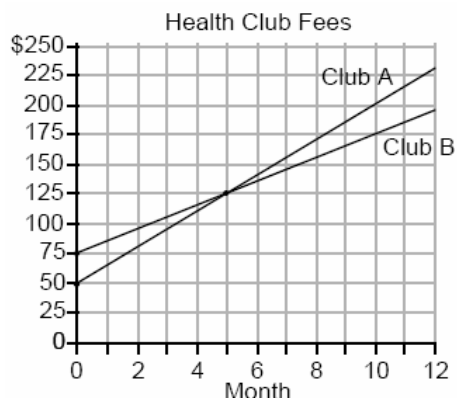


NAME: _____

A.A.7: Analyze and solve verbal problems whose solution requires solving systems of linear equations in two variables.

1. 089935a, P.I. A.A.7

Two health clubs offer different membership plans. The graph below represents the total cost of belonging to Club *A* and Club *B* for one year.



- a* If the yearly cost includes a membership fee plus a monthly charge, what is the membership fee for Club *A*?
- b* (1) What is the number of the month when the total cost is the same for both clubs?
- (2) What is the total cost for Club *A* when both plans are the same?
- c* What is the monthly charge for Club *B*?

2. 010130a, P.I. A.A.7

Juan has a cellular phone that costs \$12.95 per month plus 25¢ per minute for each call. Tiffany has a cellular phone that costs \$14.95 per month plus 15¢ per minute for each call. For what number of minutes do the two plans cost the same?

3. 060117a, P.I. A.A.7

A hotel charges \$20 for the use of its dining room and \$2.50 a plate for each dinner. An association gives a dinner and charges \$3 a plate but invites four nonpaying guests. If each person has one plate, how many paying persons must attend for the association to collect the exact amount needed to pay the hotel?

- [A] 20 [B] 40 [C] 44 [D] 60

NAME: _____

4. 080114b, P.I. A.A.7

A cellular telephone company has two plans. Plan *A* charges \$11 a month and \$0.21 per minute. Plan *B* charges \$20 a month and \$0.10 per minute. After how much time, to the *nearest minute*, will the cost of plan *A* be equal to the cost of plan *B*?

- [A] 1 hr 36 min [B] 1 hr 22 m
[C] 81 hr 48 min [D] 81 hr 8 min

5. 010035a, P.I. A.A.7

The Excel Cable Company has a monthly fee of \$32.00 and an additional charge of \$8.00 for each premium channel. The Best Cable Company has a monthly fee of \$26.00 and additional charge of \$10.00 for each premium channel. The Horton family is deciding which of these two cable companies to subscribe to.

a For what number of premium channels will the total monthly subscription fee for the Excel and Best Cable companies be the same?

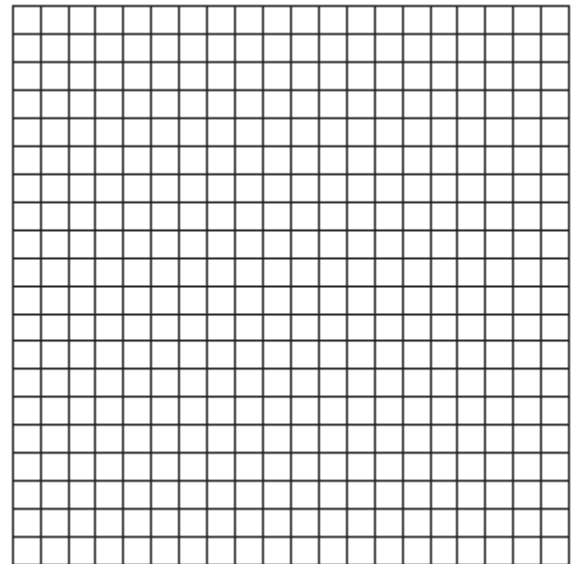
b The Horton family decides to subscribe to 2 premium channels for a period of one year.

(1) Which cable company should they subscribe to in order to spend less money?

(2) How much money will the Hortons save in one year by using the less expensive company?

6. 010329a, P.I. A.A.7

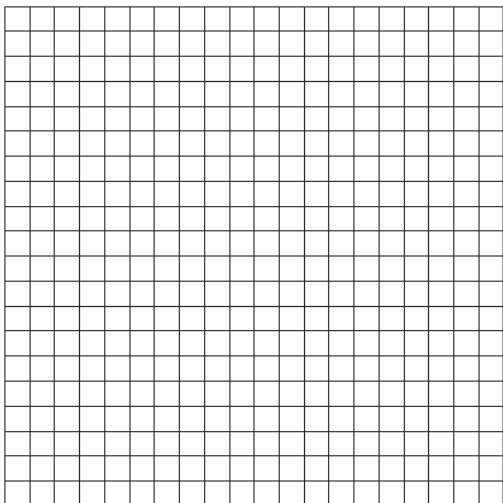
Currently, Tyrone has \$60 and his sister has \$135. Both get an allowance of \$5 each week. Tyrone decides to save his entire allowance, but his sister spends all of hers each week plus an additional \$10 each week. After how many weeks will they each have the same amount of money? [The use of the grid is optional.]



NAME: _____

7. 060226b, P.I. A.A.7

Island Rent-a-Car charges a car rental fee of \$40 plus \$5 per hour or fraction of an hour. Wayne's Wheels charges a car rental fee of \$25 plus \$7.50 per hour or fraction of an hour. Under what conditions does it cost *less* to rent from Island Rent-a-Car? [The use of the grid is optional.]



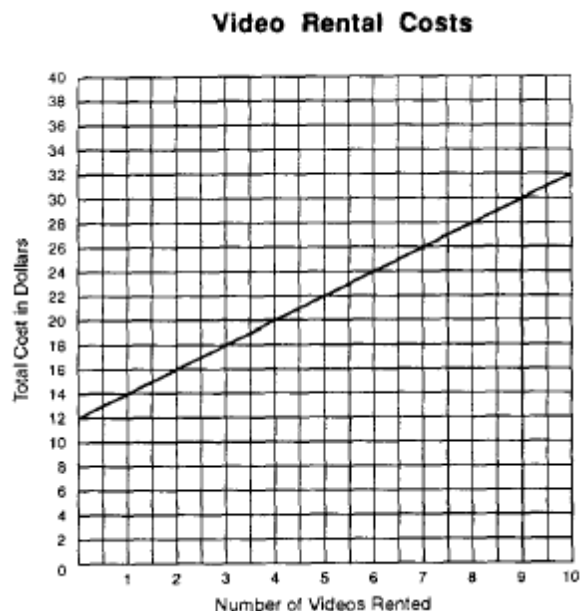
8. spring9831a, P.I. A.A.7

Two video rental clubs offer two different rental fee plans:

Club *A* charges \$12 for membership and \$2 for each rented video.

Club *B* has a \$4 membership fee and charges \$4 for each rented video.

The graph below represents the total cost of renting videos from Club *A*.



(a) On the same set of *xy*-axes, draw a line to represent the total cost of renting videos from Club *B*.

(b) For what number of video rentals is it less expensive to belong to Club *A*?

NAME: _____

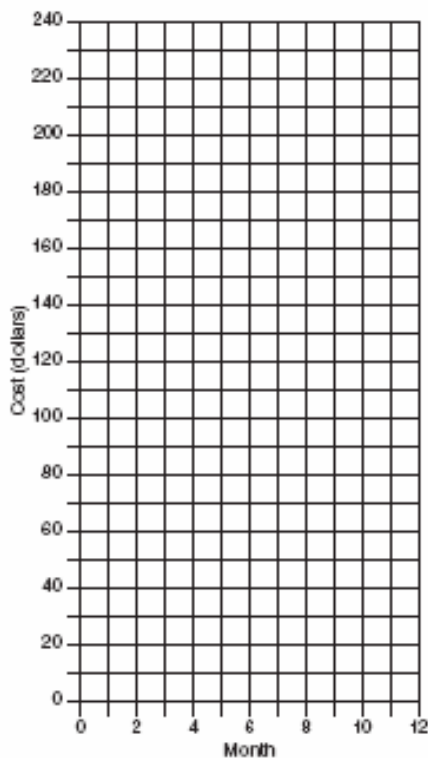
9. 060232a, P.I. A.A.7

At Ron's Rental, a person can rent a big-screen television for \$10 a month plus a one-time "wear-and-tear" fee of \$100. At Josie's Rental, the charge is \$20 a month and an additional charge of \$20 for delivery with no "wear-and-tear" fee.

a If c equals the cost, write one equation representing the cost of the rental for m months at Ron's Rental and one equation representing the cost of the rental for m months at Josie's Rental.

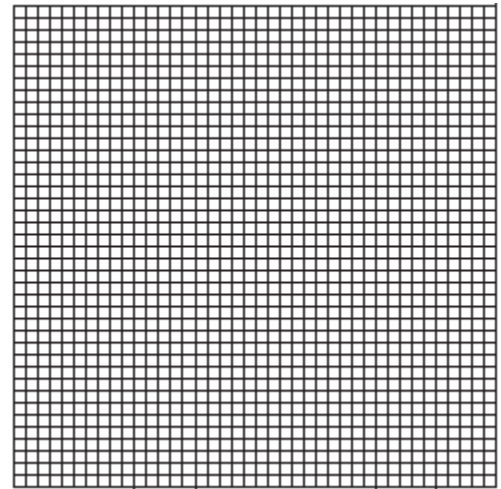
b On the accompanying grid, graph and label each equation.

c From your graph, determine in which month Josie's cost will equal Ron's cost.



10. 060335a, P.I. A.A.7

The senior class is sponsoring a dance. The cost of a student disk jockey is \$40, and tickets sell for \$2 each. Write a linear equation and, on the accompanying grid, graph the equation to represent the relationship between the number of tickets sold and the profit from the dance. Then find how many tickets must be sold to break even.



A.A.7: Analyze and solve verbal problems whose solution requires solving systems of linear equations in two variables.

a [1] \$50

b (1) [1] 5

(2) [1] \$125

c [1] \$10

a, b, and c [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an

[1] obviously incorrect procedure.

[3] 20, and appropriate work is shown, such as an equation, trial and error, or a graph.

[2] Appropriate work is shown, such as $12.95 + 0.25x = 14.95 + 0.15x$, but one computational error is made.

or [2] Appropriate work is shown, but an answer of \$17.95 is found.

or [2] 20, and only a check is shown.

[1] The student starts appropriate work to find when the prices are equal but does not complete it, such as starting to solve the correct equation, showing one incorrect trial, or drawing an incomplete graph.

or [1] 20, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[2] incorrect procedure.

[3] D

[4] B

a [2] 3 and an appropriate method is shown, such as trial and error or the equation

$$32 + 8x = 26 + 10x$$

[1] 3 and no work is shown.

or [1] An appropriate method is shown, but an incorrect answer is found.

b (1) [1] Best Cable Company and an appropriate explanation is given.

b (2) [1] \$24 and an appropriate explanation is given.

b (1) and b (2) [1] Best Cable Company and \$24 and no work is shown.

a and b [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an

[5] obviously incorrect procedure.

[3] 5, and appropriate work is shown, such as the equation $60 + 5x = 135 - 10x$, or trial and error with at least three trials and appropriate checks, or a graph.

[2] Appropriate work is shown, but one computational or graphing error is made.

or [2] The trial-and-error method is used to find a correct solution, but only two trials and appropriate checks are shown.

[1] Appropriate work is shown, but more than one computational or graphing error is made.

or [1] 5, but no work or only one trial with an appropriate check is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[6] incorrect procedure.

[2] More than 6 hours, and appropriate work is shown, using a graphic or algebraic solution.

[1] Appropriate work is shown, but one computational error or an error in analyzing the results is made.

or [1] More than 6 hours, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[7] incorrect procedure.

a [2] Properly graphs Club *B* with the correct slope of 4 and *y*-intercept of 4.

[1] Graph has only a correct slope or only a correct intercept.

b [2] Gives a number of videos which is correct for their graph or calculation (such as any number greater than 4 for a correct solution) and gives an appropriate explanation either using the graph (i.e., lower line) or using a specific example (i.e., for 5 videos Club *A* costs \$22 and Club *B* \$24).

[1] Gives an appropriate number of videos but does not give proper explanation.

[8]

a [1] $c = 10m + 100$ for Ron's Rental and $c = 20m + 20$ for Josie's Rental.

b [2] Two lines, rays, or segments are graphed and labeled correctly, using values arrived at by using a table or by using the slope and *y*-intercept.

[1] Two lines, rays, or segments are graphed correctly, but they are not labeled.

or [1] One line, ray, or segment is graphed and labeled correctly, using values arrived at by using a table or by using the slope and *y*-intercept.

c [1] 8

or [1] An appropriate number of months is found, based on an incorrect graph in part b.

a, b, and c [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an

[9] obviously incorrect procedure.

[4] $y = 2x - 40$, a correctly drawn graph with a slope of 2 and a *y*-intercept of -40, and 20, and appropriate work is shown.

[3] Appropriate work is shown, but one computational or graphing error is made.

or [3] The equation and graph are correct, but the breakeven point is missing or is incorrect.

[2] Appropriate work is shown, but more than one computational or graphing error is made.

or [2] An incorrect equation is written, but an appropriate graph is drawn, and an appropriate breakeven point is identified.

[1] An incorrect equation is written, but an appropriate graph is drawn, but the breakeven point is missing or is incorrect.

or [1] A correct equation is written, but the graph is incorrect, and the breakeven point is not identified.

or [1] $y = 2x - 40$ and 20, but no work is shown and no graph is drawn.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[10] incorrect procedure.