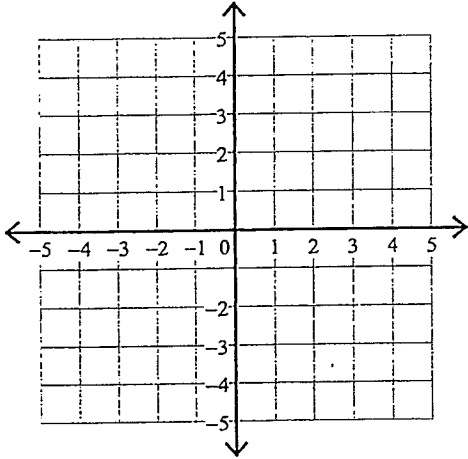


Fall Final Problem Set

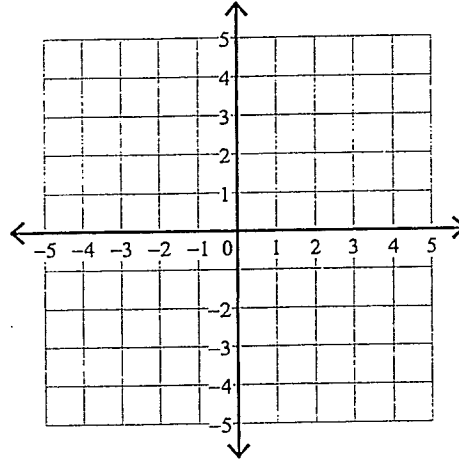
Solve each system by graphing.

1) $y = -\frac{5}{4}x + 1$

$y = -\frac{1}{4}x - 3$



2) $2x - y = -4$
 $2x + 3y = -12$



- 1) (4, -4)
- 5) (3, -6)
- 9) (-6, 4)

- 2) (-3, -2)
- 6) (-1, 5)
- 10) (-6, -1)

Solve each system by substitution.

3) $y = 2x$
 $y = -5x$

4) $y = -3x + 3$
 $y = -5x + 7$

- 3) (0, 0)
- 7) (1, -1)

5) $y = 5x - 21$
 $-x - y = 3$

6) $y = 6x + 11$
 $8x - y = -13$

7) $-6x + 7y = -13$
 $y = -4x + 3$

8) $5x + 8y = 17$
 $y = -3x + 14$

- 4) (2, -3)
- 8) (5, -1)

Solve each system by elimination.

9) $-5x - 2y = 22$
 $x + 2y = 2$

10) $-2x + y = 11$
 $2x - 3y = -9$

$$\begin{aligned} 11) \quad & -4x + 8y = -24 \\ & -4x + 3y = 6 \end{aligned}$$

$$\begin{aligned} 12) \quad & -x - 2y = -4 \\ & -x - 2y = -4 \end{aligned}$$

Solve each system by elimination.

$$\begin{aligned} 13) \quad & -2x - 6y = -24 \\ & 4x + 9y = 30 \end{aligned}$$

$$\begin{aligned} 14) \quad & 2x - 10y = 24 \\ & -8x + 6y = 6 \end{aligned}$$

$$\begin{aligned} 15) \quad & -9x - 3y = 30 \\ & -2x - 12y = 18 \end{aligned}$$

$$\begin{aligned} 16) \quad & -4x - 8y = -16 \\ & -2x + 16y = -8 \end{aligned}$$

$$17) \quad |5m + 1| = 39$$

$$18) \quad |9m + 1| = 91$$

$$19) \quad 0 = -2r + 2r$$

$$20) \quad -7v - 5v = -24$$

Solve each equation.

$$21) \quad 5(-3a + 3) = 30$$

$$22) \quad 4(1 + 6p) = -44$$

$$23) \quad 3n = -6n + 5n$$

$$24) \quad 1 - 5b - 6b = 10 - 2b$$

$$25) \quad 3b + 6(6b - 1) = 26 + 7b$$

$$26) \quad 3(4m - 5) = -27 + 8m$$

Simplify. Your answer should contain only positive exponents.

$$27) \quad a^2 b^{-2} \cdot 2a^2 b^{-3}$$

$$28) \quad 4mn^4 \cdot 3n^{-4}$$

- 12) Infinite number of solutions
 15) $(-3, -1)$
 16) $(4, 0)$
 19) { All real numbers. }
 20) { 2 }
 23) { 0 }
 24) { -1 }
 27) $\frac{2a^4}{b^5}$
 28) $12m$
 13) $(-6, 6)$

- 11) $(-6, -6)$
 14) $(-3, -3)$
 17) $\left\{\frac{38}{5}, -8\right\}$
 18) $\left\{10, -\frac{92}{9}\right\}$
 21) { -1 }
 22) { -2 }
 25) { 1 }
 26) { -3 }

$$29) 4vu^0 \cdot 3vu^3$$

$$30) 3u^{-4}v^2 \cdot 3uv$$

$$1) 2a^{-4}b^{-3} \cdot 2b^{-2}$$

$$32) uv^4 \cdot 3v^{-4}$$

$$33) (2v)^{-4}v^{-1}$$

$$34) r^4(r^{-3})^3$$

$$30) \frac{9v^3}{u^3} \quad 34) \frac{1}{r^5} \quad 38) \frac{1}{8p^2} \quad 42) \frac{2}{3p^8}$$

$$35) (2a^{-3})^{-1}a^{-1}$$

$$36) a^2(a^{-4})^3$$

$$37) \frac{2b \cdot 4b}{4b^{-4}}$$

$$38) \frac{p^3}{2p \cdot 4p^4}$$

$$29) 12v^2u^3 \quad 33) \frac{1}{16v^5} \quad 37) 2b^6 \quad 41) \frac{1}{6}$$

$$2) \frac{p \cdot 4p^4}{2p^2}$$

$$40) \frac{x^3}{2x^3 \cdot 4x^0}$$

$$32) 3u \quad 36) \frac{1}{a^{10}} \quad 40) \frac{1}{8}$$

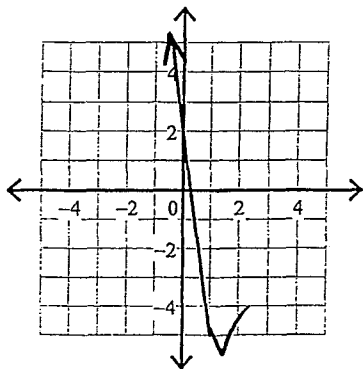
$$41) \frac{p^0}{3p^{-4} \cdot 2p^4}$$

$$42) \frac{2p^{-3}}{3pp^4}$$

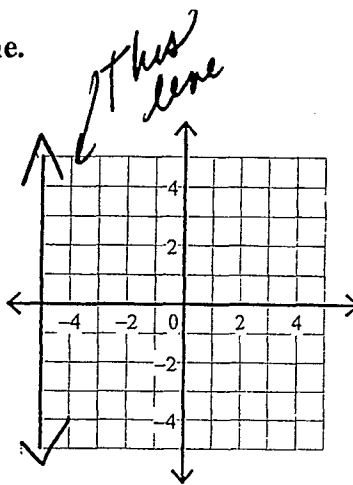
$$31) \frac{4}{a^4b^5} \quad 35) \frac{a^2}{2} \quad 39) 2p^3$$

Write the slope-intercept form of the equation of each line.

43)



44)



45) $7x - 4y = 4$

46) $5x - 4y = -32$

46) $y = \frac{5}{4}x + 8$

50) 9

54) $9x - 9$

58) $k^2 - 5k + 6$

Write the slope-intercept form of the equation of the line through the given points.

47) through: (2, -3) and (0, 5)

48) through: (2, 5) and (4, -4)

45) $y = \frac{7}{4}x - 1$

49) 33

53) $16m^2 + 12m$

57) $4v^2 + 2v - 6$

Evaluate each using the values given.

49) $m - 5n$; use $m = 3$, and $n = -6$

50) $(y - z)^2$; use $y = 1$, and $z = 4$

51) $2p + m$; use $m = -6$, and $p = -3$

52) $y - 2x$; use $x = 2$, and $y = 1$

44) $x = -5$

48) $y = -\frac{9}{2}x + 14$

52) -3

56) $4x^2 - 8x + 3$

Find each product.

53) $4m(4m + 3)$

54) $3(3x - 3)$

43) $y = -7x + 2$

47) $y = -4x + 5$

51) -12

55) $2b^2 - 4b + 2$

55) $(2b - 2)(b - 1)$

56) $(2x - 1)(2x - 3)$

57) $(2v - 2)(2v + 3)$

58) $(k - 2)(k - 3)$

Translating Situations to Systems of Equations

① The difference of two numbers is 3. Their sum is 13. Find the numbers.

② Herman and Jacquita are each saving money to pay for college. Herman currently has \$15,000 and is working hard to save \$1000 per month. Jacquita only has \$12,000 but is saving \$1300 per month. In how many months will they have the same amount of savings?

③ George bought some CDs at his local store. He paid \$15.95 for each CD. Nora bought the same number of CDs from a store online. She paid \$13.95 for each CD, but had to pay \$8 for shipping. In the end, both George and Nora spent the exact same amount of money buying their CDs! How many CDs did George buy?

④ A large pizza at Palanzio's Pizzeria costs \$6.80 plus \$0.90 for each topping. The cost of a large cheese pizza at Guido's Pizza is \$7.30 plus \$0.65 for each topping. How many toppings need to be added to a large cheese pizza from Palanzio's Pizzeria and Guido's Pizza in order for the pizzas to cost the same, not including tax?

⑤ One super Scout already sold cookies to 14 families and hopes to sell to two more families a day. Her rival has only sold to 2 families and decides to sell to five families a day from then on.

⑥ Some students want to order shirts with their school logo. One company charges \$9.65 per shirt plus a setup fee of \$43. Another company charges \$8.40 per shirt plus a \$58 fee. For what number of shirts would the cost be the same?

⑦ The length of a rectangle is equal to triple the width. The perimeter is 86 centimeters. Find the length and width of the rectangle.

⑧ The perimeter of a rectangular wooden deck is 90 feet. The deck's length, l , is 5 feet less than 4 times its width,

⑨ Marcos had 15 coins in nickels and quarters. He had 3 more quarters than nickels.

⑩ Elsie took all of her cans and bottles from home to the recycling plant. The number of cans was one more than four times the number of bottles. She earned 12¢ for each bottle and 10¢ for each can, and ended up earning \$2.18 in all. How many cans and bottles did she recycle?

⑪ Ariel bought several bags of caramel candy and taffy. The number of bags of taffy was 5 more than the number of bags of caramels. Taffy bags weigh 8 ounces each, and caramel bags weigh 16 ounces each. The total weight of all of the bags of candy was 400 ounces. How many bags of candy did she buy?

Handwritten solutions for the problems above:

① $x + y = 13$
 $x - y = 3$
 $2x = 16$
 $x = 8$
 $y = 5$

② Herman: $y = 15,000 + 1,000x$
 Jacquita: $y = 12,000 + 1,300x$
 $15,000 + 1,000x = 12,000 + 1,300x$
 $3,000 = 300x$
 $x = 10$

③ George: $y = 15.95x$
 Nora: $y = 13.95x + 8$
 $15.95x = 13.95x + 8$
 $2x = 8$
 $x = 4$

④ Palanzio's: $y = 6.80 + 0.90x$
 Guido's: $y = 7.30 + 0.65x$
 $6.80 + 0.90x = 7.30 + 0.65x$
 $0.25x = 0.50$
 $x = 2$

⑤ Scout: $y = 14 + 2x$
 Rival: $y = 2 + 5x$
 $14 + 2x = 2 + 5x$
 $12 = 3x$
 $x = 4$

⑥ Company 1: $y = 9.65x + 43$
 Company 2: $y = 8.40x + 58$
 $9.65x + 43 = 8.40x + 58$
 $1.25x = 15$
 $x = 12$

⑦ $l = 3w$
 $2l + 2w = 86$
 $2(3w) + 2w = 86$
 $6w + 2w = 86$
 $8w = 86$
 $w = 10.75$
 $l = 32.25$

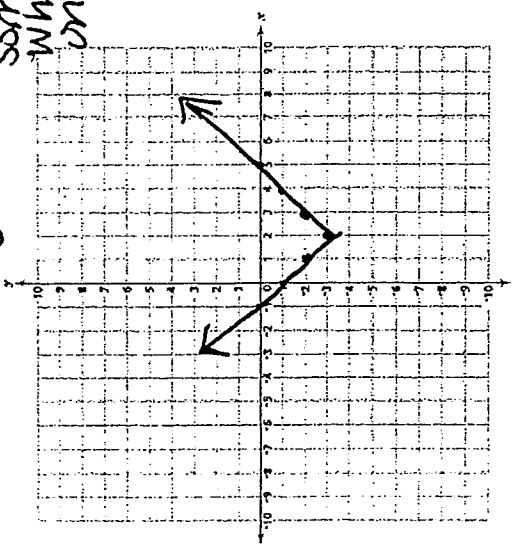
⑧ $l = 4w - 5$
 $2l + 2w = 90$
 $2(4w - 5) + 2w = 90$
 $8w - 10 + 2w = 90$
 $10w = 100$
 $w = 10$
 $l = 35$

⑨ $n + q = 15$
 $q = n + 3$
 $n + (n + 3) = 15$
 $2n + 3 = 15$
 $2n = 12$
 $n = 6$
 $q = 9$

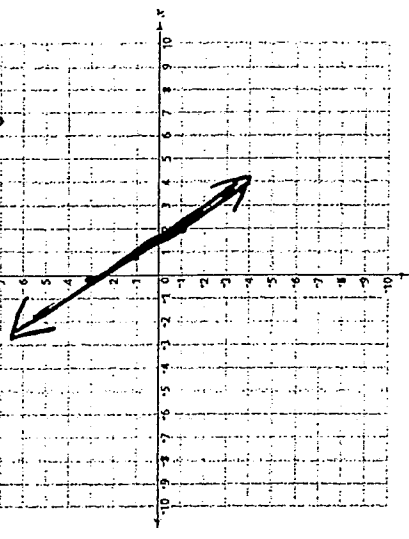
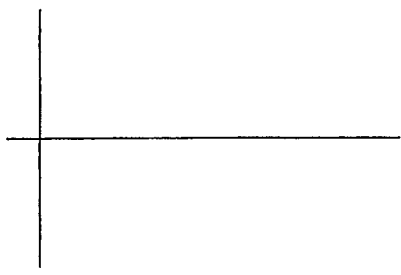
⑩ $c = 4b + 1$
 $10c + 12b = 2.18$
 $10(4b + 1) + 12b = 2.18$
 $40b + 10 + 12b = 2.18$
 $52b = -7.82$
 $b = -0.15$

⑪ $t = 5c + 1$
 $8t + 16c = 400$
 $8(5c + 1) + 16c = 400$
 $40c + 8 + 16c = 400$
 $56c = 392$
 $c = 7$
 $t = 36$

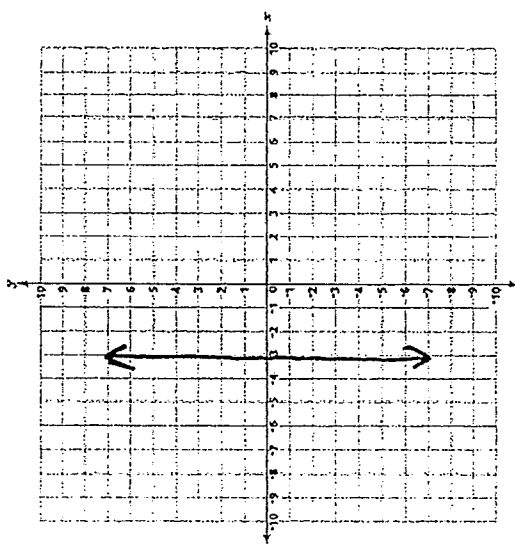
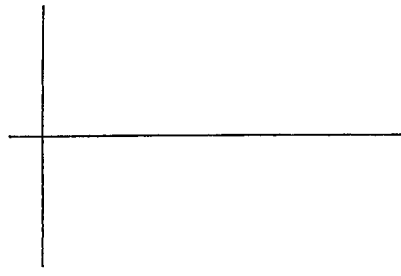
For each graph 1) Show 3 or more solutions 2) Describe the graph so someone could draw it accurately 3) Explain what kind of function it is (whether or not it is a function) 4) Describe any restrictions on domain or range.



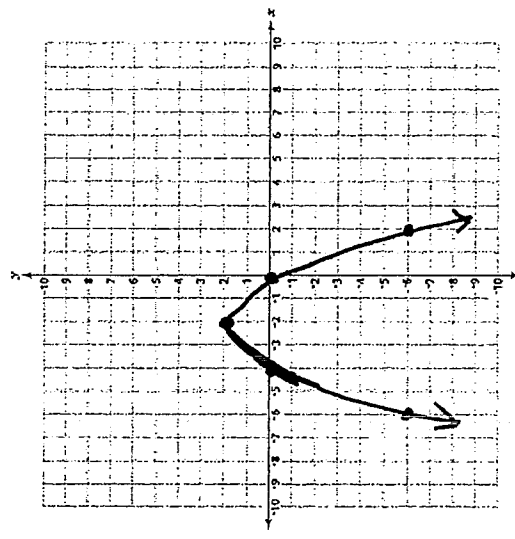
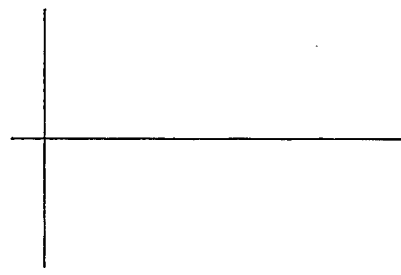
Describe the graph.



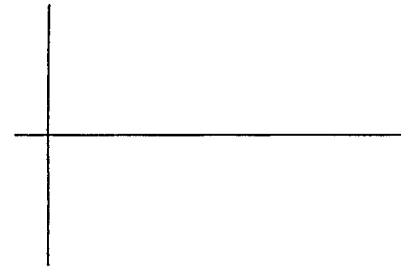
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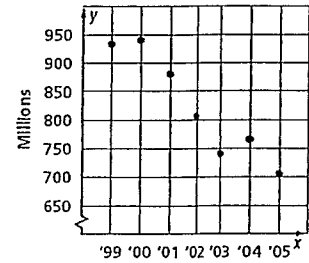
Describe the graph.



Please see answers in the CD book.

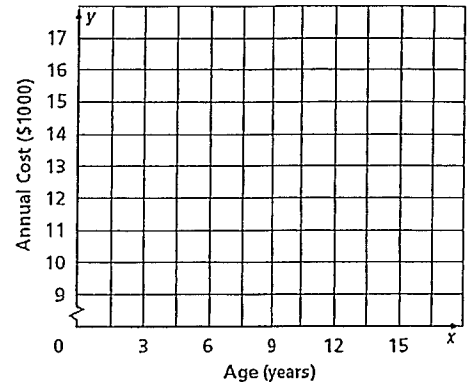
Scatter Plots and Lines of Best Fit Worksheet

1. **MUSIC** The scatter plot shows the number of CDs (in millions) that were sold from 1999 to 2005. If the trend continued, about how many CDs were sold in 2006?



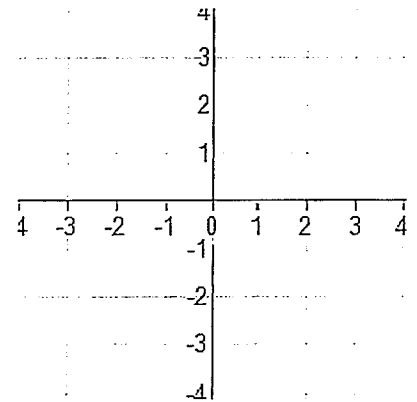
2. **FAMILY** The table below shows the predicted annual cost for a middle income family to raise a child from birth until adulthood. Draw a scatter plot and describe what relationship exists within the data.

Cost of Raising a Child Born in 2003					
Child's Age	3	6	9	12	15
Annual Cost (\$)	10,700	11,700	12,600	15,000	16,700



3. Make a scatter plot of the data in the table. Draw a line of best fit. What is the equation of the line of best fit?

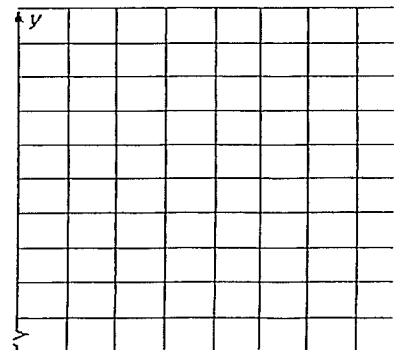
X	-2	-2	-1	0	1	1	1	2	2	3
Y	2	3	2	1	0	1	-1	-1	-2	-2



4. **EDUCATION** The table at the right gives the number of hours spent studying for a science exam and the final exam grade.

Study Hours	3	2	5	1	0	4	3
Grade	84	77	92	70	60	90	75

- a. Draw a scatter plot of the data and draw in the line of best fit.



- b. What is the equation for the line of best fit?
- c. Predict the grade for a student who studied for 6 hours.
- d. Could this line go on forever? Why or why not?