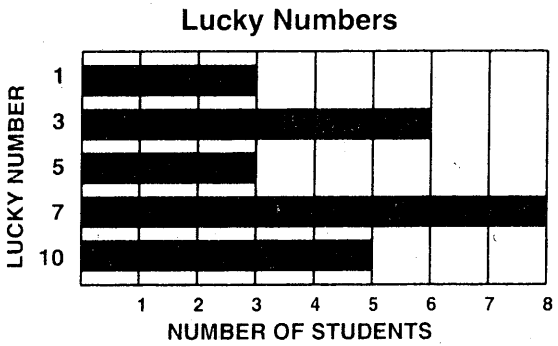
PRACTICE TEST 2

Directions: Read each question carefully.
Fill in the letter on the answer sheet provided on page 368 that best answers the question.

1. Choose the one alternative that best completes the statement or answers the question.

   The graph shows the results of a survey of 25 students who were asked to identify their "lucky number."



   Based on the table, what percentage of students did not choose 7 as their lucky number?

   a. 17%
   b. 32%
   c. 34%
   d. 68%

2. A high point in the state of South Carolina is Sassafras Mountain, at an elevation of 3,560 feet. If you are making a relief map to scale, on a scale of 1:1,000,000, roughly what is the height of Sassafras Mountain on the map?

3. Classify the triangle with sides of length 23, 20, and 23.

   a. isosceles
   b. right
   c. scalene
   d. equilateral

4. The table below illustrates several different amounts of hamburger and chicken you can buy for a barbeque you are hosting. Determine the rate of change.

Hamburger (lb) x	0	4	8	12	16	20
Chicken (lb) y	15	12	9	6	3	0

   a. The rate of change in the amount of hamburger vs the amount of chicken you need to buy for the barbeque is 3/4.
   b. The rate of change in the amount of hamburger vs the amount of chicken you need to buy for the barbeque is 4/3.
   c. The rate of change in the amount of hamburger vs the amount of chicken you need to buy for the barbeque is –3/4.
   d. The rate of change in the amount of hamburger vs the amount of chicken you need to buy for the barbeque is –4/3.

5. Candice has created the chart below to compare the three cellular phone plans she is considering.

Plan	Monthly Fee	Cost/Minute
A	$5.95	$0.30
B	$12.95	$0.10
C	$19.99	$0.08

Which of the following is a reasonable conclusion for Candice make if she plans to talk 150 minutes per month?

a. Plan B is the least expensive plan if Candice is going to talk 150 minutes per month.
b. Plan A is the least expensive plan if Candice is going to talk 150 minutes per month.
c. Plan C is the least expensive plan if Candice is going to talk 150 minutes per month.
d. The three plans cost the same for 150 minutes of phone time.

6. You are trying to determine the gas mileage of a car. The car used 15 gallons of gas and traveled 450 miles. Which reasoning is faulty?

a. solution: 30 miles/gallon, because 15 divides into 45 three times
b. solution: 3 miles/gallon, because 20 divides into 500 25 times
c. the car goes 45 miles on a gallon and a half, and therefore gets 30 miles/gallon
d. the car gets exactly the number of mile

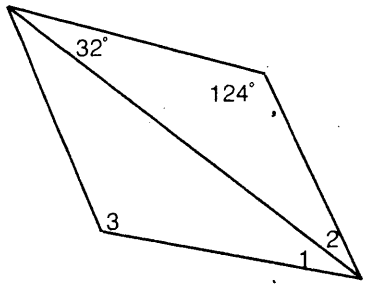
7. Philip wants to compare how many tourists visited Myrtle Beach in the last two years during June, July, and August. Which display would best show this?

a. scatter plot
b. circle graph
c. double bar graph
d. stem-and-leaf plot

8. Which cities are farther apart, cities 3.1cm apart on a map in which 1 cm = 33.3 miles, cities 5.7 in. apart on a map in which 1 in. = 20 miles, or cities 182 mm apart on a map in which 1 mm = 0.5 miles?

a. cities 3.1cm apart on a map in which 1 cm = 33.3 miles
b. cities 5.7 in. apart on a map in which 1 in. = 20 miles
c. cities 182 mm apart on a map in which 1 mm = 0.5 miles
d. the relationship cannot be determined

9. Find the measures of the numbered angles in the parallelogram.



a. $m\angle 1 = 32°$
$m\angle 2 = 24°$
$m\angle 3 = 124°$

b. $m\angle 1 = 24°$
$m\angle 2 = 32°$
$m\angle 3 = 124°$

c. $m\angle 1 = 16°$
$m\angle 2 = 62°$
$m\angle 3 = 148°$

d. $m\angle 1 = 32°$
$m\angle 2 = 16°$
$m\angle 3 = 148°$

10. What is the best approximation for $\sqrt{10}$?

a. larger than 3, because $\sqrt{10}$ is greater than the $\sqrt{9}$
b. larger than 3, but less than 4, because $\sqrt{10}$ is between the $\sqrt{9}$ and $\sqrt{16}$
c. 5, because one-half of 10 is 5
d. 5, because $(5)^2$ is 10

11. Order the steps below to solve the system of equations using linear combinations.

$2x + 5y = 7$ Equation 1
$4y - 3x = 16$ Equation 2

I. Substitute the known variable into either of the original equations. Solve for the remaining unknown variable.

II. Multiply Equation 1 by 3 and Equation 2 by 2.

III. Multiply Equation 1 by 3 and Equation 2 by –2.

IV. Arrange the equations with like terms in columns.

V. Add the equations, combine like terms to eliminate one variable, and solve for the remaining variable.

a. IV, II, V, I
b. II, IV, I, V
c. IV, III, V, I
d. III, IV, I, V

12. Emile recorded the following data:

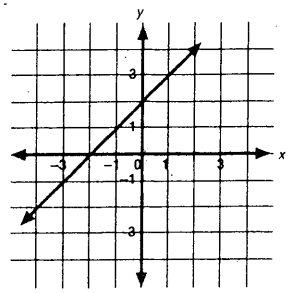
X	–4	–1	0	2
Y	10	–5	–6	–2

Which equation below shows the functional relationship between x and y?

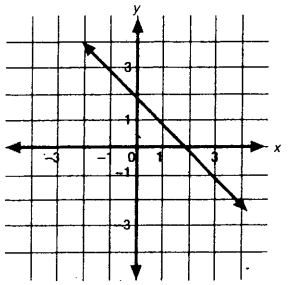
a. $y = x^2 - 6$
b. $y = 2x + 6$
c. $y = x^2 + 6$
d. $y = 2x^2 + 6$

13. Which graph represents the equation: $y = x - 2$?

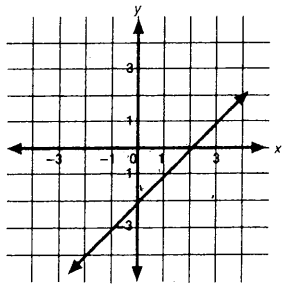
a.



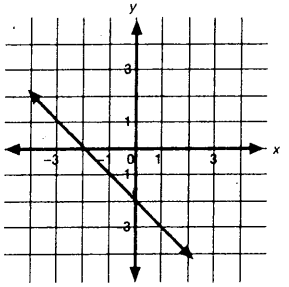
b.



c.



d.



14. Write the equation of a line, in standard form, with a slope of 4 and passing through the point (0,0).

a. $x + y = 4$
b. $4x - y = 0$
c. $4y - x = 0$
d. $x + y = 0$

15. A rectangle with side lengths $2h$ and k has one vertex at $(-h,k)$. Which of the points below

16. The Titanic itself was 882.75 feet long. If you had to make a replica of this famous ship for an art project, what unit would you use to build your model?

a. inches
b. centimeters
c. feet
d. meters

17. How many compact disc players cost from $180 to $190, inclusive?

Stem	Leaf				
20	0	0	0	5	
19	0	0	1	6	9
18	0	0	7	7	8
	8	8	9	9	
17	1	5	5	8	9
	9	9			
16	8	9	9		

key: 17|5 means 175

a. 7
b. 10
c. 14
d. 11

18. Find the missing elements in the pattern below:

9, 11, 15, 21, 29, 39, ____, 65, 81, ____, 119

a. 52, 100
b. 55, 109
c. 51, 99

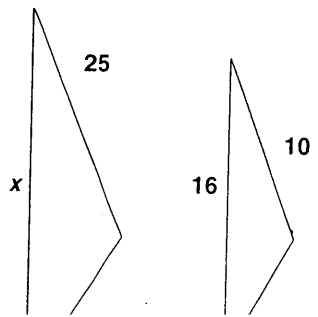
19. What is the equation of the line, in standard form, that has a y-intercept of –16/3 and a slope of 2/3?

a. $2x - 3y = -16$
b. $2x - 3y = 16$
c. $3y - 2x = 16$
d. $2x + y = -16/3$

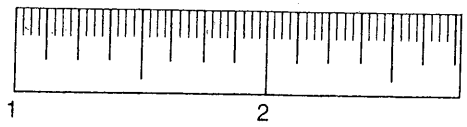
20. Determine which situation can be represented by a linear function.

a. Shiangtai walks his dog 2.5 miles around the neighborhood every day.
b. Galileo demonstrated that objects of different weights fall at the same velocity by dropping two objects of different weights from the top of the Leaning Tower of Pisa.
c. A circus acrobat is shot out of a cannon with an initial upward velocity of 64 feet per second.
d. Fort Jackson offers a 4th of July firework show set to music. The rockets launched will explode at approximately the highest point.

21. The triangles below are similar. Find the length of x.

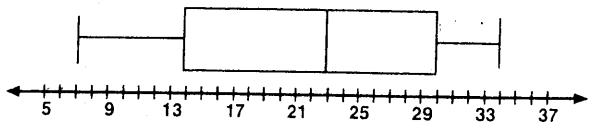


22. What is the greatest precision that can be achieved using this straight edge?



a. nearest 1/16
b. nearest 1/8
c. nearest 1/4
d. nearest 1/32

23. Which set of data is represented by the box-and-whisker plot?



a. 30, 24, 7, 23, 36, 29, 14
b. 30, 24, 7, 23, 34, 29, 14
c. 30, 22, 7, 23, 34, 29, 14
d. 30, 24, 7, 13, 34, 29, 14

24. Mr. Cardinal gives an 8 question true-false quiz. You did not study, so you decide to guess on each question. How many different ways could you answer the 8 question quiz?

a. 256
b. 128
c. 64
d. 16

25. You and your friends have a total of $18.50 to spend on pizza. It costs $14 plus $0.75 for each additional topping, tax included. Is it reasonable to say that you and your friends can choose 5 toppings?

    a. no, the total price would exceed the amount of money you have.
    b. no, the total price would be greater than the amount of money you have.
    c. yes, the total price would be less than the amount of money you have.
    d. yes, the total price would exactly be $18.50

26. You are organizing the annual spaghetti dinner to raise funds for your school's Beta club. Your goal is to sell $1500 worth of tickets. Which equation would represent the function assuming 200 adults and 100 students will attend the dinner.

    a. $2x + y = 15$
    b. $200x + y = 1500$
    c. $2x + 10y = 150$
    d. $20x + 100y = 1500$

27. Which equation describes the data in the table?

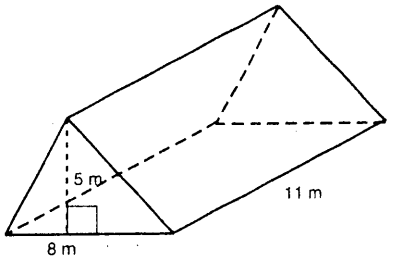
X	Y
–2	5
1	2
4	–1
6	–3

    a. $y = -2x + 1$

28. The ratio of the volumes of two similar solids is 64:729. Which of the following could be surface areas of the solids?

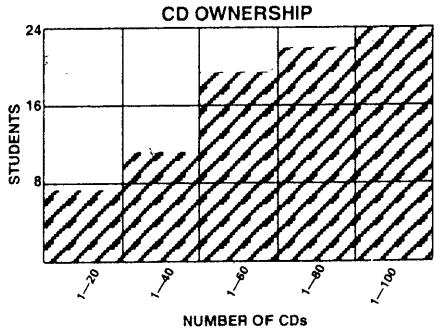
    a. 4 square units, 9 square units
    b. 64 square units, 729 square units
    c. 32 square units, 162 square units
    d. 8 square units, 27 square units

29. Find the volume of the triangular prism.



    a. 440 m^3
    b. 31 m^3
    c. 220 m^3
    d. 51 m^3

30. Maya surveyed classmates in her English class to find how many CDs each student owned. Her results are shown in the cumulative frequency histogram below.



Which of the following statements is true?

31. After P pieces of candy are divided equally among 5 children, 4 pieces remain. How many would remain if $P + 4$ pieces of candy were divided equally among the 5 children?

a. 0
b. 1
c. 2
d. 3

32. In solving the following system by the substitution method, choose the one step that could occur.

$$2d + 3s = 105$$
$$d + 2s = 65$$

a. $2d + 3(-2s + 65) = 65$
b. $2(2s - 65) + 3s = 105$
c. $2(-2s + 65) + 3s = 105$
d. $2d + 3(-2s + 65) = 105$

33. Solve $5 - x > 4$.

a. $x > 1$
b. $x > -1$
c. $x < 1$
d. $x < -1$

34. Solve $1/3(7x + 5) = 3x - 5$

a. -5
b. $-5/2$
c. 10

35. Determine whether the following equation has two real solutions, one real solution, or two complex solutions. $7x^2 + x + 6 = 0$

a. one real solution
b. two real solutions
c. cannot be determined
d. two complex solutions

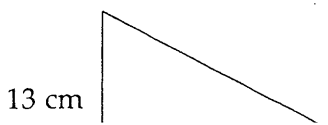
36. If $f_{(x)} = x^2 - 4x + 2$, find $f_{(3)}$.

a. -2
b. -1
c. 1
d. 2

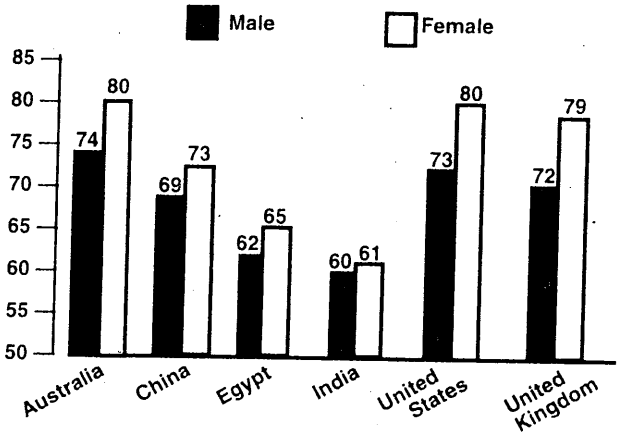
37. The first day of school you and 2 of your friends enter your math teacher's classroom. You see there are 30 empty seats. How many ways could you and your friends be seated in this math class?

a. 6
b. 120
c. 4060
d. 24,360

38. Given the right triangle below, what is the length of the hypotenuse? Round your answer to the nearest tenth.

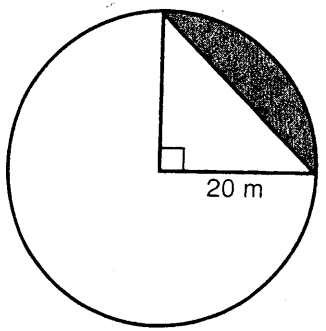


39. The graph shows life expectancies in selected countries. Which is a reasonable conclusion from the information?

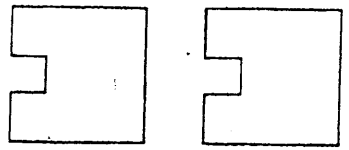


a. The country in which a person lives has little influence on life expectancy.
b. A female in Australia lives about as long as a male in China.
c. Most males live about 70 years.
d. Females live longer than males.

40. Find the area of the shaded region. Use 3.14 for π.



41. The figure on the right is a transformation of the figure on the left. What type of information was used?



a. reflection
b. rotation
c. translation
d. none of the above

42. Which expression is equivalent to $(a + b)^2$?

a. $a^2 + b^2$
b. $2(a + b)$
c. $(a + b)(a - b)$
d. $a^2 + 2ab + b^2$

43. The length of a rectangle is 5 cm less than its width. If both dimensions are decreased by 2 cm, its area is decreased by 34 cm^2. Find the dimensions of the original rectangle.

a. 17cm x 12cm
b. 1cm x 6cm
c. 7cm x 12cm
d. 5cm x 10cm

45. Subtract (4x + 7) from (–6x + 2)

a. –2x + 9
b. –10x + 5
c. –2x – 5
d. –10x – 5

46. What effect does tripling the length, width, and height of a rectangular solid have on its volume if the original rectangular solid measures 2cm x 5cm x 3m?

a. The volume increases 9 fold
b. The volume increases by a factor of 27
c. The volume triples
d. The volume increases 6 fold

47. If the following three statements are true:

all squares are rectangles;
all rectangles are parallelograms;
some parallelograms are not rectangles;

then which of the following must be *false*?

a. all squares are parallelograms
b. all parallelograms are quadrilaterals
c. all parallelograms are squares
d. some rectangles are not squares

48. Express 24.0 cm in inches.

a. 9.45 in

49. Suppose you are told that an object is moving at 66 ft/sec, and you are asked how fast you would have to drive a car to keep pace with this object.

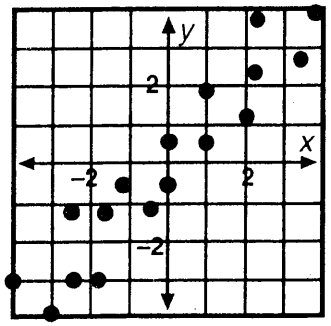
a. 45 miles/hour
b. 348,480 miles/hour
c. 5280 miles/hour
d. 66 miles/hour

50. Find the mean, median, and mode of the data in the following sample.

6, 16, 29, 29, 29, 6, 25, 17, 14, 29

a. 20, 21, 29
b. 29, 21, 20
c. 17.5, 20, 29
d. 21, 20, 29

51. What type of relationship is shown by the scatterplot?



a. positive

52. The weights (in pounds) of seven members of a football team's defensive line are 180, 219, 220, 191, 219, 209, and 186. If you want the impression of your defensive line to be larger young men, which measure of central tendency would you use?

a. mean
b. median
c. mode
d. It does not matter in this case because they are all approximately the same value

53. A study was conducted of the age and systolic blood pressure of six randomly selected persons. The linear regression equation generated from the data obtained was

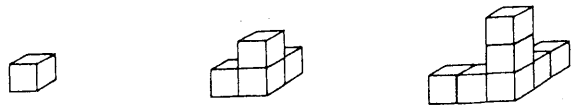
$$y = 0.96x + 81.04.$$

Using this equation predict the age of a person if their systolic blood pressure is 125.

a. about 46
b. about 201
c. about 215
d. about 49

54. Measure the following angle.

55. Consider the following pattern of blocks. If there are no hidden blocks, how many blocks would be in Building 7?



Bldg. 1 Bldg. 2 Bldg. 3

a. 10
b. 19
c. 22
d. 16

56. The following data were obtained from a survey of the number of years people smoked and percentage of lung damage.

Years, x	22	14	31	36	9	41	19
Damage, y	20	14	54	63	17	71	23

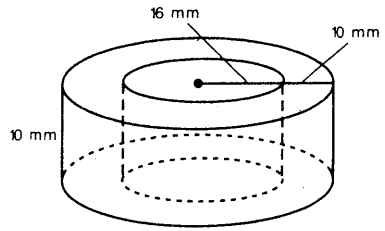
Determine the function that models the data best.

a. $y = 2x - 11$
b. $y = 2$
c. $y = 2.2x - 18$
d. $y = 1.8x - 1.8$

57. Simplify the following: $(2x - 1)(x + 3)$

a. $2x^2 - 5x - 3$

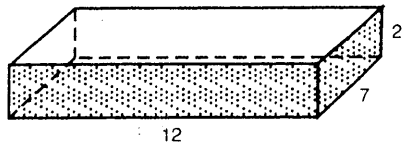
58. The volume of the following napkin ring, in cubic millimeters, is



a. $3240 \prod$ mm^3
b. $4200 \prod$ mm^3
c. $9600 \prod$ mm^3
d. none of these

59. At the same time of day, a person who is 5 ft. tall casts a 3-ft long shadow and a building casts a 12-ft long shadow. What is the height of the building?
a. 20 ft
b. 15 ft
c. 14 ft
d. 7.2 ft

60. The dimensions of the right rectangular prism shown are doubled. How many times larger is the volume of the new prism?



a. 1/2
b. 4
c. 8
d. 2