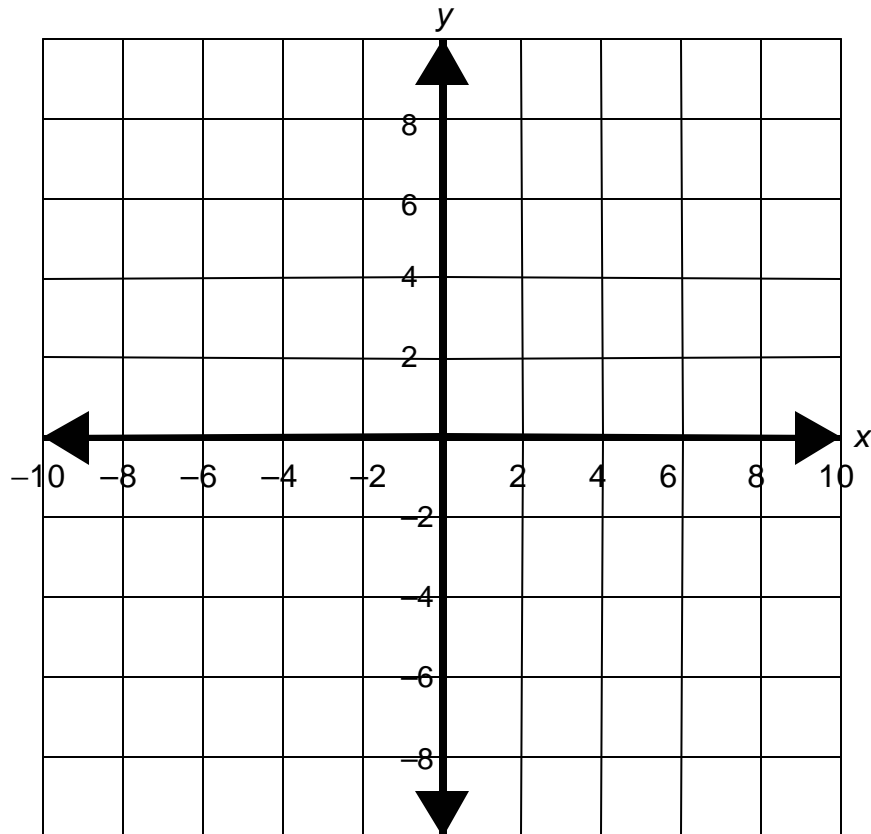


## Sample ISAT Open Response: Sample Student Answers

1. Anthony is given three points:  $A(4, 2)$ ,  $B(10, -4)$ , and  $D(0, -2)$ . Determine the coordinates for  $C$  if he is to create the rectangle  $ABCD$ . Plot the points on the coordinate graph. Use coordinate geometry to prove that quadrilateral  $ABCD$  is a rectangle.

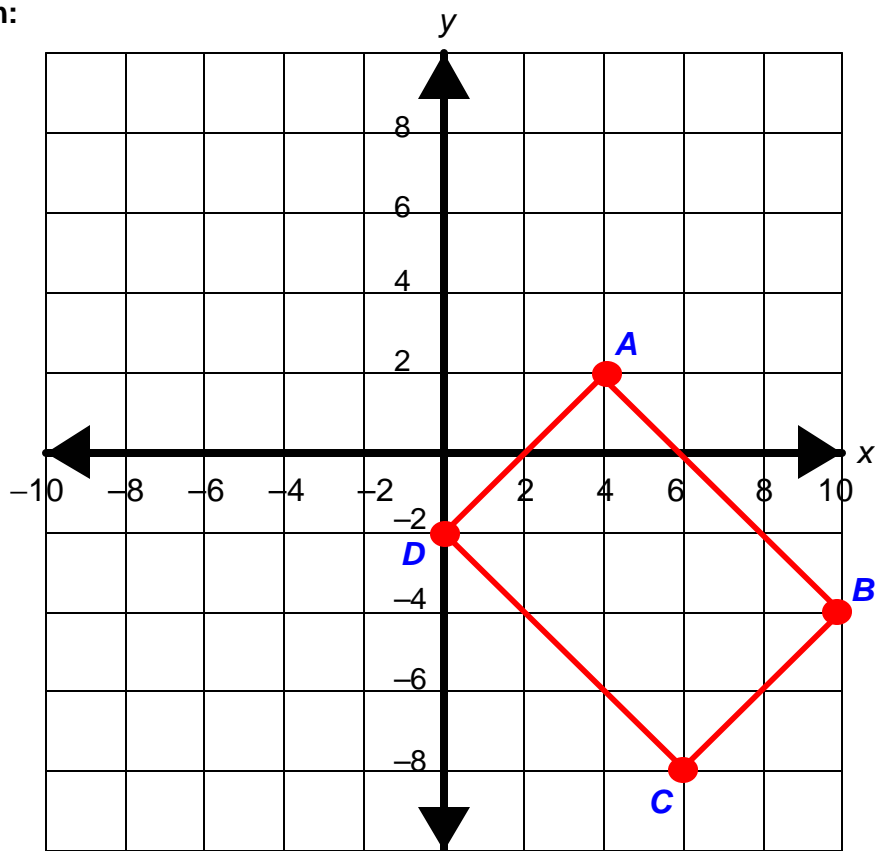
Show all your work. **Explain in words** how you got your answer and **why** you used the steps you did to solve the problem.



Course 3, Lesson 11-2

## Sample ISAT Open Response: Sample Student Answers

**Solution:**



In order to form a rectangle,  $\overline{AB}$  must be parallel to  $\overline{CD}$ . Since they are parallel,  $\overline{AB}$  and  $\overline{CD}$  have the same slope. The slope of  $\overline{AB}$  is  $-1$ . Starting at point  $D(0, -2)$ , go down 6 units and right 6 units and draw a line through this point. The slope of  $\overline{AD}$  is 1. Starting at  $B(10, -4)$ , go left 4 units and down 4 units and draw a line through this point. Point  $C$  is at the intersection of the two new lines. That means that point  $C$  has the ordered pair  $C(6, -8)$ .

To use coordinate geometry to prove that  $ABCD$  is a rectangle, check to see that the sides of the quadrilateral are parallel. The slope of sides  $\overline{AD}$  and  $\overline{BC}$  are both 1, and the slope of sides  $\overline{DC}$  and  $\overline{AB}$  are both  $-1$ . Thus each side of the figure is parallel to the opposite side. The sides of the figure intersect at right angles because lines  $\overline{AD}$  and  $\overline{AB}$  are perpendicular, and the lines  $\overline{DC}$  and  $\overline{CB}$  are perpendicular. Their slopes are negative reciprocals, thus proving that the lines are perpendicular and form right angles. Since the sides of the figure intersect at  $90^\circ$  angles, the quadrilateral is a rectangle.

## Sample ISAT Open Response: Sample Student Answers

2. Amy's school just introduced a new dress code. Students must wear dress slacks, belts, and collared shirts. Below are the color choices for each item.

<b>Slacks</b>	<b>Shirts</b>	<b>Belts</b>
black	white	black
navy blue	red	brown
khaki	green	

Create a tree diagram showing all the different combinations of outfits Amy can wear. Then find the probability that she will wear black pants, a white shirt, and a black belt.

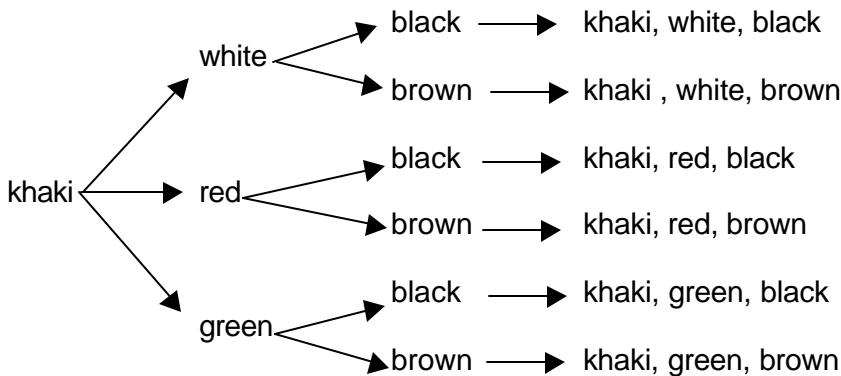
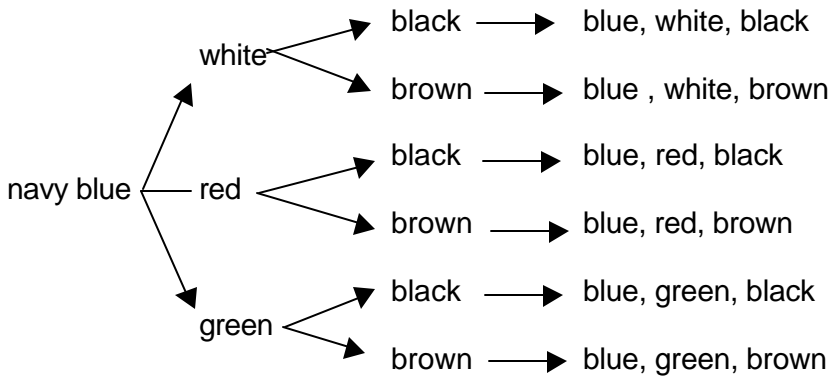
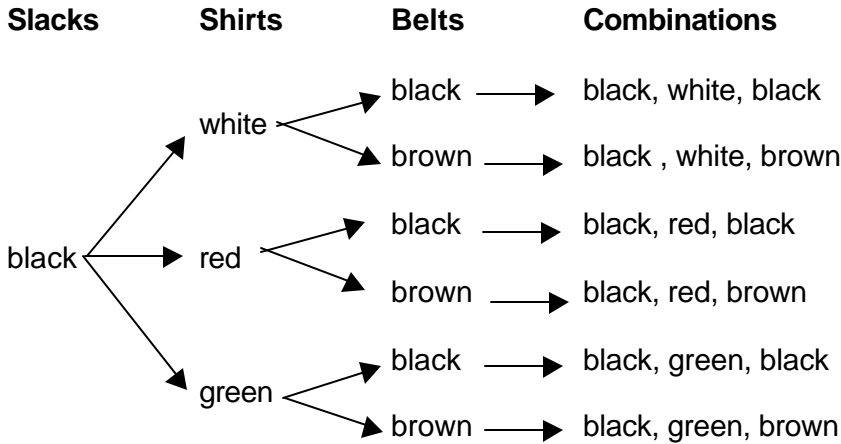
Show all your work. **Explain in words** how you got your answer and *why* you did the steps you did to solve the problem.

*Course 3, Lesson 9-5*

Sample ISAT Open Response: Sample Student Answers

**Solution:**

To draw the tree diagram, create a list of the colors of slacks Amy can wear. Then, for each color of slacks, list the colors of shirts Amy can wear. Finally, for each color of shirt, list the colors of belt Amy can wear.



## Sample ISAT Open Response: Sample Student Answers

To determine how many total combinations there are, count the combinations in the final list. There are 18 different combinations in this list. Since there are 18 different combinations and only 1 combination with black slacks, a white shirt, and a black belt, the probability that Amy will wear that combination is  $\frac{1}{18}$ .