(3)

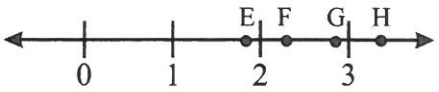
Geometry
1, 9
Krauss

Ohio Graduation Test Mathematics Practice Test 1

1. There were 60 defective computer chips out of a batch of 750. What percent of the entire batch is defective?

   A. 0.08%
   B. 0.8%
   C. 8%
   D. 80%

2. Which point on the number line is closest to $\sqrt{5}$?



   A. E
   B. F
   C. G
   D. H

3. A light year (the distance light travels in a year) is equal to about 5,880,000,000,000 miles. How would you write the number in scientific notation?

   A. 5.880×10^{9}
   B. $.588 \times 10^{9}$
   C. 5.88×10^{11}
   D. 5.88×10^{12}

4. Out of 1,000 students, 3/5 bought hot lunches on Monday. How many students bought hot lunches?

   A. 300
   B. 350
   C. 600
   D. 850

5. According to the sale ad below, about how much could you save on a board game regularly priced at $12.47?

   A. $ 3.00
   B. $ 6.00
   C. $ 9.00
   D. $15.00

6. A school store buys packages of graph paper to sell to students for a small profit. The school buys 50 packages of graph paper for $8.00. They sell the packs of graph paper for 25¢ each. How many packages of graph paper do they have to sell to earn $18.00?

   A. 100
   B. 120
   C. 160
   D. 200

7. The average daily attendance at Washington High School is 2,890. Yesterday only 4/5 of the students attended school. If there are 3,000 students enrolled, how many fewer students attended yesterday than the average daily attendance?

   A. 20
   B. 490
   C. 60
   D. 80

8. The wholesale cost of a book is $12.00. It is to be marked up 30%. What is the retail price?

   A. $3.60
   B. $8.40
   C. $12.78
   D. $15.60

9. Doug earned \$125 the first week on his job. The second week he earned twice as much. At the end of the second week, Doug spent \$72.47. About how much money did Doug have left?

A. \$ 50.00
B. \$ 75.00
C. \$175.00
D. \$300.00

10. There are a total of 120 freshmen and seniors in the band. How many freshmen are in the band if the ratio of freshmen to seniors is 3:1?

A. 90
B. 40
C. 60
D. 30

11. Jack is four years older than half his brother's age, b. Which algebraic expression below represents Jack's age?

A. $b + 4$
B. $\frac{1}{2}b + 4$
C. $4 - 2b$
D. $b - 4$

12. If $x = 10$ and $y = 1$, what is the value of $\frac{4x - 5}{7y}$?

A. 3
B. 5
C. $4\frac{3}{8}$
D. $50\frac{5}{8}$

13. Tina has a \$3000 limit on her credit card. She made purchases totaling \$750.00 so far. Which inequality below shows how much Tina can still spend with her credit card?

A. $3000 \geq s - 750$
B. $3000 - s \leq 750$
C. $s \geq 3000 + 750$
D. $s \leq 3000 - 750$

14. The diagram shows a portion of a spreadsheet. A computer program inserts the value of cells A1 and B1 into a formula to obtain the value of cell C1. Then A2 and B2 into the same formula to obtain the value of cell C2 and so on.

	A	B	C
1	1	2	1
2	2	3	3
3	3	4	5
4	4	5	7

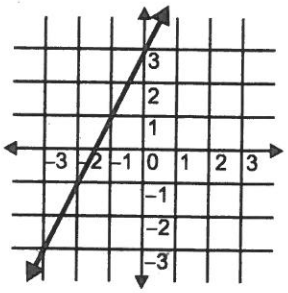
Which formula does the computer use to calculate the values in column C?

A. $C = 3A - B$
B. $C = 4B - 10A$
C. $C = 4(A - 2) + B$
D. $C = 2A - 2B$

15. The regular price of a stereo (r) is \$560. The stereo is on sale for 25% off. Which equation will help you find the sale price of the stereo?

A. $s = r - .25$
B. $s = r - .25s$
C. $s = r - .25r$
D. $s = r - s$

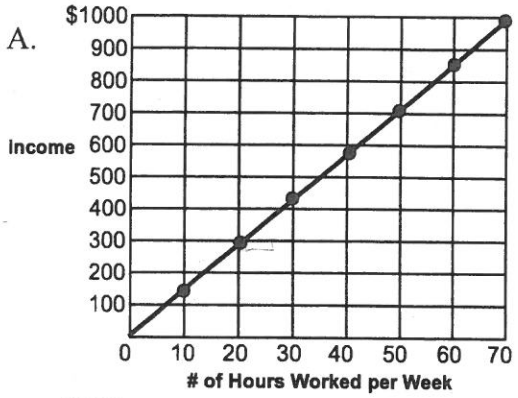
16. Which of the following equations is represented by the graph?



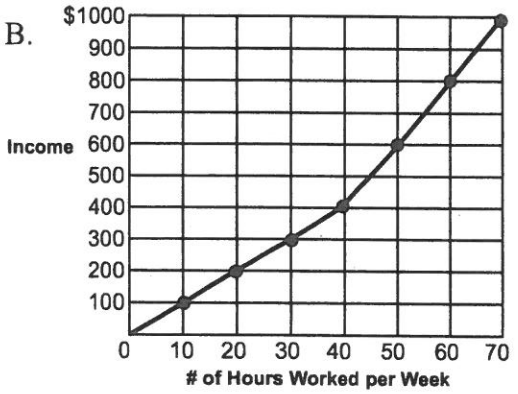
A. $y = -3x + 3$
B. $y = -\frac{1}{3}x + 3$
C. $y = 3x - 3$
D. $y = 2x + 3$

17. Jeff earns $10.00 per hour for the first 40 hours per week. He earns $20 per hour for any time after 40 hours. Which graph below correctly shows Jeff's income for the number of hours he works?

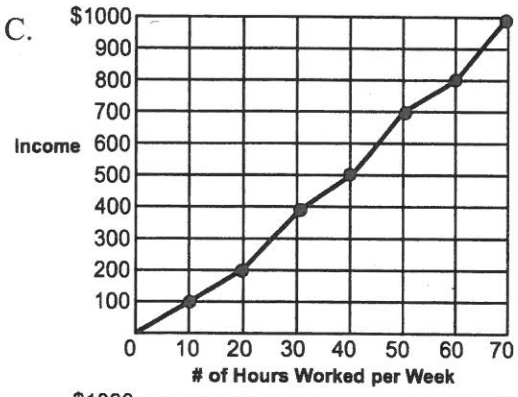
A.



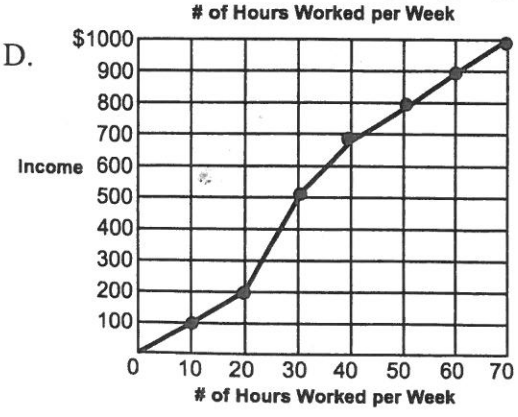
B.



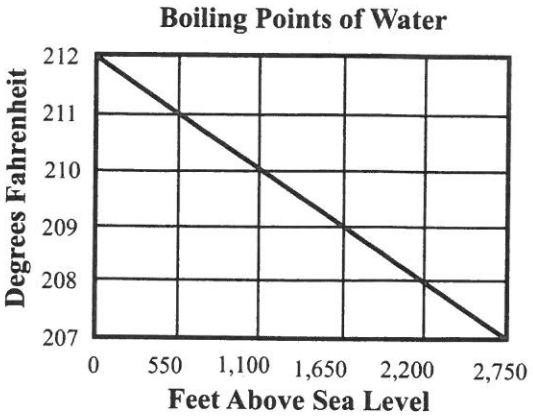
C.



D.



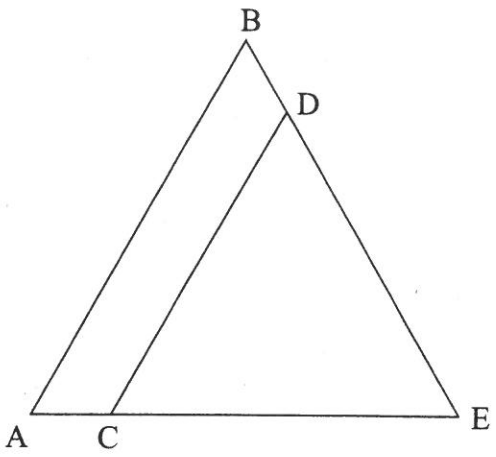
18.



A certain mountain is 6,050 feet high. Based on the information given by the line graph above, what would be the boiling point of water to the nearest degree on top of the mountain?

A. 199°
B. 200°
C. 201°
D. 202°

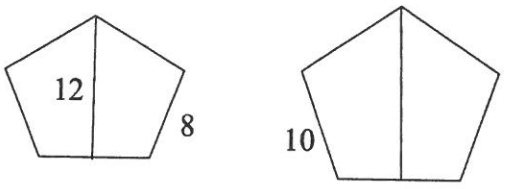
19.



If $m \angle A \cong m \angle C$, then which of the following statements is true?

A. $\angle C \cong \angle B$
B. $\overline{BD} \parallel \overline{AC}$
C. $\triangle ABE \cong \triangle CDE$
D. $\triangle ABE \sim \triangle CDE$

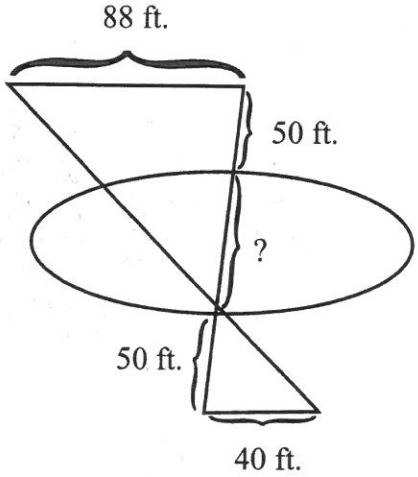
20. The following two figures are similar.



What is the height of the second pentagon?

A. 15
B. 14
C. 13
D. 12

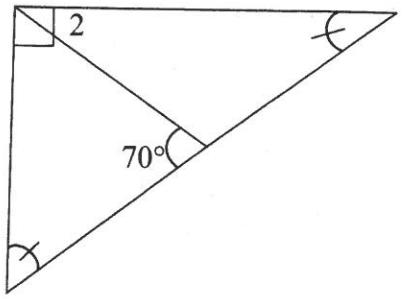
21.



Mark needs to measure the distance across a pond to build a bridge for a local park as part of a bike trail. He placed a stake 50 feet from each side of the pond, then measured over 40 ft. from 1 stake. Then he ran a ball of twine from that stake across the pond forming two similar triangles. He found the side corresponding to the 40 ft. side to be 88 ft. How wide is the pond?

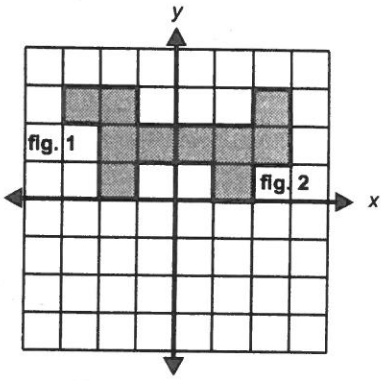
A. 50 feet
B. 60 feet
C. 80 feet
D. 110 feet

22. What is the $m\angle 2$ in the diagram below?



A. $M\angle 2 = 35°$
B. $M\angle 2 = 30°$
C. $M\angle 2 = 40°$
D. $M\angle 2 = 25°$

23. Figure 1 goes through a transformation to form figure 2. Which of the following descriptions fits the transformation shown?

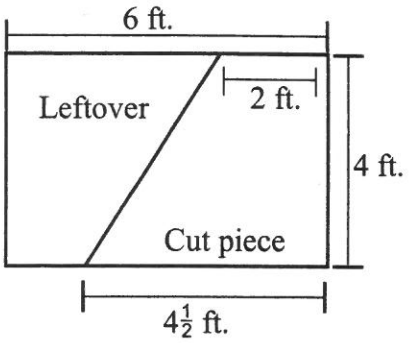


A. reflection across the x axis
B. reflection across the y-axis
C. $\frac{1}{4}$ clockwise rotation around the origin
D. translation right 3 units

24. Nick is going to paint the ceiling and four walls of a room that is 10 feet wide, 12 feet long, and 10 feet from floor to ceiling. How many square feet will he paint?

A. 120 square feet
B. 560 square feet
C. 680 square feet
D. 1,200 square feet

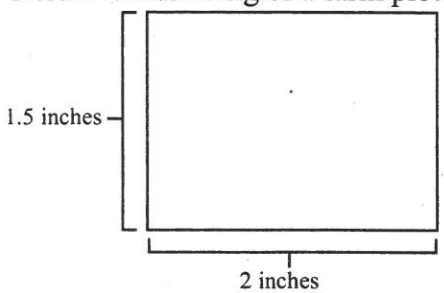
25.



Chris is doing construction work for the summer. He cut a trapezoid from a $4' \times 6'$ piece of plywood. What is the area of the leftover piece?

A. 6 ft.^{2}
B. 8 ft.^{2}
C. 11 ft.^{2}
D. 12 ft.^{2}

26. Below is a drawing of a farm plot:



Scale: 1 inch = 0.75 miles

What is the perimeter of this farm plot?

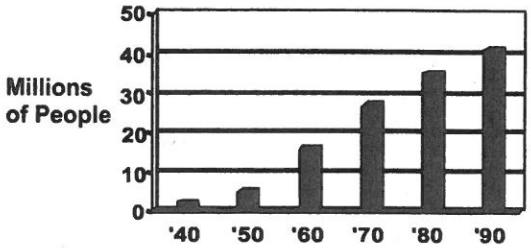
A. $2\frac{1}{4}$ miles
B. 3 miles
C. $5\frac{1}{4}$ miles
D. 7 miles

27. Assume v is an integer. Find the solution set for v.

$$12 - 3|v| \geq 6$$

A. $\{-3, -2, -1, 0, 1, 2, 3\}$
B. $\{-2, -1, 0, 1, 2\}$
C. $\{-2, -1, 0, 1\}$
D. $\{-1, 0, 1\}$

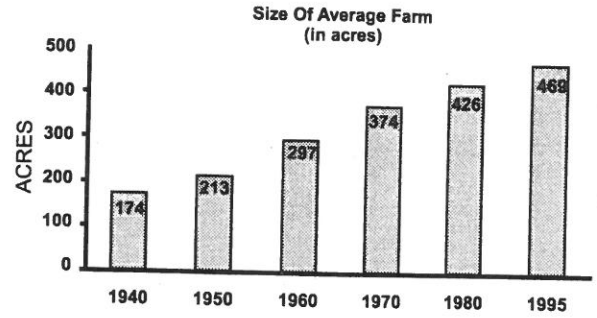
28. People Receiving Social Security Checks



How many people received Social Security checks in 1980?

A. 35 people
B. 35,000 people
C. 350,000 people
D. 35,000,000 people

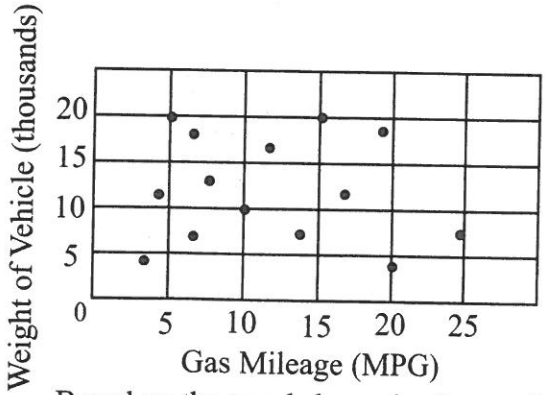
29. The chart below shows the average sizes of United States farms in acres from 1940 to 1995.



If the trend in farm size continues, which of the following is a logical conclusion?

A. Larger farms will mean less food produced.
B. More farms will produce more food.
C. There will be larger farms in the future.
D. There will be more farms in the Future.

30. The graph below represents the estimated mpg of a vehicle and the total weight of that vehicle.



Based on the trend shown by the graph, which of the following is the *best* estimate of the mpg that could be expected of a car that weighs 14,000 pounds?

A. less than 5 mpg
B. between 5 and 6 mpg
C. between 8 and 10 mpg
D. between 15 and 25 mpg

31. Jean has test scores of 68, 78, 100, 91, and 83. What does she have to get on her next test to get an 85 average?

A. 85
B. 87
C. 89
D. 90

32. Ray went on a trip and wanted to figure his gas mileage. He drove 724 miles and bought 20 gallons of gasoline. How many miles per gallon did he average?

A. 36.2 miles per gallon
B. 36.7 miles per gallon
C. 36.8 miles per gallon
D. 38.2 miles per gallon

33. Sarah deposits 50¢ into Miss Clucky, a machine that makes chicken squawks and gives Sarah one plastic egg with a toy surprise. In the machine, 30 eggs contain a rubber frog, 43 eggs contain a plastic ring, 23 eggs contain a necklace, and 18 eggs contain a plastic car. What is the probability that Miss Clucky will give Sarah a necklace in her egg?

A. $\frac{1}{114}$
B. $\frac{23}{114}$
C. $\frac{23}{91}$
D. $\frac{1}{23}$

34. Camilla rolled a die five times and it came up six each time. If Camilla rolls the die one more time, what is the theoretical probability that it will come up six again?

A. $\frac{1}{6}$
B. $\frac{1}{3}$
C. $\frac{1}{2}$
D. $\frac{5}{6}$

35. The Ice Cream Shoppe offers five flavors of ice cream, three different syrup toppings, and four kinds of sprinkles. How many different sundaes are possible each containing one flavor of ice cream, one syrup topping, and one kind of sprinkle?

A. 12
B. 23
C. 24
D. 60

36. Mary owns a cat named Snoopy. She reached into her bag of 4 fish, 6 liver, 3 chicken-flavored, and 10 milk treats and gave one to Snoopy without looking. What is the probability that Snoopy got a liver treat?

A. $\frac{1}{6}$
B. $\frac{6}{17}$
C. $\frac{6}{23}$
D. $\frac{1}{23}$

37. The mayor asked 4 radio stations to survey their listeners about how many would vote again for the present mayor if elections were held today. The results of the surveys are listed in the table below.

Radio Station	Support for the mayor
WRTY	72%
WFGJ	.87
WKLM	11 IN 14
WASV	$\frac{7}{8}$

Which radio audience showed the strongest support for the mayor?

A. WRTY
B. WFGJ
C. WKLM
D. WASV

38. Carrie drew a polygon with 5 sides. Which of the following statements about the figure must be true?

A. The sum of the measures of the interior angles equals 540°.
B. The figure is a quadrilateral or a hexagon.
C. The figure has five congruent angles.
D. The figure has 2 parallel sides.

39. An analysis of 160 million tons of garbage showed the following percentages of waste products:

What's in the Garbage

paper	40.0%
food waste	7.4%
plastics	8.0%
metals	8.5%
glass	7.0%
yard waste	17.5%
other	11.6%

When making a circle graph, how large would the central angle be for plastics?

A. 14.4°
B. 28.8°
C. 144°
D. 288°

40. Amin has a part-time job earning $10.00 per hour. He made a chart of his hours, earnings, and federal taxes taken out of his paycheck.

Hours	Earned	Taxes
25	$250	$23
26	$260	$25
27	$270	$26
28	$280	$28
29	$290	$29

If the pattern continues, how much will be taken from his check for federal taxes if he works 32 hours?

A. $32
B. $33
C. $34
D. $35

41. Which of the following is equivalent to $5(x - 5) > 4x - 20$?

A. $5x + x - 5 < 4x - 20$
B. $5x + 5 < 4x + 20$
C. $5x - 5 > 4x - 20$
D. $5x - 25 > 4x - 20$

42. Solve the following inequality: $-3(4x + 5) > 2(5x + 6) + 13$

A. $x < -\frac{20}{11}$
B. $x > 20$
C. $x > \frac{20}{11}$
D. $x < 20$

43. In a survey of 1000 students ages 10 to 15, participants were asked what was their favorite after school activity. The results follow.

talking on the phone	15%
playing video games	28%
reading	7%
playing sports	20%
watching TV	30%

If you were to make a circle graph of the data, what would be the measure of the central angle for playing sports?

A. 72°
B. 60°
C. 20°
D. 100°

44. A farmer has some cream which is 20% butterfat and some which is 15% butterfat. How many gallons of each must be mixed to produce 50 gallons of cream which is 18% butterfat?

A. 15 gallons of 15% butterfat and 35 gallons of 20% butterfat
B. 15 gallons of 20 % butterfat and 35 gallons of 15% butterfat
C. 20 gallons of 15% butterfat and 30 gallons of 20% butterfat
D. 20 gallons of 20% butterfat and 30 gallons of 15% butterfat

Questions 45 - 50 require a short answer or an extended response (longer answer). On the actual test, you will be given a booklet to put your answers in. For this assignment, use your own paper.

45. When Brent started on his trip, the odometer read 47,682. At the end of his trip, it read 47,952. Brent's car averages 30 miles per gallon. He paid $1.20 per gallon for gas.

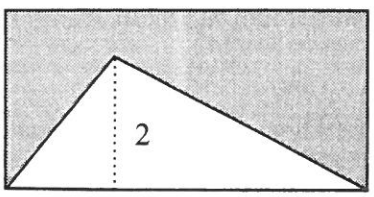
    Write an algebraic expression to show how much Brent paid for gasoline on his trip. Support your answer by solving the equation. Show your work.

46. Tran and Carlos each drew a triangle. Both triangles had a 25° angle and a 40° angle. Do you think the triangles are similar? Why or why not?

47. Bill's grades in Spanish class were: 69, 72, 75, 76, 78, 78, 78, 79, 81, 83, and 84. Draw a box and whisker chart for his grades.

    Find the mean, then upper and lower quartiles, and extremes of the data.

48. The triangle and rectangle below have dimensions as shown. Write an expression which represents the area of the shaded region.



SOCKS-A-PLENTY WAREHOUSE		
Item	**3 pair price**	**6 pair price**
Anklets	$4.50	$ 8.50
Sport Socks	$6.50	$11.50
Support Socks	$9.00	$15.75
Dress Socks	$6.00	$11.25
Please add 10% for shipping and handling		

49. What would be the total cost of 18 pairs of Sport Socks and 12 pairs of Anklets? Show your work.

50. An Ohio school is setting up a computer network. They have two companies in mind which they trust equally well to do a satisfactory job.

MICK'S NETWORKS

$500 FOR SERVER CONFIGURATION
$150 PER COMPUTER

SPEEDY NETWORKING

$200 PER COMPUTER
SERVER CONFIGURATION FREE

The school has 620 computers. Write an equation for networking costs with each company. Decide which plan is least expensive.