

New York Additional Topics Lesson 1 NY P.726: Analyzing Data and Identifying Bias

Part 1: Identifying Types of Data

1. fall0714ia, P.I. A.S.2
Which situation should be analyzed using bivariate data?
- [A] Ms. Saleem keeps a list of the amount of time her daughter spends on her social studies homework.
- [B] Mr. DeStefan records his customers' best video game scores during the summer.
- [C] Mr. Benjamin tries to see if his students' shoe sizes are directly related to their heights.
- [D] Mr. Chan keeps track of his daughter's algebra grades for the quarter.

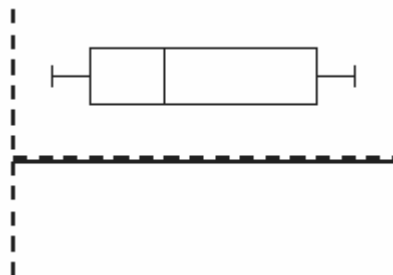
Part 2: Sampling and Surveys

2. 010815b, P.I. A.S.3
Which method of collecting data would most likely result in an unbiased random sample?
- [A] selecting every third teenager leaving a movie theater to answer a survey about entertainment
- [B] placing a survey in a local newspaper to determine how people voted in the 2004 presidential election
- [C] surveying honor students taking Mathematics B to determine the average amount of time students in a school spend doing homework each night
- [D] selecting students by the last digit of their school ID number to participate in a survey about cafeteria food

New York Additional Topics Lesson 2 NY P.732: Quartiles and Box-and- Whisker Plots

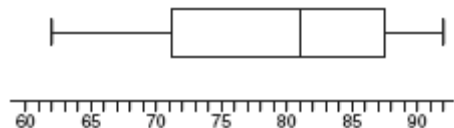
Part 2: Box-and-Whisker Plots

3. 060220a
The accompanying diagram is an example of which type of graph?



- [A] histogram [B] box-and-whisker plot
[C] stem-and-leaf plot [D] bar graph

4. 010301a, P.I. A.S.6
The accompanying diagram shows a box-and-whisker plot of student test scores on last year's Mathematics A midterm examination.

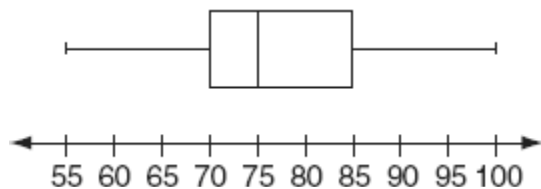


What is the median score?

- [A] 71 [B] 81 [C] 92 [D] 62

5. 060610a, P.I. A.S.6

The accompanying box-and-whisker plot represents the scores earned on a science test.

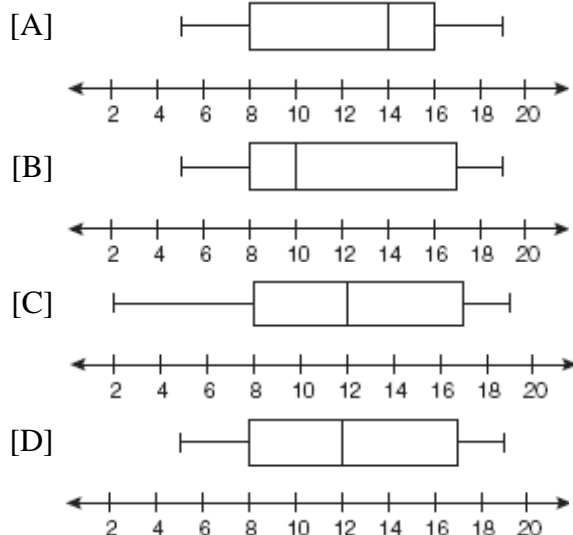


What is the median score?

- [A] 70 [B] 77 [C] 75 [D] 85

6. fall0709ia, P.I. A.S.5

The data set 5, 6, 7, 8, 9, 9, 9, 10, 12, 14, 17, 17, 18, 19, 19 represents the number of hours spent on the Internet in a week by students in a mathematics class. Which box-and-whisker plot represents the data?



New York Additional Topics Lesson 3 NY P.738: Working With Sets

Part 2: Interval Notation

7. fall0704ia, P.I. A.A.29

Which interval notation represents the set of all numbers from 2 through 7, inclusive?

- [A] $[2,7)$ [B] $(2,7]$ [C] $[2,7]$ [D] $(2,7)$

New York Additional Topics Lesson 4 NY P. 743: Union and Intersection of Sets

Part 1: Operations on Sets

8. fall0710ia, P.I. A.A.31

Given:

$$\text{Set } A = \{(-2, -1), (-1, 0), (1, 8)\}$$

$$\text{Set } B = \{(-3, -4), (-2, -1), (-1, 2), (1, 8)\}$$

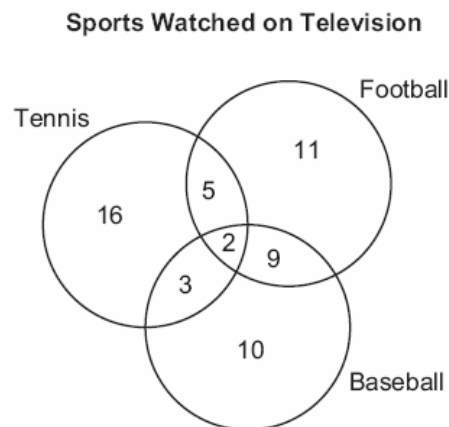
What is the intersection of sets A and B ?

- [A] $\{(-2, -1), (1, 8)\}$ [B] $\{(1, 8)\}$
[C] $\{(-2, -1)\}$
[D] $\{(-3, -4), (-2, -1), (-1, 2), (-1, 0), (1, 8)\}$

Part 2: Solving Problems With Venn Diagrams

9. 060203a, P.I. A.RP.11

The accompanying diagram shows the results of a survey asking which sports the members of the Key Club watch on television.



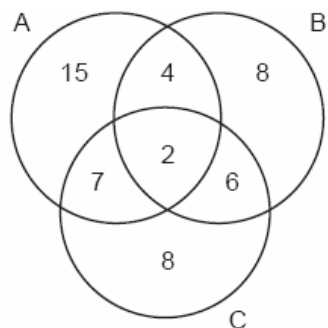
Which statement or statements are true?

- I The most watched sport is tennis.
II The least watched sport is baseball.
III More Key Club members watch tennis than football.

- [A] I, only [B] II and III, only
[C] II, only [D] I and II, only

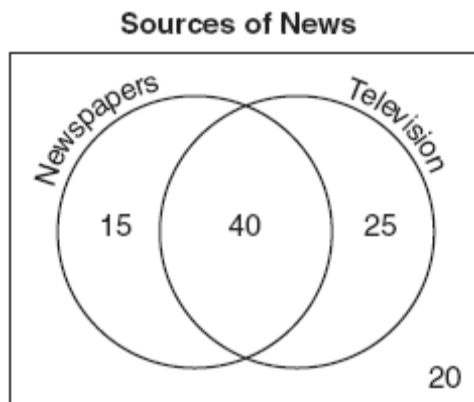
10. 060026a, P.I. A.RP.11

The accompanying Venn diagram shows the number of students who take various courses. All students in circle A take mathematics. All in circle B take science. All in circle C take technology. What percentage of the students take mathematics or technology?



11. 010621a, P.I. A.RP.11

The accompanying Venn diagram shows the results of a survey asking 100 people if they get news by reading newspapers or by watching television.



What is the probability that a person selected at random from this survey does *not* claim television as a source of getting the news?

- [A] $\frac{75}{100}$ [B] $\frac{55}{100}$ [C] $\frac{35}{100}$ [D] $\frac{15}{100}$

12. 080117a, P.I. A.RP.11

In a class of 450 students, 300 are taking a mathematics course and 260 are taking a science course. If 140 of these students are taking both courses, how many students are not taking either of these courses?

- [A] 40 [B] 30 [C] 110 [D] 140

13. 069919a, P.I. A.RP.11

In a class of 50 students, 18 take music, 26 take art, and 2 take both art and music. How many students in the class are not enrolled in either music or art?

- [A] 24 [B] 16 [C] 8 [D] 6

14. 060436a, P.I. A.RP.11

The senior class at South High School consists of 250 students. Of these students, 130 have brown hair, 160 have brown eyes, and 90 have both brown hair and brown eyes. How many members of the senior class have *neither* brown hair *nor* brown eyes?

15. 080226a, P.I. A.RP.11

In a telephone survey of 100 households, 32 households purchased Brand A cereal and 45 purchased Brand B cereal. If 10 households purchased both items, how many of the households surveyed did *not* purchase either Brand A or Brand B cereal?

16. 060533a, P.I. A.RP.11

In a survey of 400 teenage shoppers at a large mall, 240 said they shopped at Abernathy's, 210 said they shopped at Bongo Republic, and 90 said they shopped at both stores. How many of the teenage shoppers surveyed did not shop at either store?

17. 080631a, P.I. A.RP.11
In Clark Middle School, there are 60 students in seventh grade. If 25 of these students take art only, 18 take music only, and 9 do not take either art or music, how many take both art and music?
18. 010815a, P.I. A.RP.11
A school newspaper took a survey of 100 students. The results of the survey showed that 43 students are fans of the Buffalo Bills, 27 students are fans of the New York Jets, and 48 students do not like either team. How many of the students surveyed are fans of *both* the Buffalo Bills and the New York Jets?
[A] 18 [B] 52 [C] 16 [D] 70
19. 010434a, P.I. A.RP.11
A car dealer has 22 vehicles on his lot. If 8 of the vehicles are vans and 6 of the vehicles are red, and 10 vehicles are neither vans nor red, how many red vans does he have on his lot?
20. 060121a, P.I. A.RP.11
A school district offers hockey and basketball. The result of a survey of 300 students showed:
120 students play hockey, only
90 students play basketball, only
30 students do not participate in either sport
Of those surveyed, how many students play both hockey and basketball?
21. 080419a, P.I. A.RP.11
Seventy-eight students participate in one or more of three sports: baseball, tennis, and golf. Four students participate in all three sports; five play both baseball and golf, only; two play both tennis and golf, only; and three play both baseball and tennis, only. If seven students play only tennis and one plays only golf, what is the total number of students who play only baseball?
[A] 60 [B] 44 [C] 56 [D] 12
22. 080532a, P.I. A.RP.11
There are 30 students on a school bus. Of these students, 24 either play in the school band or sing in the chorus. Six of the students play in the school band but do not sing in the chorus. Fourteen of the students sing in the chorus and also play in the school band. How many students on the school bus sing in the chorus but do not play in the band?
23. 060732a, P.I. A.RP.11
Jose surveyed 20 of his friends to find out what equipment they use to play recorded movies. He found that 12 of his friends have only DVD players, 5 have both DVD players and VCRs, and 2 have neither type of player. The rest of his friends have only VCRs. What is the total number of his friends that have VCRs?
24. 010519a, P.I. A.RP.11
In Ms. Wright's English class, 16 students are in band, 7 students play sports, 3 students participate in both activities, and 9 students are not in band and do not play sports. How many students are in Ms. Wright's English class?
[A] 29 [B] 26 [C] 10 [D] 7

New York Additional Topics Lesson 5 NY P. 748: Related Data Sets

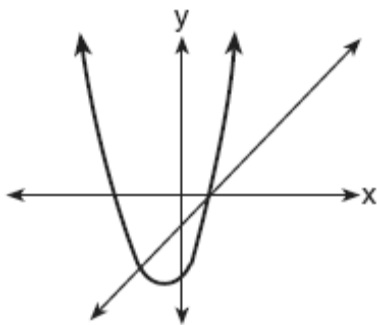
Part 2: Relationships Between Data Sets

25. fall0707ia, P.I. A.S.14
Which situation describes a correlation that is *not* a causal relationship?
- [A] The more miles driven, the more gasoline needed.
- [B] The faster the pace of a runner, the quicker the runner finishes.
- [C] The more powerful the microwave, the faster the food cooks.
- [D] The rooster crows, and the Sun rises.

New York Additional Topics Lesson 6 NY P.752: Systems of Linear and Quadratic Equations

Part 1: Solving Systems Using Graphing

26. 060507a
The accompanying diagram shows the graphs of a linear equation and a quadratic equation.

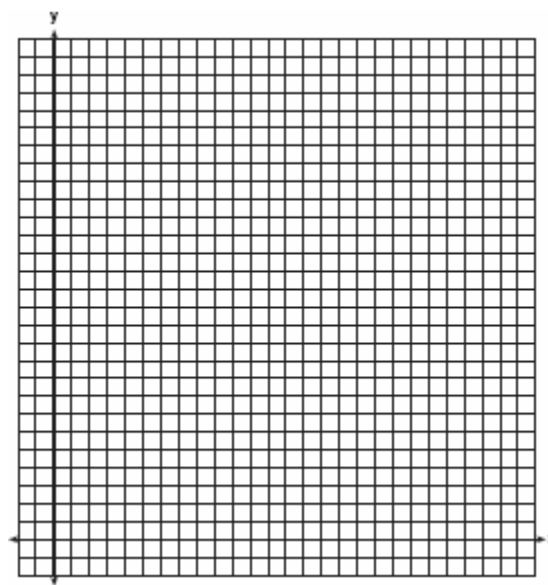


How many solutions are there to this system of equations?

- [A] 2 [B] 1 [C] 3 [D] 0

27. 060235a, P.I. A.G.9

A rocket is launched from the ground and follows a parabolic path represented by the equation $y = -x^2 + 10x$. At the same time, a flare is launched from a height of 10 feet and follows a straight path represented by the equation $y = -x + 10$. Using the accompanying set of axes, graph the equations that represent the paths of the rocket and the flare, and find the coordinates of the point or points where the paths intersect.

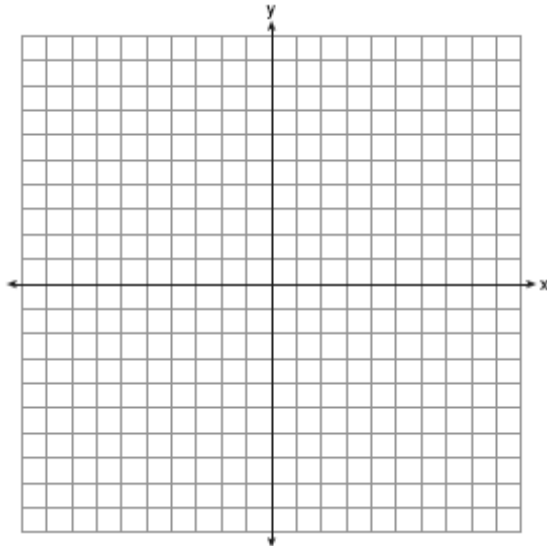


28. fall0738ia, P.I. A.G.9

Solve the following systems of equations graphically, on the set of axes below, and state the coordinates of the point(s) in the solution set.

$$y = x^2 - 6x + 5$$

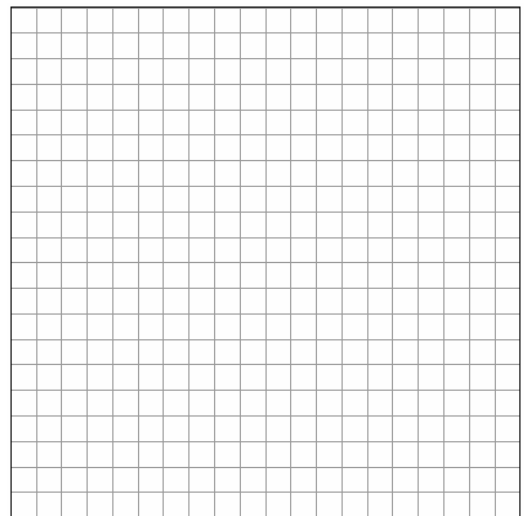
$$2x + y = 5$$



29. 060328b, P.I. G.G.70

The price of a stock, $A(x)$, over a 12-month period decreased and then increased according to the equation

$A(x) = 0.75x^2 - 6x + 20$, where x equals the number of months. The price of another stock, $B(x)$, increased according to the equation $B(x) = 2.75x + 1.50$ over the same 12-month period. Graph and label both equations on the accompanying grid. State all prices, to the *nearest dollar*, when both stock values were the same.



Part 2: Solving Systems Using Algebraic Methods

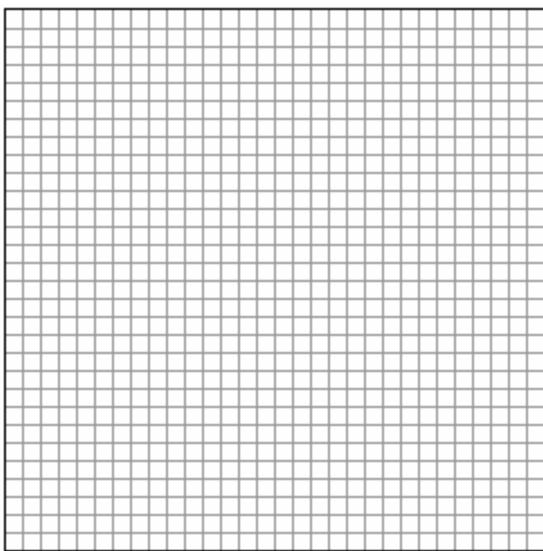
30. 080538a, P.I. A.A.11

Solve the following system of equations:

$$y = x^2 + 4x + 1$$

$$y = 5x + 3$$

[The use of the grid is optional.]

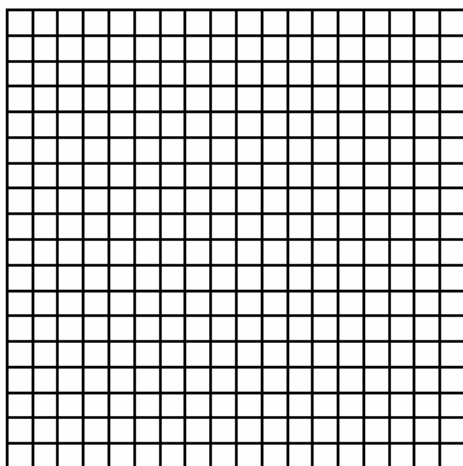


31. 069935a, P.I. A.A.11

Solve the following system of equations algebraically or graphically for x and y :

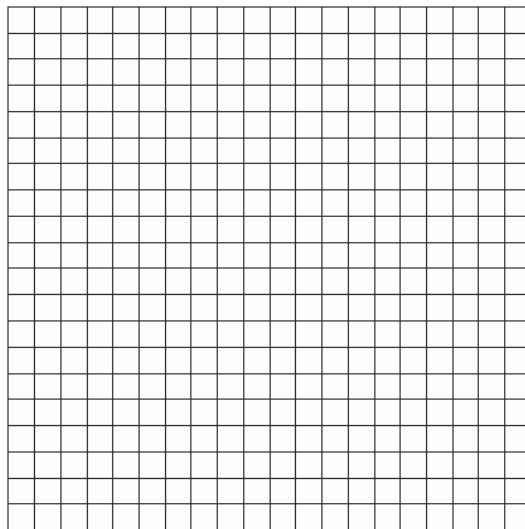
$$y = x^2 + 2x - 1$$

$$y = 3x + 5$$



32. 060228b, P.I. A.A.11

A pelican flying in the air over water drops a crab from a height of 30 feet. The distance the crab is from the water as it falls can be represented by the function $h(t) = -16t^2 + 30$, where t is time, in seconds. To catch the crab as it falls, a gull flies along a path represented by the function $g(t) = -8t + 15$. Can the gull catch the crab before the crab hits the water? Justify your answer. [The use of the accompanying grid is optional.]



33. 060018a, P.I. A.A.11

The graphs of the equations $y = x^2 + 4x - 1$ and $y + 3 = x$ are drawn on the same set of axes. At which point do the graphs intersect?

[A] $(-2, 1)$

[B] $(1, 4)$

[C] $(1, -2)$

[D] $(-2, -5)$

34. 080135a, P.I. A.A.11

Solve the following system of equations algebraically:

$$y = x^2 + 4x - 2$$

$$y = 2x + 1$$

Skills Handbook P. 765: Perimeter, Area, and Volume

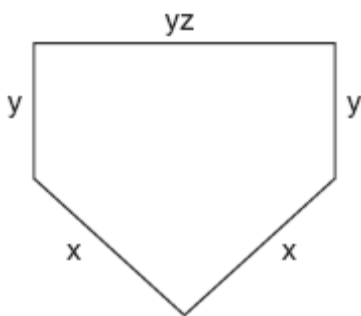
35. 089905a, P.I. A.G.1

The Pentagon building in Washington, D.C., is shaped like a regular pentagon. If the length of one side of the Pentagon is represented by $n + 2$, its perimeter would be represented by

- [A] $5n + 10$ [B] $10n$
[C] $n + 10$ [D] $5n + 2$

36. 010603a, P.I. A.G.1

The lengths of the sides of home plate in a baseball field are represented by the expressions in the accompanying figure.



Which expression represents the perimeter of the figure?

- [A] $5xyz$ [B] $2x + 3yz$
[C] $2x + 2y + yz$ [D] $x^2 + y^3z$

37. 010212a, P.I. A.G.1

What is the area of a square whose perimeter is represented by $12x$?

- [A] $12x^2$ [B] $144x^2$
[C] $9x^2$ [D] $6x\sqrt{2}$

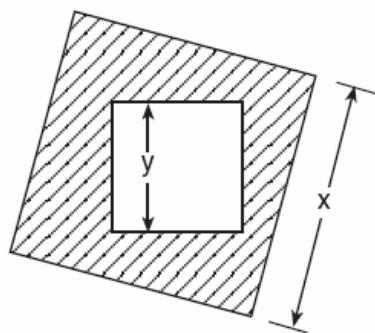
38. 060527a, P.I. A.G.1

The length of a side of a square window in Jessica's bedroom is represented by $2x - 1$. Which expression represents the area of the window?

- [A] $2x^2 + 1$ [B] $4x^2 + 1$
[C] $4x^2 + 4x - 1$ [D] $4x^2 - 4x + 1$

39. 060302a, P.I. A.G.1

The accompanying diagram shows a square with side y inside a square with side x .

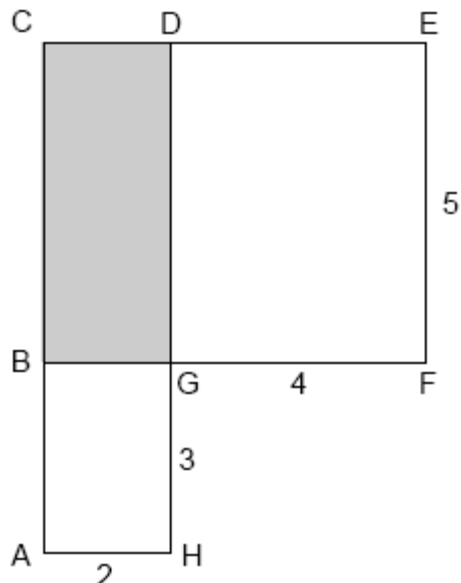


Which expression represents the area of the shaded region?

- [A] y^2 [B] $x^2 - y^2$
[C] $y^2 - x^2$ [D] x^2

40. 069916a, P.I. A.G.1

In the accompanying figure, $ACDH$ and $BCEF$ are rectangles, $AH = 2$, $GH = 3$, $GF = 4$, and $FE = 5$.



What is the area of $BCDG$?

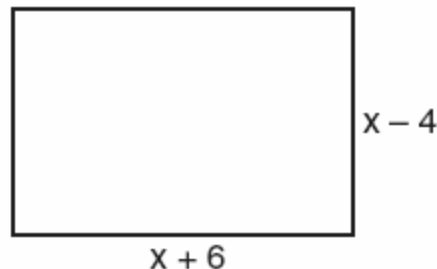
[A] 20 [B] 6 [C] 10 [D] 8

41. 080124a, P.I. A.G.1

An engineer measured the dimensions for a rectangular site by using a wooden pole of unknown length x . The length of the rectangular site is 2 pole measures increased by 3 feet, while the width is 1 pole measure decreased by 4 feet. Write an algebraic representation, in terms of x , for the perimeter of the site.

42. 060437a, P.I. A.G.1

Express both the perimeter and the area of the rectangle shown in the accompanying diagram as polynomials in simplest form.



43. 080031a, P.I. A.G.1

Mr. Santana wants to carpet exactly half of his rectangular living room. He knows that the perimeter of the room is 96 feet and that the length of the room is 6 feet longer than the width. How many square feet of carpeting does Mr. Santana need?

44. 080023a, P.I. A.G.1

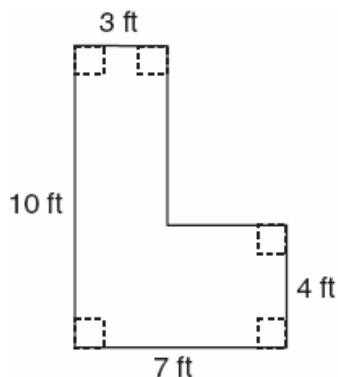
Kerry is planning a rectangular garden that has dimensions of 4 feet by 6 feet. Kerry wants one-half of the garden to have roses, and she says that the rose plot will have dimensions of 2 feet by 3 feet. Is she correct? Explain.

45. 060631a, P.I. A.G.1

Determine the area, in square feet, of the *smallest* square that can contain a circle with a radius of 8 feet.

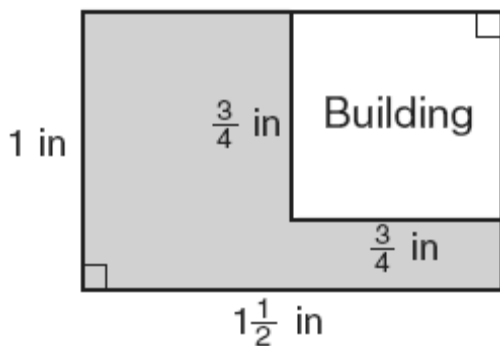
46. 060132a, P.I. A.G.1

Keesha wants to tile the floor shown in the accompanying diagram. If each tile measures 1 foot by 1 foot and costs \$2.99, what will be the total cost, including an 8% sales tax, for tiling the floor?



47. 080738a, P.I. A.G.1

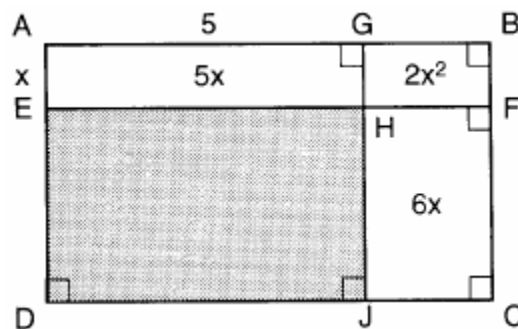
The accompanying diagram represents a scale drawing of the property where Brendan's business is located. He needs to purchase rock salt to melt the ice on the parking lot (shaded area) around his building. A bag of rock salt covers an area of 1,500 square feet. How many bags of rock salt does Brendan need to purchase to salt the entire parking lot?



Scale: $\frac{1}{4}$ in = 18 ft

48. 010028a, P.I. A.G.1

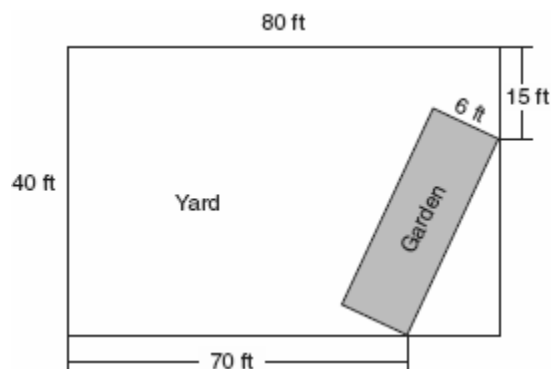
In the figure below, the large rectangle, $ABCD$, is divided into four smaller rectangles. The area of rectangle $AEHG = 5x$, the area of rectangle $GHFB = 2x^2$, the area of rectangle $HJCF = 6x$, segment $AG = 5$, and segment $AE = x$.



- Find the area of the shaded region.
- Write an expression for the area of the rectangle $ABCD$ in terms of x .

49. 010330a, P.I. A.G.1

A rectangular garden is going to be planted in a person's rectangular backyard, as shown in the accompanying diagram. Some dimensions of the backyard and the width of the garden are given. Find the area of the garden to the nearest square foot.



50. 010202b, P.I. A.G.1

Chad had a garden that was in the shape of a rectangle. Its length was twice its width. He decided to make a new garden that was 2 feet longer and 2 feet wider than his first garden. If x represents the original width of the garden, which expression represents the difference between the area of his new garden and the area of the original garden?

- [A] $6x + 4$ [B] 8
[C] $x^2 + 3x + 2$ [D] $2x^2$

51. 080130b, P.I. A.G.1

A small, open-top packing box, similar to a shoebox without a lid, is three times as long as it is wide, and half as high as it is long. Each square inch of the bottom of the box costs \$0.008 to produce, while each square inch of any side costs \$0.003 to produce. Write a function for the cost of the box described above. Using this function, determine the dimensions of a box that would cost \$0.69 to produce.

52. 060611a, P.I. A.G.1

The second side of a triangle is two more than the first side, and the third side is three less than the first side. Which expression represents the perimeter of the triangle?

- [A] $2x - 1$ [B] $x + 5$
[C] $x^2 - x - 6$ [D] $3x - 1$

53. 060713a, P.I. A.G.1

If the base of a triangle is represented by $x + 4$ and the height is represented by $2x$, which expression represents the area of the triangle?

- [A] $(x + 4)(2x)$ [B] $\frac{1}{2}((x + 4) + (2x))$
[C] $(x + 4) + (2x)$ [D] $\frac{1}{2}(x + 4)(2x)$

54. 010335a, P.I. A.G.1

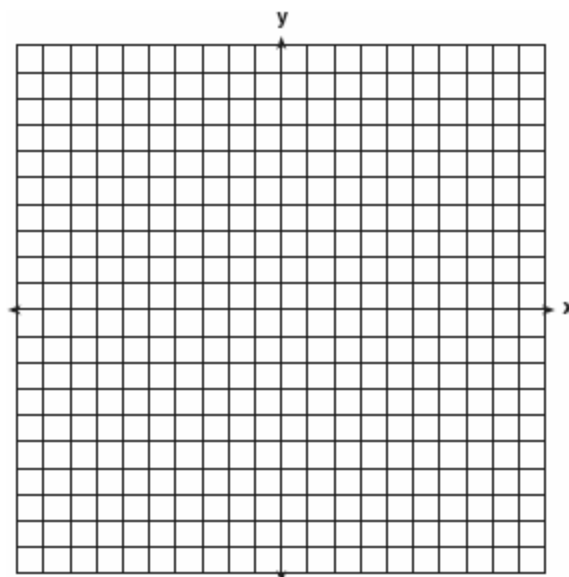
On the accompanying set of axes, graph and label the following lines:

$$y = 5$$

$$x = -4$$

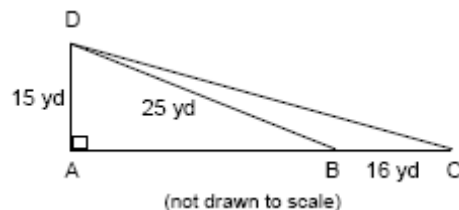
$$y = \frac{5}{4}x + 5$$

Calculate the area, in square units, of the triangle formed by the three points of intersection.



55. 089934a, P.I. A.G.1

Mr. Gonzalez owns a triangular plot of land BCD with $DB = 25$ yards and $BC = 16$ yards. He wishes to purchase the adjacent plot of land in the shape of right triangle ABD , as shown in the accompanying diagram, with $AD = 15$ yards. If the purchase is made, what will be the total number of square yards in the area of his plot of land, $\triangle ACD$?



56. 060134a, P.I. A.G.1

The plan of a parcel of land is represented by trapezoid $ABCD$ in the accompanying diagram. If the area of $\triangle ABE$ is 600 square feet, find the minimum number of feet of fence needed to completely enclose the entire parcel of land, $ABCD$.

