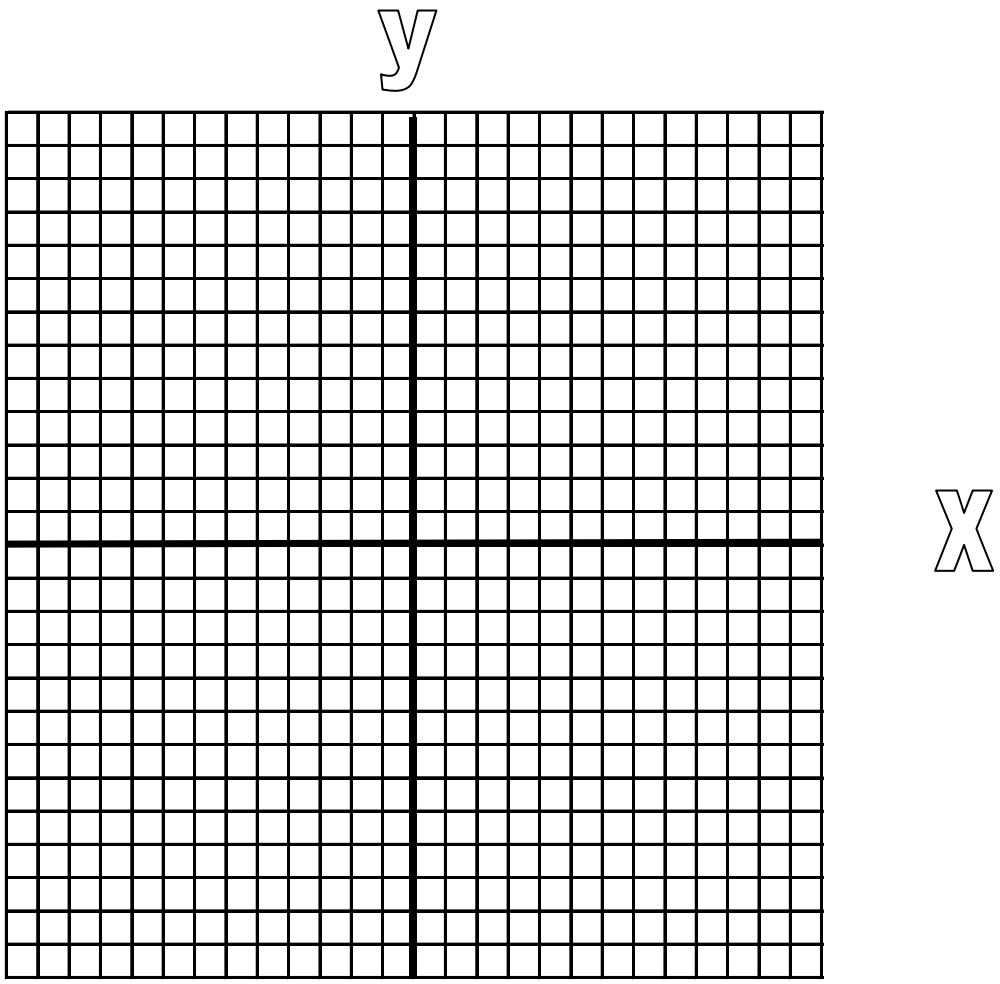
Blank Coordinate Axis

(Blank Transparency or Copy Master for Teacher Use or Student Practice)



Practice with Perpendicular Lines

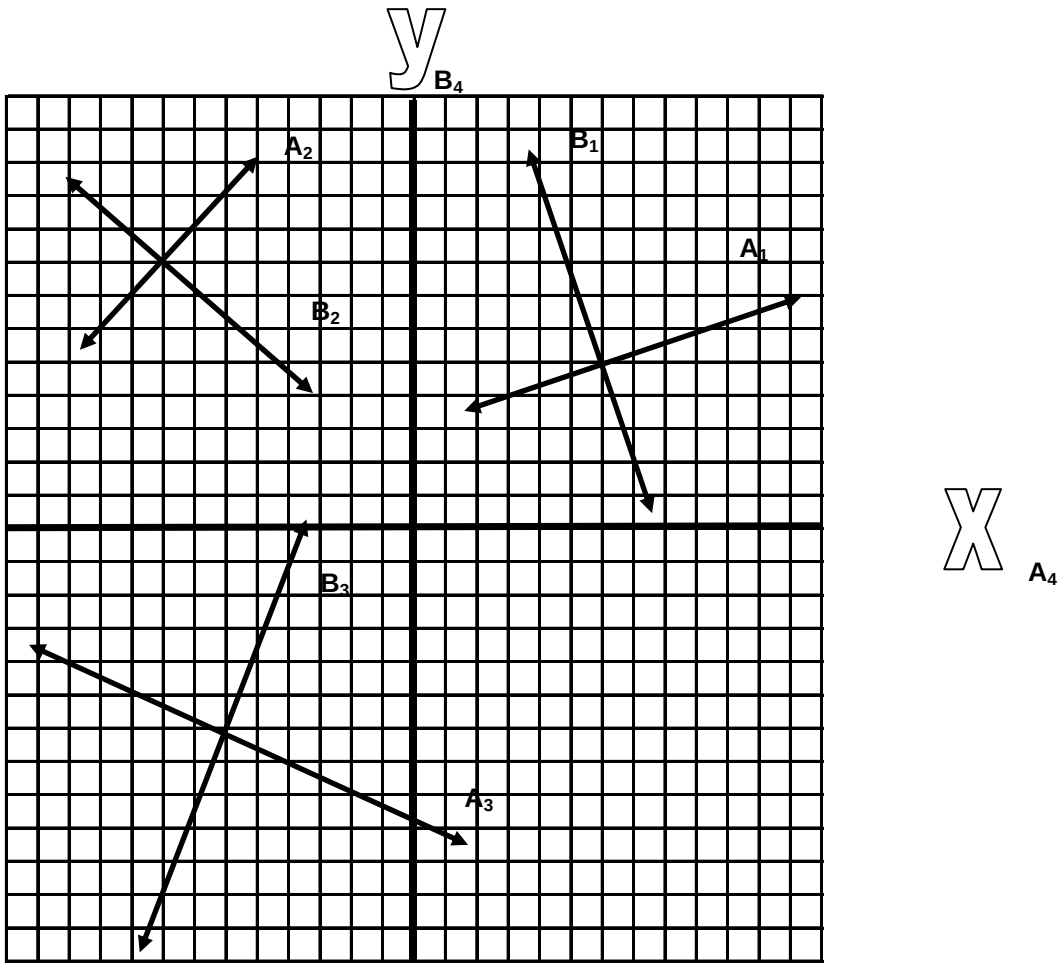


Table Comparing the Perpendicular Lines' Slopes

Pair of Perpendiculars	Slope of line A in pair	Slope of line B in pair
In Quadrant One		
In Quadrant Two		
In Quadrant Three		
Coordinate Axes		

What Do You Notice about the Slopes?

Name: _____ Date: _____

Obstacle Course Directions and Rubric

Now that you have studied the concept of perpendicularity, it's time to work with it! Look at the obstacle course on your other sheet. Do you see the small line at the bottom right-hand side? That is your starting path. Trace a route from the end point of that segment that takes you all the way to the other side of the grid **without** hitting the sides or any of the obstacles in your way.

There is only one problem. . . you can only make turns that are **perpendicular.** You can turn right or left whenever you want to, but your new path must be perpendicular to the previous one! Your second task is to represent each step of your route algebraically. Here's an example using the starting move:

The starting path goes from the point (10, -13) to the point (9, -10). To find the slope, find the difference in the y values over the difference in the x values: $(y_2-y_1)/(x_2-x_1)$. For the first move, you have

(-13 - -10) / (10 - 9) =

-3 / 1 =

- 3.

So the slope for this line segment is –3.

Remember that all you need to write an equation in point-slope form is a **point** and a **slope.** You have both of these! Now do it.

$y - y_1 = m (x - x_1)$ ⇒ (For example, put in the coordinates (9, -10) for one of the two points.

y - **-10** = **-3** (x - **9**) ⇒ (Simplify the double negative to give the final form of the point-slope equation.)

y + 10 = -3 (x - 9)

Finally, you need to record the distance traveled by your move. In this case, the change-in-y was **+3** and the change-in-x was **-1.**

Once you have those things, you have recorded your move algebraically! The first move is filled in for you on the data table.

Record the algebraic data for each of your subsequent moves. Make sure that your data fits the move you made!! Good luck!!! And have FUN traveling!

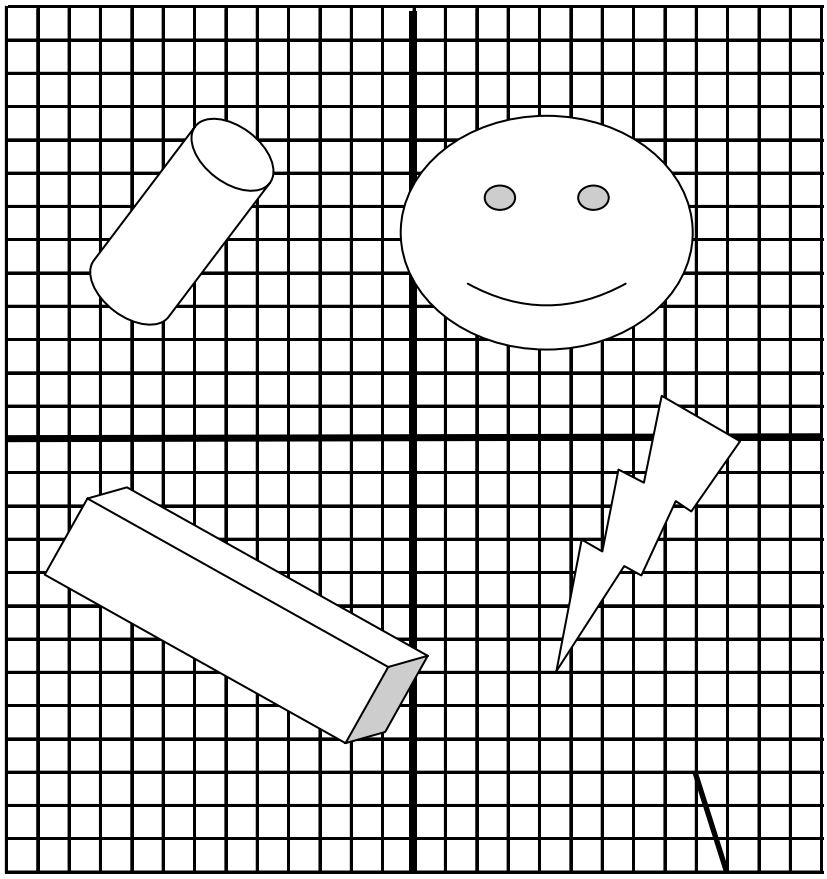
Assessment Rubric

Criterion	Commendable	Acceptable	See Teacher
Geometric Solution	▪ Route takes very few moves. ▪ Route does **not** hit anything. ▪ All turns are right angles.	▪ Route does **not** hit anything. ▪ All turns are right angles as measured by the protractor.	▪ Route hits an obstacle or wall. ▪ One or more of the turns do not form a right angle.
Algebraic Solution	▪ All equations model the path segment they represent. ▪ All changes-in-x correctly measure the x distance traveled. ▪ All changes-in-y correctly measure the y distance traveled.	▪ The written equations have a few minor problems with their path segments. ▪ All changes-in-x and -y correctly measure the x and y distances traveled.	▪ The written equations have several major problems representing their path segments. ▪ Some or many of the changes-in-x and -y do not correctly model the distances traveled.

Name: _____ Date: _____

Perpendicular Obstacle Course

FINISH!



START

Path	Start Point	End Point	Change-in-y	Change-in-x	Equation
#1	**(10, -13)**	**(9, -10)**	**3**	**-1**	**y + 10 = -3 (x -9)**
#2					
#3					
#4					
#5					
#6					
#7					
#8					