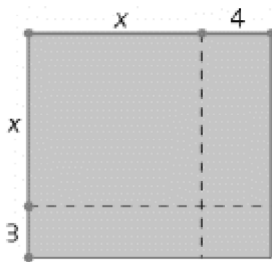


FOMP 10 Final Review Part 2 v1

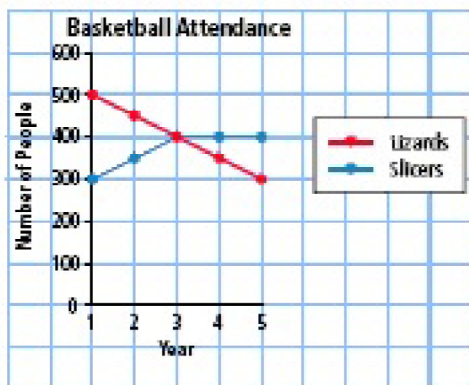
Short Answer

Level 1-2 Questions

1. What expression does the diagram represent?



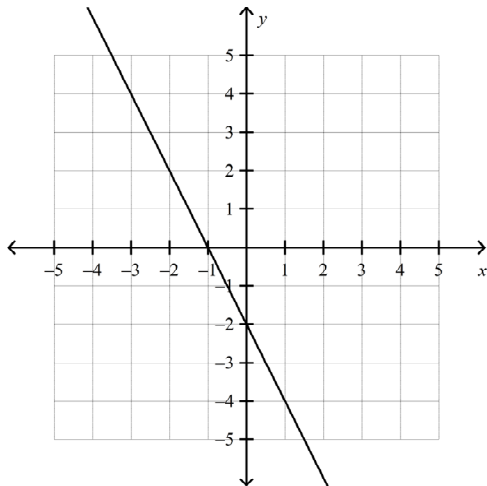
2. What is the factored form of the expression $5x^2 - 45$?
3. What value of k makes the trinomial $x^2 + 14x + k$ a perfect square?
4. The graph shows the number of fans for each team who attended basketball games during the playing season. Which team's attendance is changing at a rate that is not constant?



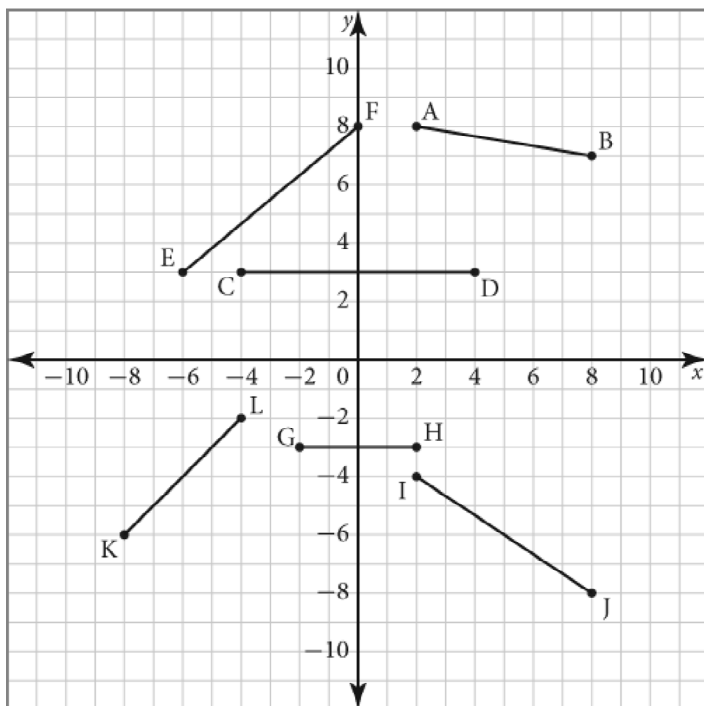
5. Factor $x^2 - 16x + 64$?

6. Factor $x^2 - 8x + 12$.

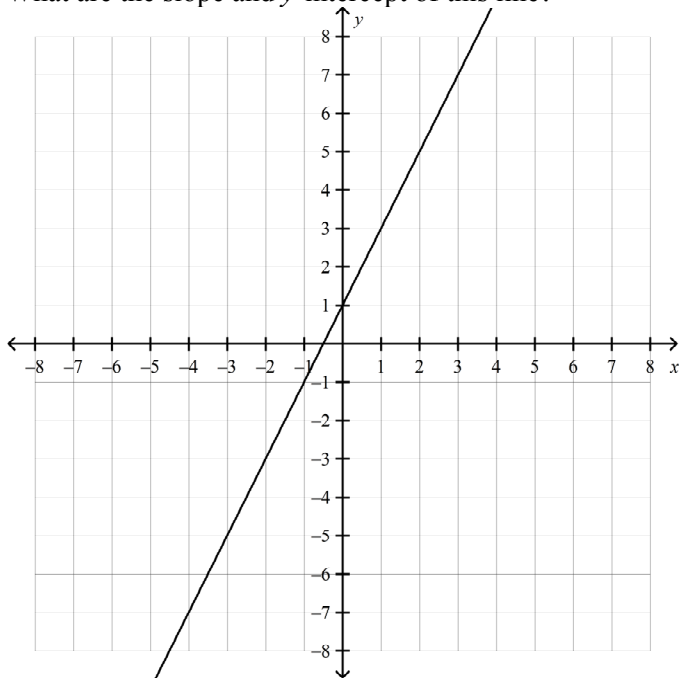
7. The graph represents the function $f(x)$. What is the value of $f(-1)$?



8. Which of the following line segments have a negative slope?



9. What is the slope of a line with run -3 and rise -9 .
10. Points $A(-3, -1)$ and $B(1, 7)$ are on a line. What is the rise from point A to point B?
11. What letter represents the slope in the equation of a line, $y = mx + b$?
12. The y -intercept of the line $y = -5x - 6$ is
13. What are the slope and y -intercept of this line?



14. What ordered pair is a solution to the linear system $y = -3x$ and $y = x$?
15. What is the solution to the linear system $-5x - 4y = -5$ and $-4y = -3x + 35$?
16. What ordered pair represents the solution to the linear system $y = -7x - 43$ and $-x - 7y = -35$?

17. Ruby is 7 years older than Sam. The sum of their ages is 49. How old is Sam?

18. $3x$ is the _____ of the expression $3x^3 + 6x^2 + 9x$.

19. Determine the slope given the rise and the run.

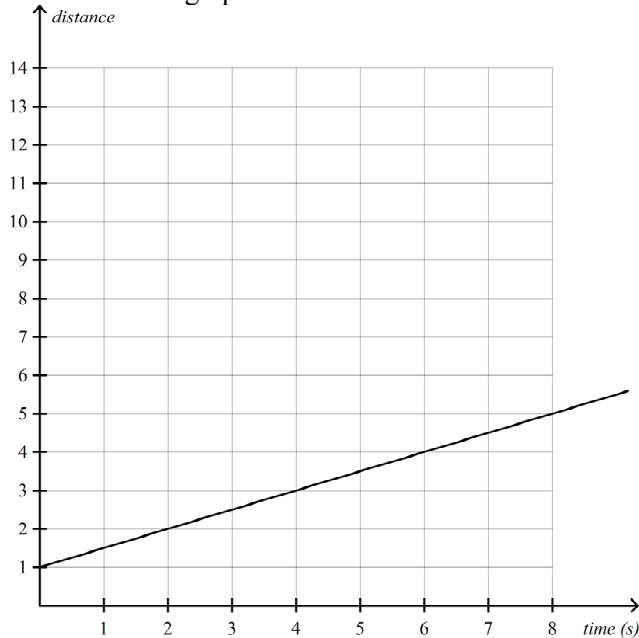
a) rise = 1, run = 2

b) rise = 4, run = -1

c) rise = -3, run = -4

d) rise = -10, run = -2

20. The distance-time graph illustrates Sarah's walk in front of a motion sensor.



a) Identify the slope and explain what it means.

b) When was Sarah 3 m from the sensor?

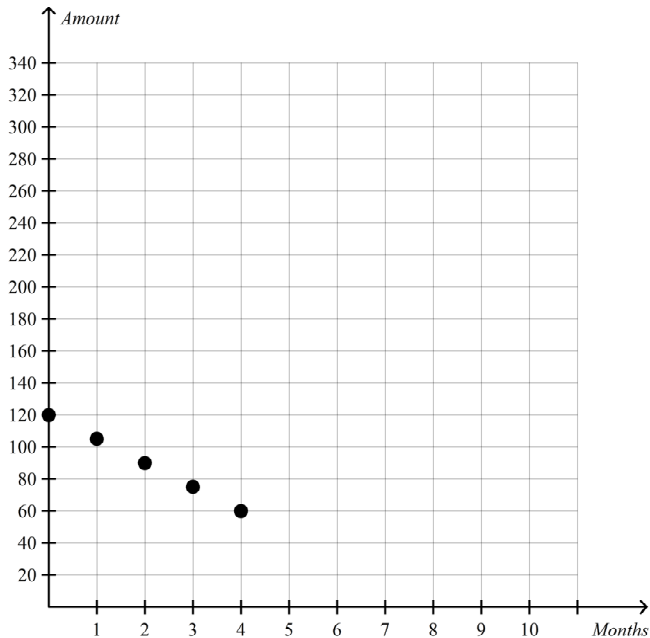
21. Points A(0, 12) and B(4, -4) are on a line.

a) Plot points A and B and draw the line that passes through them.

b) Determine the slope of the line.

c) Make a table of values with x -values from 0 to 4.

22. On a graph, a _____ represents two quantities that change in relation to each other at a constant rate.
23. Jamie's parents gave him some money at the start of the school year to spend on supplies throughout the year. He spends \$15 each month on paper, pens, and other supplies. The graph shows the amount of money that remains in the account as he spends from month to month.

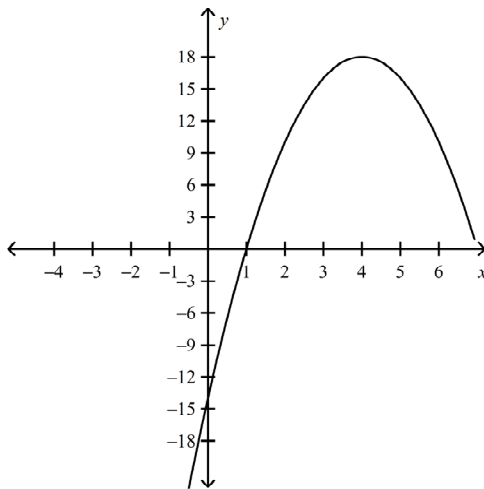


- a) How much money did Jamie's parents give him at the start of the year?
 b) What is the slope of the line?
 c) Will the money last the entire school year? Explain.
24. The graph of two quantities that change in relation to each other at a changing rate is represented by a _____.
25. A graph whose points are not connected represents _____ data.
26. In the equation $y = mx + b$, the letter _____ represents the slope and the letter _____ represents the y -intercept.

27. The x -intercept occurs when _____ .
28. Three times one number added to another number is 39. Twice the first number minus the other is 6. What are the numbers?

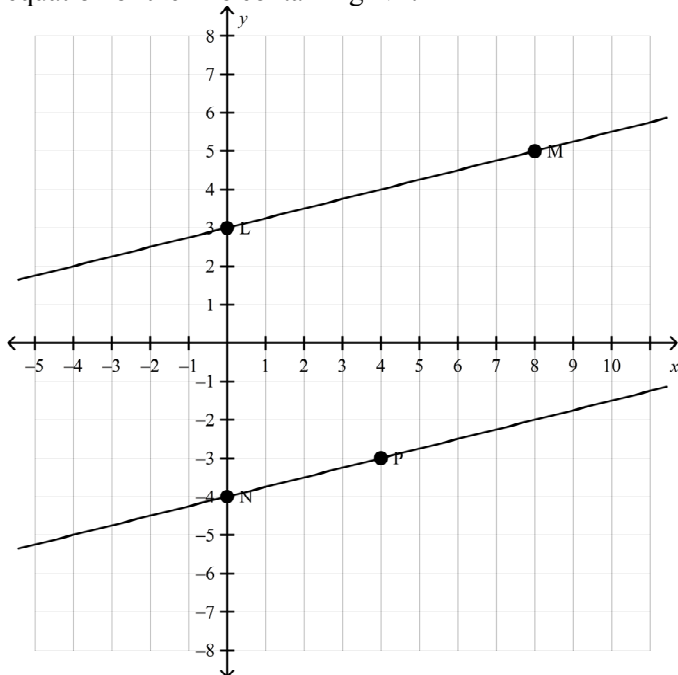
Level 3-4 Questions

29. What expression represents the surface area of a cube with a side length of $(x - 2)$ units?
30. What is the factored form of $5v(w + 1) + 3x(w + 1)$?
31. The expression $-14x^2 + 12x - 8$ written in factored form is
32. What is the expression $-99x^2 + 45x + 45$ in factored form?
33. Use set notation to state the domain of this function.



34. Suppose the area of a rectangle is represented by the expression $36x^2 - 81$. When the expression is fully factored, the factors represent the dimensions of the rectangle. What expressions represent the dimensions of the rectangle?

35. What pair of integers has a product of -12 and a sum of -4 ?
36. Factor $84 + 31x + x^2$.
37. What is the factored form of $2x^2 + 20x + 50$.
38. Points $E(1, 1)$ and $F(7, 4)$ are on a line. What is the slope from point E to point F ?
39. What is the y -intercept of the line $y = -\frac{3}{7}x$?
40. In the graph, the equation of the line containing LM is $y = \frac{1}{4}x + 3$. The two lines are parallel. What is the equation of the line containing NP ?



41. When a linear equation is written in the form $Ax + By + C = 0$, A and B cannot both be

Name: _____

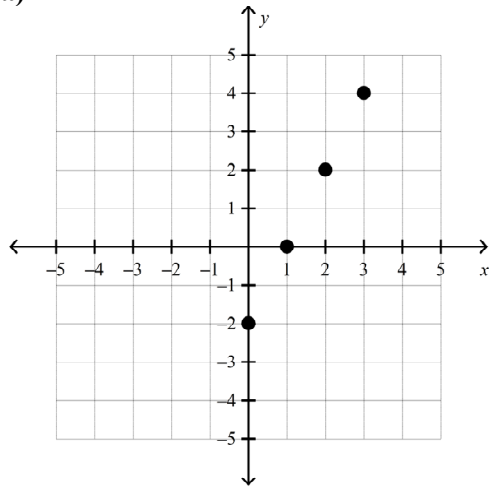
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42. What are the slope and y -intercept of the relation represented by the equation $20x + 5y + 20 = 0$?
43. What is the equation in general form for the line with slope 2 and y -intercept 5.
44. What is the equation of the line through points $(3, -1)$ and $(6, 2)$?
45. What is the equation of the line that passes through point $G(3, 17)$ and has a slope of 4?
46. What is the equation of the line that passes through $(5, 27)$ and is parallel to the line $y = 4x + 5$?
47. Using the substitution method, the solution to the linear system $y = 3x + 32$ and $-x + y = -2$ is
48. Use the substitution method to determine the solution to the linear system $y = 4x + 4$ and $y = -4x - 4$.
49. Determine the solution to the linear system $y = -3x + 10$ and $y = 5x - 14$.
50. The sum of two numbers is 17 and their difference is -25 . What are the two numbers?
51. What is the solution to the linear system $x - 10y = -73$ and $-5x + 4y = -3$?
52. The area of the screen of Javier's LCD television can be represented by the binomial $49x^2 - 36$.
 - a) Write expressions for the dimensions of the television screen by fully factoring its area.
 - b) Determine the actual dimensions of the television screen if $x = 90$ cm.
 - c) What is the perimeter of the screen?
53. Brian paints pictures at the town dock and sells them to tourists. He spends \$90 for paint supplies plus \$2 for each canvas. If he charges \$8 per painting, how many paintings must he sell to make a profit?

54. Which of the following ordered pairs represents the solution to the linear system $y = \frac{1}{2}x + 4$ and $y = 6 - x$?

55. Determine whether each relation is linear or non-linear. Explain your decision.

a)



b) $A = \pi r^2$

c) $\{(-2, 5), (1, 3), (4, 1), (10, -3)\}$

56. Points M(3, 8) and N(0, 2) are on a line. The slope of the line is _____ and the y-intercept is _____. The equation of the line is _____.

57. The slope of the line represented by $y + 2 = \frac{4}{5}(x + 3)$ is _____.

58. Jim likes to rock climb in his spare time. Recently, he climbed down from the top of a cliff to the bottom. At the top, where Jim started, he was 2680 ft above the ground. He moved down the cliff at a speed of 40 ft/min.

a) Write an equation to represent the height, h , in feet, that Jim was above the ground after t minutes.

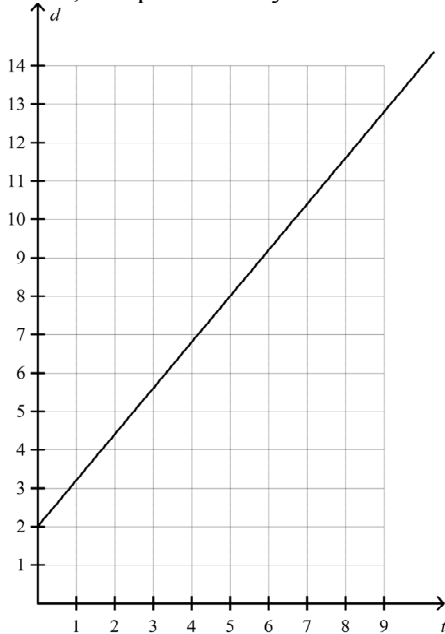
b) Make a table of values for Jim's height above the ground for values of t from 0 to 4.

c) What was Jim's height above the ground after 30 min?

d) How many minutes did it take Jim to reach the ground?

59. Gina works at a boutique where she receives a 18% commission on all her sales in a day. The government taxes one third of Gina's commission.
- Write an equation to represent Gina's earnings, E , from commission on her sales, S , minus the government taxes.
 - What are Gina's earnings after taxes if her sales are \$1200 in one day?
 - What would Gina's sales have to be for her to earn \$264 in one day, after taxes?

60. The distance-time graph illustrates Christine's walk in front of a motion sensor. Her distance from the sensor, in metres, is represented by the variable d , and time, in seconds, is represented by t .



- Identify the slope and d -intercept. Explain what they mean.
 - Write an equation in the form $d = mt + b$ that describes Christine's walk.
 - When was Christine 6 m from the sensor?
61. Danny works at a parking lot, where he can park his own car at a discounted rate. Whether he is working or not, he pays a flat fee of \$3 plus \$2 per hour that his car is parked.
- Write an equation to represent Danny's total parking cost, C , in dollars, for t hours.
 - How much will it cost Danny to park his car for a full 24 h?
 - If Danny has \$27.00, for how many hours can he park his car in the parking lot?
62. Explain how the substitution method is used to solve a linear system of two equations.

63. Use the substitution method to solve each linear system.

a) $x - 2y = 7$

$y = -x + 1$

b) $x + 3y = 5$

$-2x + y = 4$

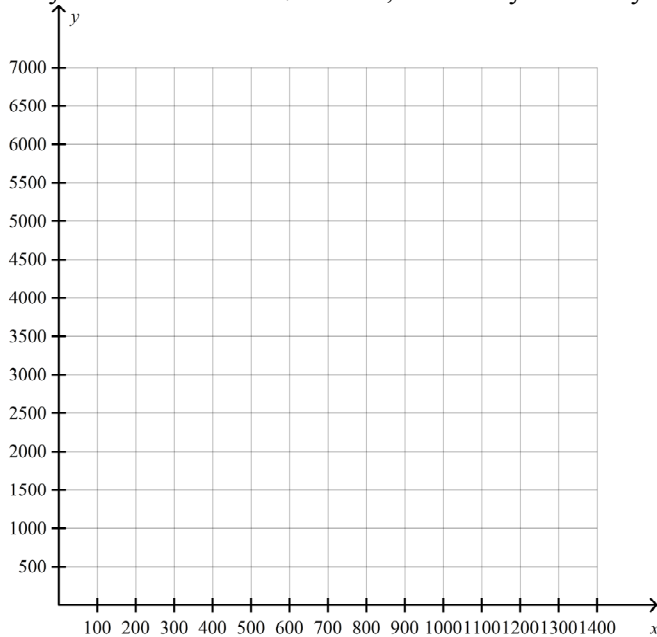
c) $-x + 3y + 1 = 0$

$3x - y + 1 = 0$

d) $4x - 3y = -13$

$-2x + y = 4$

64. The initial cost for Travis and his band to record their first CD was \$3850. Each CD will cost \$3 to produce. If they sell their CDs for \$14 each, how many must they sell before they make a profit?



65. The school band bought tickets for a concert. They paid \$290 for 6 tickets in Section A and 10 tickets in Section B. When the concert was repeated the next week, they paid \$220 for 4 tickets in Section A and 8 tickets in Section B.

a) Write a linear system to model this problem.

b) What are the prices of the tickets in Sections A and B?

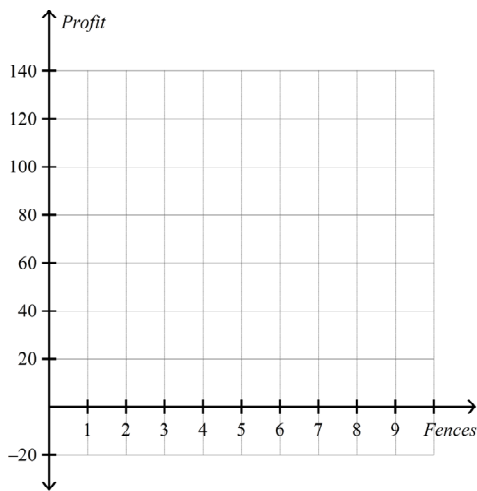
66. Stephanie has five more fish in her aquarium than Brett has in his. The two have a total of 31 fish. How many fish do Stephanie and Brett each have?

67. Since 2008, the growth of in-store sales for Custom Creations can be modelled by the equation $y = 4.2x + 29$. In the same time period, the growth of online sales can be modelled by the equation $y = 7.5x + 9.2$, where x represents the number of years since 2008, and y represents the sales in thousands of dollars.
- How many years will it take for the online sales to exceed the in-store sales?
 - What are the online sales for the store at the point where they equal the in-store sales?
68. Is the following statement true or false? Explain and provide an example to support your answer.
“If a system of linear equations has more than one solution, then it has an infinite number of solutions.”

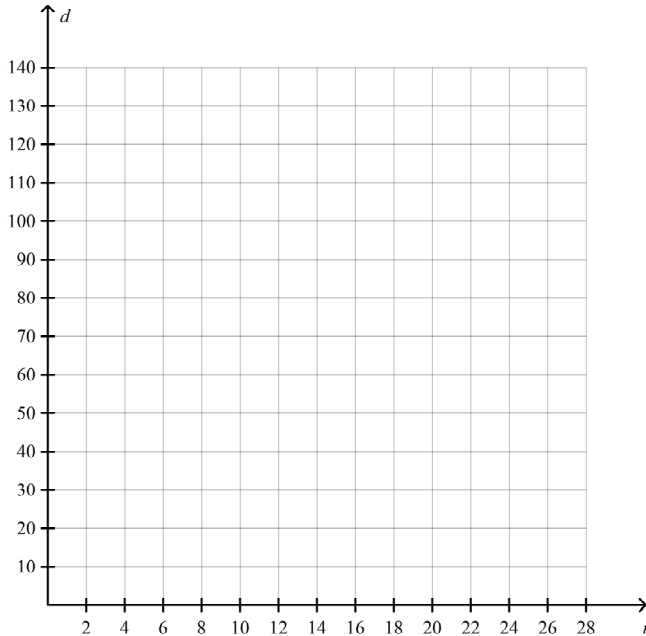
Level 5-6 Questions

69. What k makes the trinomial $36x^2 + kx + 9$ a perfect square?
70. Taylor invested \$400 in an account that pays 5% simple interest per year. The equation representing Taylor's investment is $A = P + Prt$, where A is the value of the investment, in dollars, P is the starting principal amount, in dollars, r is the interest rate written as a decimal, and t is the number of years the money is invested. What is the value of the investment after 14 years?
71. What are the slope and y -intercept of the relation represented by the equation $-6x - 3y - 5 = 0$.
72. What is the value of p such that the line passing through $(4, 2)$ and $(8, p)$ has a slope of -1 ?
73. What is the value of p in the equation of the line $px + 4y + 4 = 0$, such that the x -intercept is -2 ?
74. The table of values represents a line. What is the equation of the line?
- | x | y |
|-----|-----|
| -5 | -16 |
| 0 | -6 |
| 5 | 4 |
| 10 | 14 |
| 15 | 24 |
75. What is the equation of the line parallel to $y = 2x + 4$ and with the same x -intercept as $4x - 7y = 8$.

76. Express the equation for the relation $\frac{10y - 2}{3x} = 5$ in the form $y = mx + b$.
77. Determine the ordered pair that is a solution to the linear system $x - y = 4$ and $y + 2x = 9$.
78. Bill has a large collection of baseball cards. He estimates that he has spent \$144.50 on protective card holders and an average of \$14.50 on each card. If he sells his cards at \$23 each, how much money will he have made when his costs equal his revenue?
79. Marie had \$40 000.00 to invest. She invested part of it in bonds paying 3.6% per annum and the remainder in a second mortgage paying 4.8% per annum. If the total interest after 1 year was \$1740.00, how much did Marie invest at each rate?
80. Clark earns \$29 for every fence he paints. The cost of paint for one fence is \$14. Before he started painting he spent a total of \$15 for supplies. His profit is equal to his earnings minus all of his expenses.
- Make a table of values for 0 to 5 fences painted.
 - Is the relation linear or non-linear? Explain.
 - Graph the relationship. Are the data discrete or continuous?
 - How many fences would Clark have to paint to earn a profit of \$255?

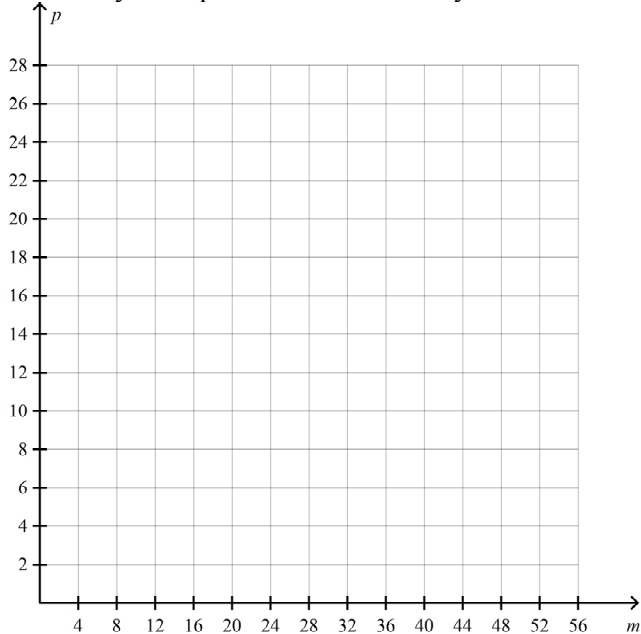


81. Points $M(2, -8)$ and $N(0, -4)$ are on a line.
- The slope of the line is _____.
 - The y -intercept of the line is _____.
 - The equation of the line is _____.
82. Determine the equation of a line in the form $y = mx + b$ that together with the equation $x + 3y = 18$ forms a linear system that has no solution.
83. A salmon fishing boat on a BC river travelled 40 km upstream in 5 h. It took 4 h to return downstream at the same speed.
- Determine the speed of the fishing boat.
 - Determine the speed of the river's current.
84. Chandra is printing T-shirts for a school fundraiser. There is a cost of \$15 to set up the printing. Each T-shirt costs \$4 to produce. If the school charges \$5 for each shirt, how many T-shirts must Chandra print in order for the school to break even?



85. Adam and Tanya are making snack bars to sell as part of a fundraiser for their art club. The bars will have 3.5 times as many kilograms of raisins as of dried cranberries. Adam and Tanya have already bought all of the other ingredients. What masses, in kilograms, of raisins and dried cranberries do they need to buy if they want to spend all of their \$297.00? Raisins cost \$7.00/kg and dried cranberries cost \$8.50/kg.

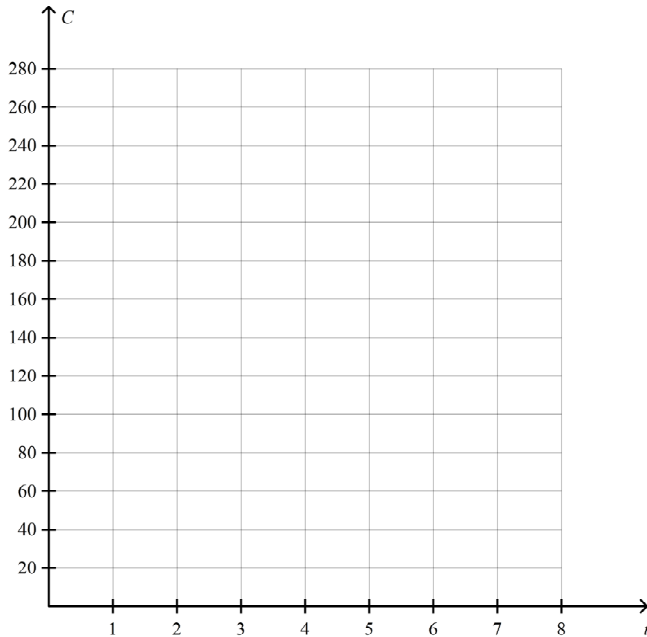
86. Glen is checking a shipment of electronic equipment. The shipment contains laser printers that cost \$575 each and colour monitors that cost \$200 each. He counts 26 boxes on the loading dock. The invoice states that the order totals \$7825.
- Determine the linear system that represents the number of printers and the number of monitors.
 - How many laser printers and how many colour monitors were delivered?



Level 7-8 Questions

87. The sum of three integers is 10. The first integer is four times the sum of the second and third. The second is twice the opposite of the third. What are the integers?
88. Robert is buying jerseys for his school hockey team. Each jersey costs \$31 plus 12% taxes. He also needs to buy a storage box for the jerseys, which costs \$93 plus 12% taxes. He has a budget of \$520.80.
- Write a function to represent the amount, $B(j)$, of money that remains in the budget after buying the storage box and j jerseys.
 - Make a table of values for the amount of money that remains for 0 to 4 jerseys bought.
 - How much money remains in the budget if Robert buys 8 jerseys?
 - What is the maximum number of jerseys that Robert can buy with his budget?

89. Candace and Dino run computer repair services. For a service call, Dino charges \$70, while Candace charges \$45. In addition, they each charge an hourly rate. Dino charges \$25/h; Candace charges \$30/h. One day, they each had a service call that they charged the same amount for. What did they charge and how long did each work?



90. At Science World, three families went for the day. The first family had 4 senior citizens, 2 children, and 4 adults. They paid \$188 for admission. The second family had 2 senior citizen, 4 children, and 4 adults. They paid \$180. The third family had 1 senior citizens, 5 children, and 1 adults. They paid \$110.
- Write a linear system to model this situation.
 - Determine the costs of admission for a senior citizen, an adult, and a child.