(A) Lesson Context

BIG PICTURE of this UNIT:	• mastery with algebraic manipulations/calculations involving linear systems • proficiency in working with graphic and numeric representations of linear systems • proficiency in working with linear systems in real world scenarios		
CONTEXT of this LESSON:	Where we've been Lessons 1,2,3 reviewed linear relations & in Gr 8 ➔ intro to linear systems	Where we are Solving a linear system graphically & knowing what a solution MEANS	Where we are heading Mastery of techniques for solving & applying linear systems

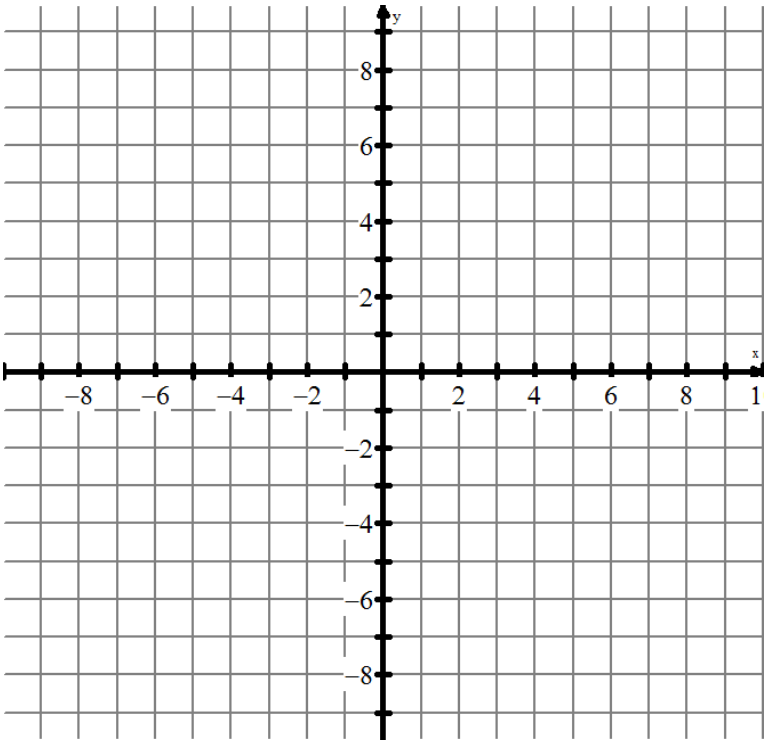
(B) Lesson Objectives:

a. Graphically determine the intersection point of two lines & algebraically verify the intersection point. (R)
b. Verify a solution to a linear system. (REVIEW)
c. Apply linear systems to real world problems (REVIEW)

(C) Examples for Classwork

a. Graph each of the following lines on the same grid: $y = 2x - 4$ and $y = -x + 5$

Graphic Solution:



Algebraic Verification ➔Option #1:

Algebraic Verification ➔Option #2:

(D)Applying Linear Systems

Yasser is renting a car. Zeno Car Rental charges $45 for the rental of the car and $0.10 per kilometre driven. Erdos Car Rental charges $35 for the rental of the same car and $0.25 per kilometre driven. Which company should Yasser choose to rent the car from?

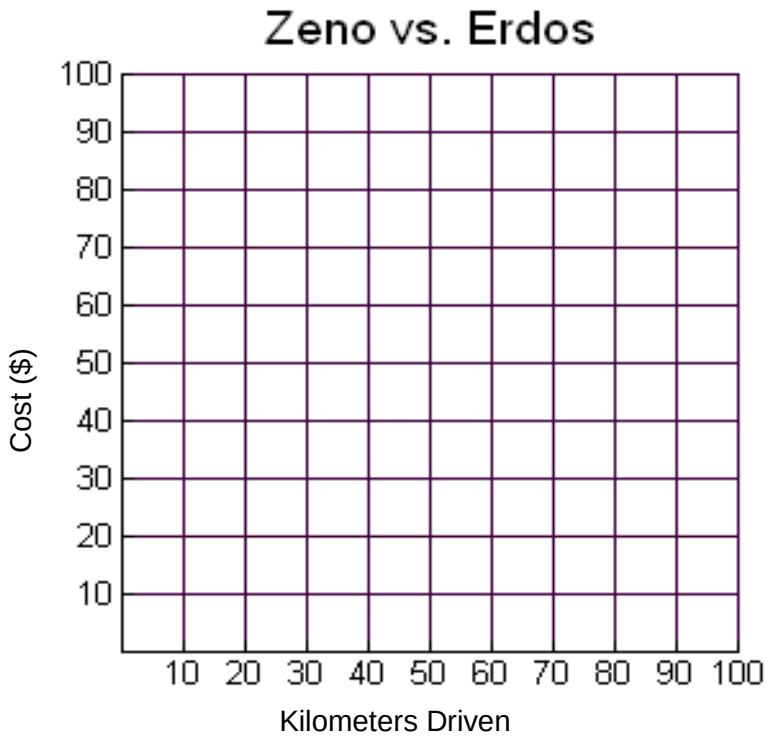
To solve the question, complete the table of values, and the graph.

Zeno

Distance (km)	Cost
0	
10	
20	
30	
40	
50	
60	
70	
80	
90	
100	

Erdos

Distance (km)	Cost
0	
10	
20	
30	
40	
50	
60	
70	
80	
90	
100	



1. How can the car rental cost and the cost per kilometre be used to draw the graph?

2. What is the point of intersection of the two lines? What does it represent?

3. Under what conditions is it best to rent from Zeno Car Rental?

4. Under what conditions is it best to rent from Erdos Car Rental?

(E) Applying Linear Systems

The school is putting on the play "Algebra: The Musical". Adult tickets were sold at a cost of $8 and student tickets were sold at a cost of $5. A total of 220 tickets were sold to the premiere and a total of $1460 was collected from ticket sales.

How many adult and student tickets were sold to the premiere of the musical?

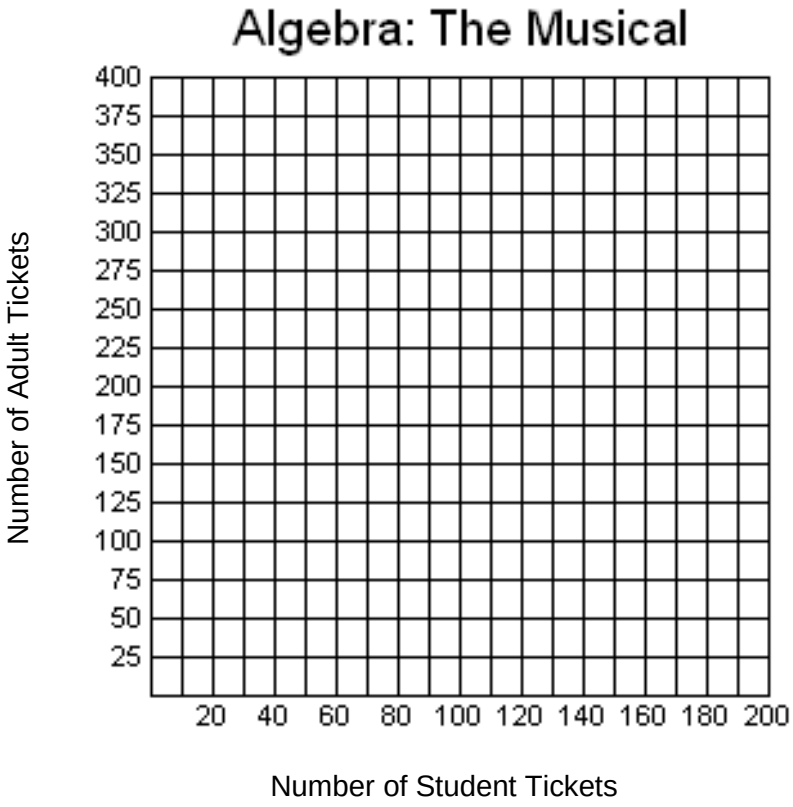
To solve the question complete the table of values, and the graph.

Let *x* represent the # of student tickets sold

Let *y* represent the # of adult tickets sold

x	*y*
0	
40	
80	
120	
160	
200	

x	*y*
0	
40	
80	
120	
160	
200	



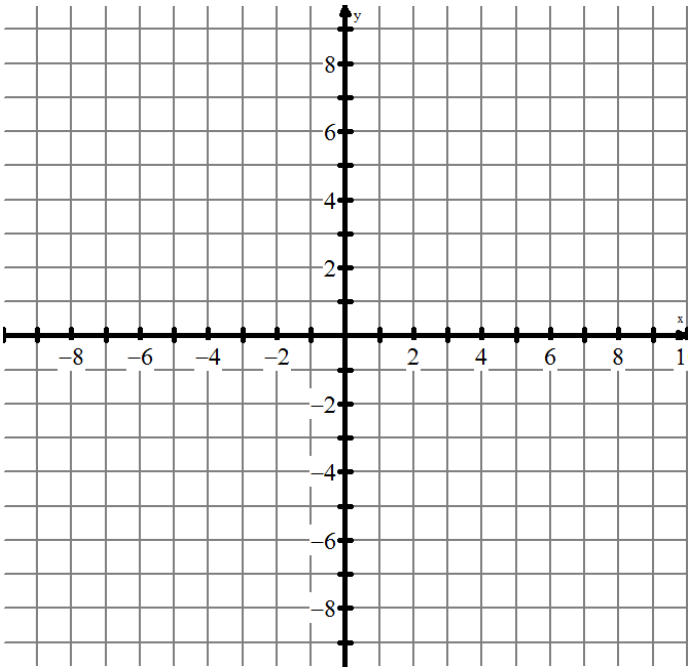
1. What is the approximate point of intersection of the two lines? What does it represent?

2. Does the rest of the graph (other than the POI) give us any information about the number of tickets sold?

(F) **Further Examples for Classwork**

a. Graph each of the following lines on the same grid: $y = -\frac{1}{3}x - 2$ and $6x + 3y = 24$

Graphic Solution:

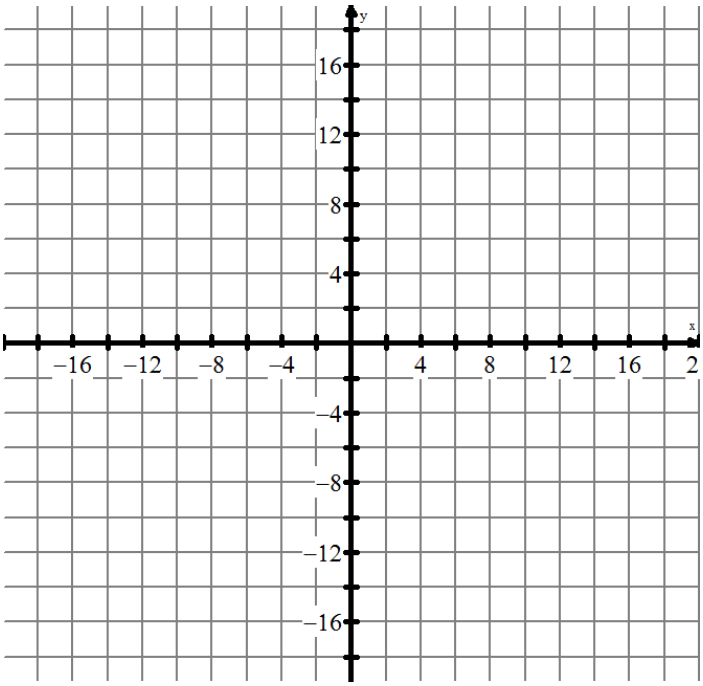


Algebraic Verification ➔Option #1:

Algebraic Verification ➔Option #2:

a. Graph each of the following lines on the same grid: $2x + 3y - 9 = 0$ and $-x - y - 2 = 0$

Graphic Solution:



Algebraic Verification ➔Option #1:

Algebraic Verification ➔Option #2:

(G) **Further Examples for Classwork**

a. Six cups of coffee and a dozen muffins originally cost $15.35. The price of a cup of coffee increases by 10% and the price of a dozen muffins increases by 12%. The new cost of six cups of coffee and a dozen muffins is $17.06. Determine the new price of one cup of coffee and one muffin.

(H) **Homework/Resources**

- Nelson 10 Chap 1.3, p26-28, Q1, 2, 4, 5bce, 7, 8, 9