Date: Title:

(A) **Lesson Objectives:**

a. Introduce a Linear System through a real world application
b. Define a Linear System and a solution to a linear system
c. Review how to graph a linear equation in the form of $y = mx + b$ and $Ax + By = C$
d. Graphically, determine the intersection point of two lines and verify the intersection point.

(B) Opening Investigation:

Mr Santowski is looking to join a ski club. The ski club offers two membership plans. The Standard Package simply costs me $48 per day with no registration fee. The Frequent Extremist Package costs me only $34 per day, but I have to pay a $100 registration fee for this package.

a. Write a linear equation for the Standard Package.
b. Graph the relation on the grid provided.
c. Write a linear equation for the Frequent Extremist Package.
d. Graph the relation on the same grid.
e. Where do the two lines seem to cross/intersect?
f. How could you verify that your intersection point is correct?
g. ALGEBRAICALLY, verify the intersection point.
h. What does the intersection point MEAN given the two ski packages?
i. Is one ski package better than another? Explain your answer.

A basketball coach bought 20 basketballs for a total of $700. If practice balls cost $30 and the official balls for games cost $50, how many of each type of ball did the coach buy?

a. Write a linear equation for the total number of basketballs purchased.
b. Graph the relation on the grid provided.
c. Write a linear equation for the total cost of the basketballs.
d. Graph the relation on the same grid.
e. Where do the two lines seem to cross/intersect?
f. How could you verify that your intersection point is correct?
g. ALGEBRAICALLY, verify the intersection point.
h. What does the intersection point MEAN given the context of the question?
i. Could the coach have purchased 12 practice balls and 8 game balls? Explain your answer.

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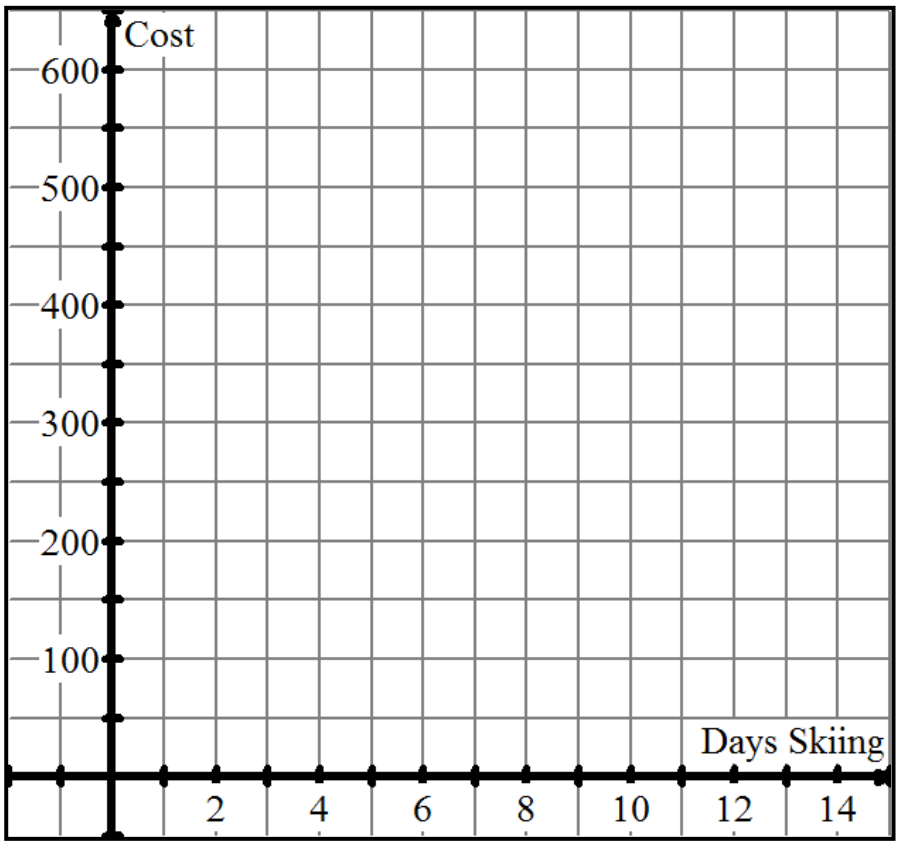
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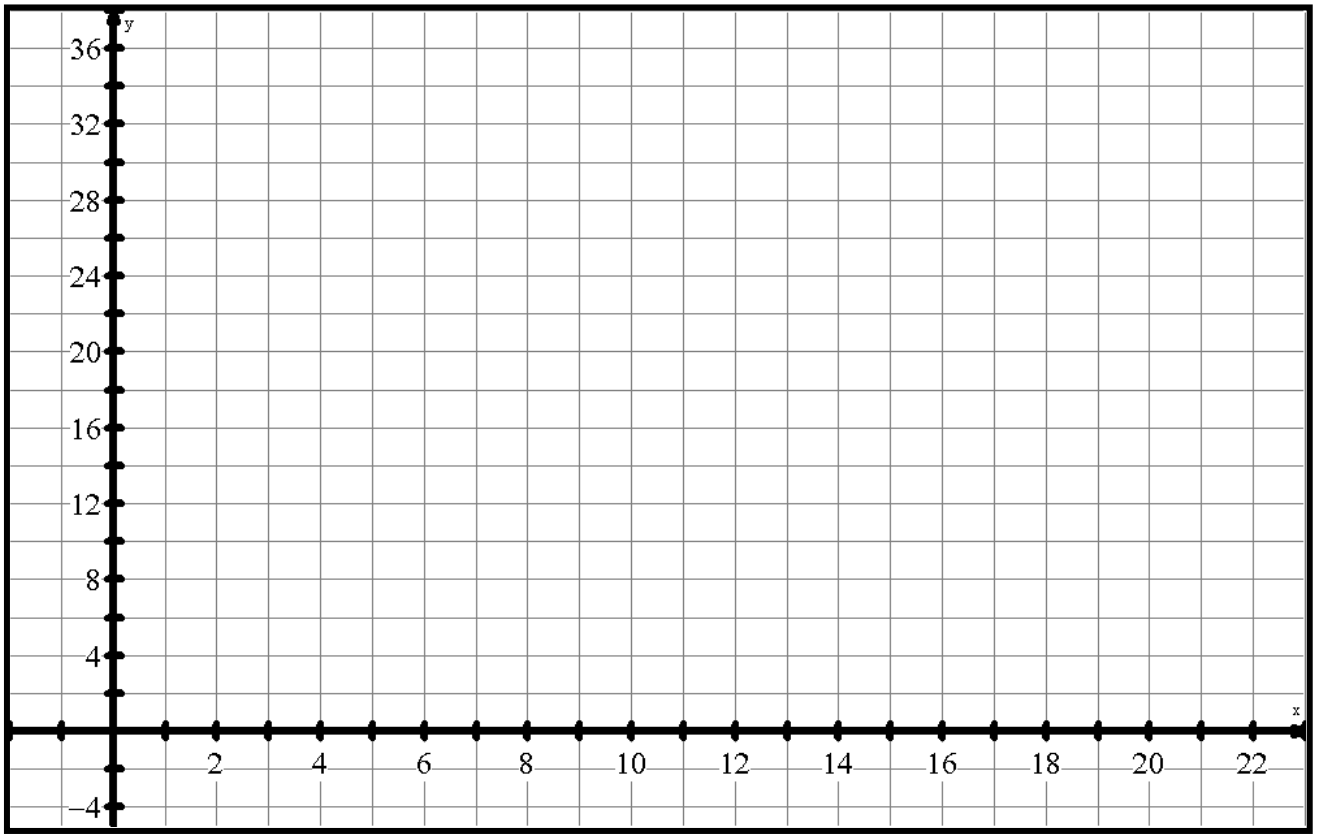
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(C) **Linear Systems**

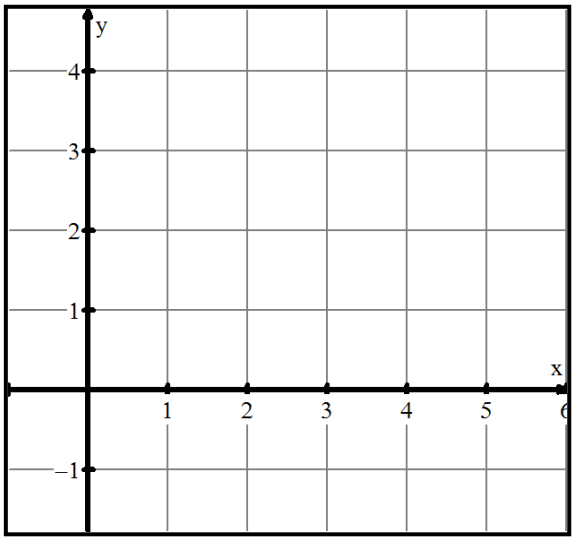
a. Graph the line $y = \frac{3}{2}x - 2$ on the grid

b. Graph the line 2x + 4y = 16 on the grid

c. Where do the lines seem to meet?

d. How would you verify your solution?

e. Verify your solution ALGEBRAICALLY.



(D) Terms to Know

a. ***Linear System***:

b. ***Solution to a Linear System***:

(E) **Further Examples for Classwork**

a. Example #1: Solve and verify the following linear system by graphing: $y = \frac{1}{2}x - 3$ and $x + y = -6$

b. Example #2: Solve and verify the following linear system by graphing: $x + 2y = 2$ and $x - y = 8$

c. Example #3: Solve and verify the following linear system by graphing: $x + 2y = 7$ and $y = 4x - 10$

d. Example #4: Solve and verify the following linear system by graphing: $y = -\frac{1}{2}x + \frac{9}{2}$ and $y = 3x - 6$

(F) **Homework/Resources**

- HOMEWORK: from the Nelson 10 Textbook: S1.7, p82-83, Q1bcf,2bd (show rearrangement),3cf (show rearrangement),5

- Help from PurpleMath with slope ➔ http://www.purplemath.com/modules/systlin1.htm
- Practice from KutaSoftware.com ➔ http://www.kutasoftware.com/FreeWorksheets/Alg1Worksheets/Systems%20of%20Equations%20Graphing.pdf
- Video link from www.onlinemathlearning.com ➔ http://www.onlinemathlearning.com/graphing-systems-of-equations.html