21. **Which statement is NOT true?**

A If $x^2 = 81$, then $x = \pm 9$.

B If $x^2 = 121$, then $x = \pm 11$.

C If $x^3 = 1$, then $x = \pm 1$.

D If $x^3 = -8$, then $x = -2$.

22. **Roberto explains to his friend why $8.\overline{96}$ is a rational number. Which statement could he have used?**

A $96 \div 8 = 12$

B 8.96 is a repeating decimal.

C 8.96 is a terminating decimal.

D 8.96 cannot be represented as the quotient of two integers.

23. **Solve: $x^3 = 64$**

A 4

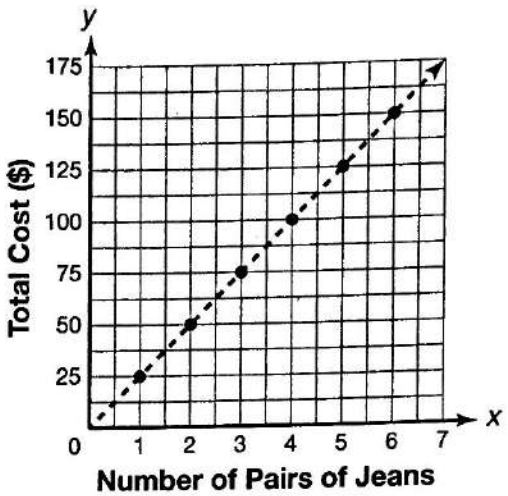
B 8

C $21\frac{1}{3}$

D 262,144

GO ON

24. The graph shows the total cost y, in dollars, for x pairs of the same type of jeans.



Which equation below represents the cost of a pair of jeans that costs MORE than the pair of jeans featured in the graph above?

A $y = 50x$

B $y = 25x$

C $y = \frac{1}{25}x$

D $y = \frac{1}{50}x$

25. Which statement about the following system of equations is true?

$$\begin{cases} 2x - y = 3 \\ 2x + 3y = 15 \end{cases}$$

A The ordered pair (2, 1) is a point on the graph of $2x - y = 3$, so (2, 1) is a solution of the system.

B The ordered pair (6, 1) is a point on the graph of $2x + 3y = 15$, so (6, 1) is a solution of the system.

C The graphs of both equations intersect at (3, 3), so (3, 3) is the solution of the system.

D The system of equations has two solutions: $x = 3$ and $y = 3$.

GO ON

26. **Consider the two functions below.**

Function 1: $y = -35x - 100$

Function 2:

x	0	1	2	3	4	5
y	100	135	170	205	240	275

Which statement comparing the two functions is NOT true?

A Function 1 and Function 2 have the same rate of change.

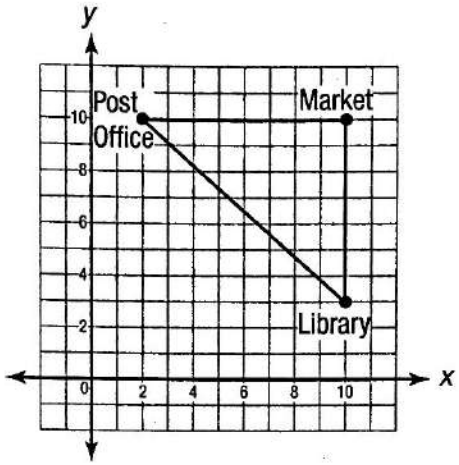
B The rate of change of Function 2 is constant.

C The rate of change of Function 1 is -35.

D The graph of Function 1 is a line, so its rate of change is the slope of the line.

GO ON

27. Mara lays a square grid over a map of the city she lives in, as shown below. Each square represents 1 square mile.



Part A:
What is the distance to the nearest tenth of a mile from the post office directly to the library?

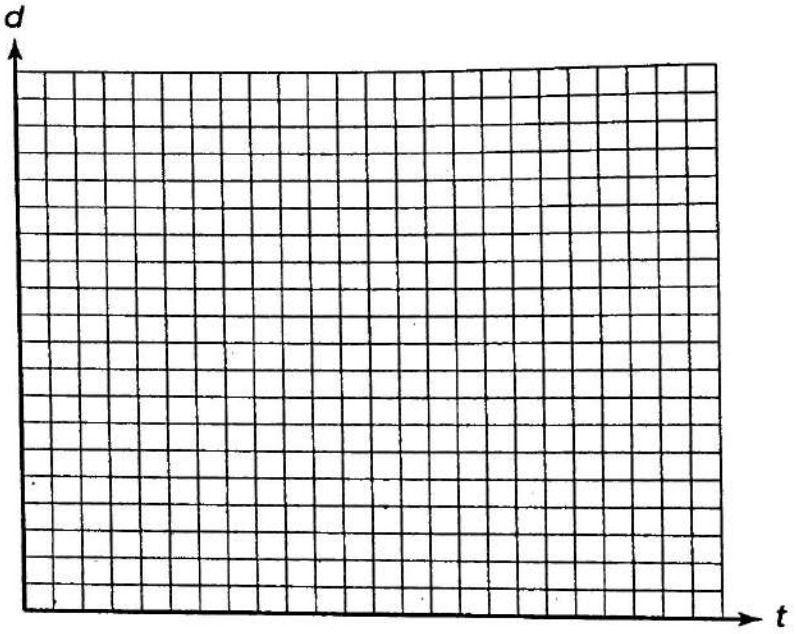
Part B:
How much farther is the distance from the post office to the library with a stop at the market, than directly from the post office to the library?

GO ON

28. **The table shows the relationship between how long a car travels and the distance it covers.**

Time (hr)	2.5	1.75	0.5	4.3	3.75	5.1	0.75	3.2	1.5
Distance (mi)	163	105	34	271	263	352	46	208	95

Part A:
Make a scatter plot of the data pairs (time, distance).



Part B:
Draw a trend line that shows the correlation between the two sets of data. How well does the line fit the data? Explain.

GO ON

29. The projected population of the town of Springfield over time is shown in the table below.

Year	10	15	20	25	30	35
Population	25,000	28,000	31,000	34,000	37,000	40,000

Part A:
Is the relation given in the table above a function? Explain your reasoning.

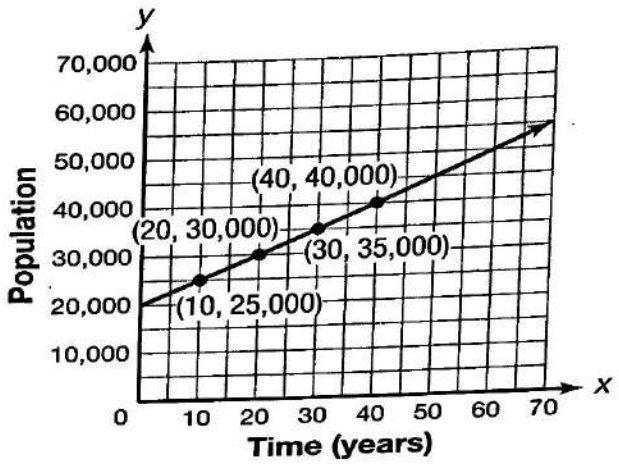
Lucy says that the equation $y = 600x + 25{,}000$ represents the relation given in the table above, where x represents the year and y represents the population of Springfield. Lucy is incorrect.

Part B:
Explain why Lucy must be incorrect. What error did Lucy make?

GO ON

29. *Continued.* Please refer to the previous page for task explanation.

Part C:
The projected population of the town of Hanson over time is shown in the graph below.



Which town, Springfield or Hanson, has the greater rate of change? Show your work and explain your reasoning.

Part D:
What does the rate of change mean in terms of the problem situation?

STOP

Section 2

30. **Triangle *ABC* has 2 angles that measure 47° and 64°. Which equation can be used to find the third angle?**

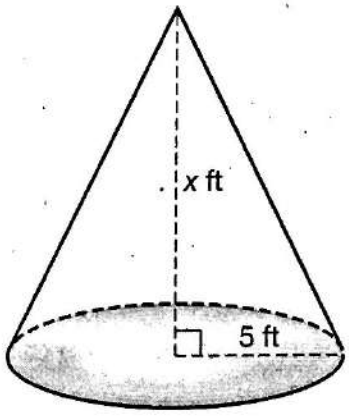
A $180° - 47° + 64°$

B $(180° - 47° + 64°) \div 2$

C $180° - (47° + 64°)$

D $360° - 47° - 64°$

31. **The volume of the cone is 75π cubic feet. What is the value of x?**



A 1

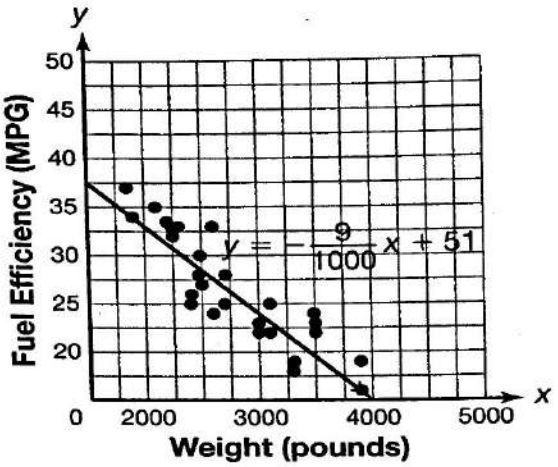
B 3

C 9

D 45

GO ON

32. **The line of best fit in the scatter plot below models the relationship between the weight of a car and the car's fuel efficiency in miles per gallon (MPG).**



Which statement BEST describes the slope of the line of best fit in terms of the situation?

A For each 1000-pound increase in the weight of a car, there is a 9 mile-per-gallon loss in fuel efficiency.

B For each 1000-pound increase in the weight of a car, there is a 9 mile-per-gallon gain in fuel efficiency.

C For each 9-pound increase in the weight of a car, there is a 1000 mile-per-gallon loss in fuel efficiency.

D For each 9-pound increase in the weight of a car, there is a 1000 mile-per-gallon gain in fuel efficiency.

GO ON

33. In a poll, students were asked whether they were left-handed or right-handed and whether they preferred Language Arts or math class. The results are shown in the two-way table below.

	Left-Handed	Right-Handed	TOTAL
Language Arts	3	73	76
Math	12	62	74
TOTAL	15	135	150

Which of the following statements is NOT true?

A About 74% of the students polled prefer math class.

B Ten percent of the students polled are left-handed.

C Of the students who are left-handed, 80% prefer math class.

D There is an association between being left-handed and preferring math class.

34. A soup can in the shape of a cylinder is 11.2 centimeters high with a diameter of 8.45 centimeters. To the nearest cubic centimeter, how much soup will the can hold when it is full?

A 149 cm^3

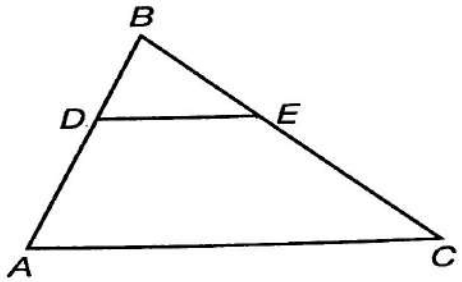
B 200 cm^3

C 628 cm^3

D 2512 cm^3

GO ON

35. **Sara says that $\triangle ABC$ is similar to $\triangle DBE$.**



What reason proves that she is correct?

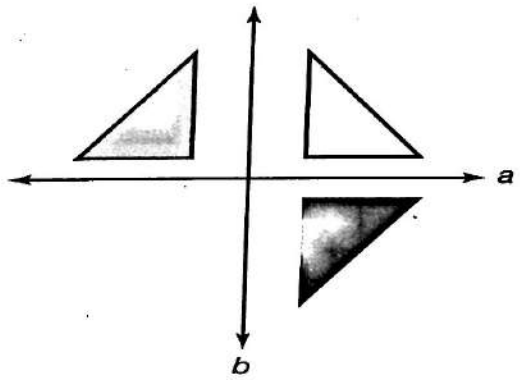
A $m\angle B = m\angle B$, and $m\angle BDE = m\angle A$

B $m\angle A = m\angle C$, and $m\angle BED = m\angle C$

C $m\angle A + m\angle B + m\angle C = 180°$

D $m\angle EDA + m\angle A = 180°$, and $m\angle DEB < 180°$

36. **Which type(s) of transformation could map the black triangle onto the white triangle, and the white triangle onto the gray triangle?**



A a reflection over line *a*

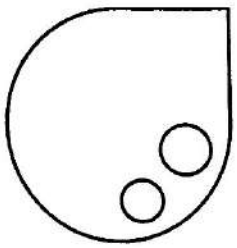
B a reflection over line *b*

C a reflection over line *a*, followed by a reflection over line *b*

D a reflection over line *b*, followed by a translation over line *a*

GO ON

37. **Michael is using computer software to design a new logo for his company. He starts with the figure below. Next he translates it down and to the left before rotating it 180° clockwise.**



What conclusion can be drawn about the image logo?

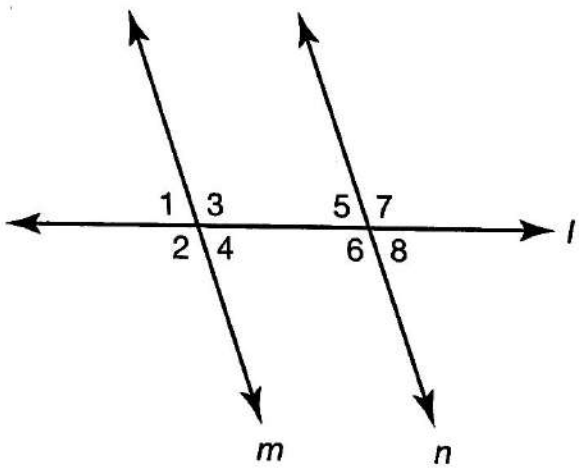
A The image will be congruent to the original logo because a sequence of rigid transformations was used to obtain it.

B The image will be congruent to the original logo because an even number of transformations was applied to the original logo.

C The image will be congruent to the original logo because a dilation was used to obtain the image.

D The image will not be congruent to the original logo because two transformations were applied to the original logo.

38. **Lines *m* and *n* are parallel and are cut by transversal *l*.**



If $\angle 8 = 2x + 3$ and $\angle 3 = 3x + 2$, what is the measure of $\angle 3$?

A 70°

B 73°

C 105°

D 107°

GO ON

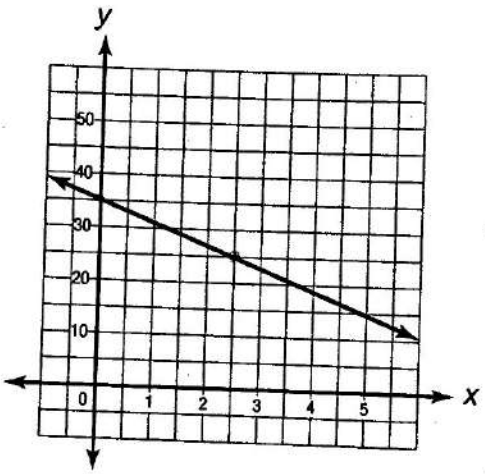
39. The temperature at sunset is 35°F. Each hour during the night, the temperature falls 4°F. Which of the following could NOT represent this situation?

A $y = 35 - 4x$

B

x	0	1	2	3	4	5
y	35	31	27	23	27	31

C



D a linear function that intersects the y-axis at (0, 35) and has a slope of -4

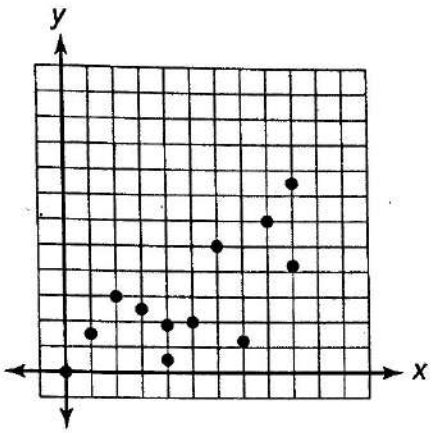
GO ON

40. Which of the following relations is a function?

A

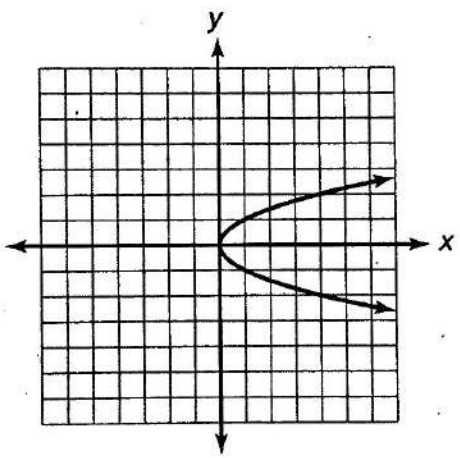
x	0	1	1	2	2
y	0	−1	1	−2	2

B



C $y = 2x + 3$

D



GO ON