

Longitudinal Study of American Youth

MATHEMATICS

(FORM T)

INTRODUCTION

This booklet contains questions about mathematics for you to answer. You will be able to answer some of the questions quickly and others will require more thought. Please do not feel discouraged if you are not absolutely sure of an answer. Some questions will ask about things you have covered in class, but others will not. Please do your best to answer each question. If you are not sure of the answer, read the question again, and make your best guess.

MARKING YOUR ANSWERS

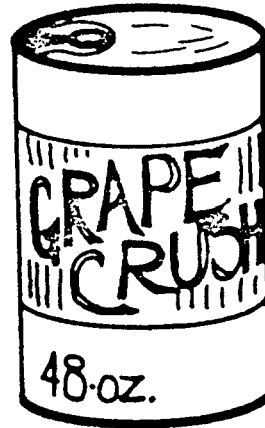
Each question is followed by a set of possible answers labeled A, B, C, etc. Read each question carefully, then choose the *one* answer you think is the best, and darken in the letter on your *Answer Sheet* next to the number for that question. Be sure to mark only *one* letter for each question. Do not skip any questions.

Do not make any stray marks on your *Answer Sheet*. Do all of your calculations on the Question Booklet, and use the *Answer Sheet* only to record your answers.

If you have any questions while taking this test, raise your hand, and the person giving the test will come to your seat to help you.

1. Grape Crush costs 75¢ for one 48 ounce can. At the school carnival Joan sells cups holding 6 ounces for 15¢. How much money does the school make on each can?

- (A) \$.90
 (B) \$.60
 (C) \$1.20
 (D) \$.45
 (E) \$.15



N264301

2. According to the table below, what is the total amount of protein contained in two boiled eggs and one-half cup of whole milk?

NUTRITIVE VALUE OF CERTAIN FOODS

	Measure	Calories	Protein (grams)	Carbohydrates (grams)
Banana, raw	1	100	1	26
Beef hamburger	3 oz.	245	21	0
Whole milk	1 cup	160	9	12
Doughnut	1	125	1	16
Eggs, boiled	2 eggs	160	13	1

- (A) 30.5 grams
 (B) 22 grams
 (C) 17.5 grams
 (D) 7 grams

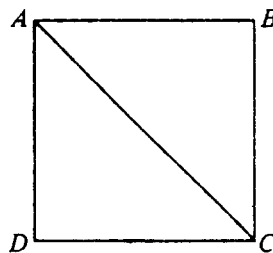
N263001

3. In a 36-unit condominium there are only 2-bedroom units and 3-bedroom units. If t represents the number of 2-bedroom units, which of the following represents the total number of bedrooms in the condominium?

- (A) $36t + 36$
 (B) $2t + 3(36 - t)$
 (C) $t(2 + 3) + 36$
 (D) $3 \times 36 - 2t$

N208901

4.

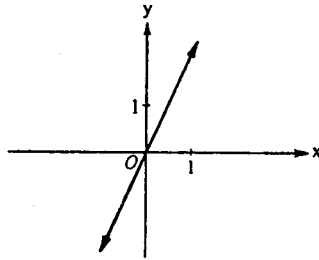


The area of square ABCD is 100 square centimeters. Which is true of the length of diagonal AC?

- (A) It is equal to 10 centimeters.
 (B) It is greater than 10 centimeters.
 (C) It is less than 10 centimeters.
 (D) It cannot be determined from the information given.

N226201

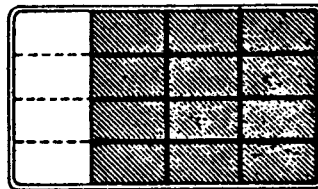
5. Which of the following is most likely represented by the graph below?



- (A) $y = \frac{1}{2}x$ (C) $y = 2x$
 (B) $y = x + 2$ (D) $y = x^2$

N230001

6. Joan and Joe told their mother that part of the chocolate cake had disappeared. Joan said, "Look, $\frac{4}{16}$ of the cake has disappeared!" Joe said, "No, only $\frac{1}{4}$ of the cake is gone." Which of the following is true?



- (A) Joan is correct and Joe is wrong. (C) Both Joan and Joe are right.
 (B) Joe is correct and Joan is wrong. (D) Both Joan and Joe are wrong.

N201801

7. $3\frac{1}{5} =$

- (A) $3 \div \frac{1}{5}$ (B) $3 - \frac{1}{5}$ (C) $3 \times \frac{1}{5}$ (D) $3 + \frac{1}{5}$

N230201

8. It is approximately 90,000,000 miles from the Earth to the Sun. Which is the correct scientific notation for this distance?

- (A) 9×10^7 (C) 90×10^6
 (B) 9×10^8 (D) 90 million $\times 10^7$

N201101

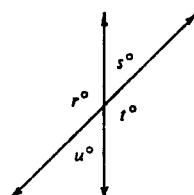
9. A cooking instructor estimates that he uses 6 dozen eggs each month. At that rate about how many eggs does he use in one year?

- (A) 70 (C) 1,200
 (B) 800 (D) 2,500

N206701

10. For the figure below, which of the following must be true?

- I. $r = t$
 II. $s = u$
 III. $s + t = 180$



- (A) I only (C) I and II only
 (B) III only (D) I, II, and III

N213601

11. A plumber charges customers \$18 for each hour worked plus an additional \$9 for travel. If C represents the total charge and h the number of hours worked, which formula could be used to calculate the plumber's total charge in dollars?

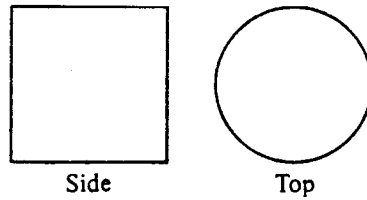
(A) $C = 18 + 9 + h$
 (B) $C = 18 \times 9 + h$

(C) $C = 18 \times 9 + h$
 (D) $C = 18 \times h + 9$

(E) $C = 18 \times 9 h$

N255101

12.

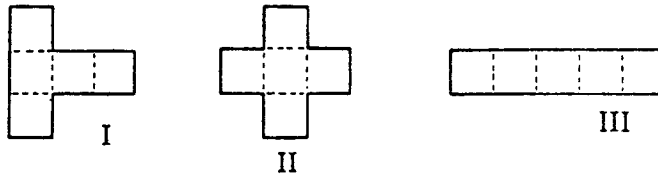


A geometry solid is viewed from the side and from the top. Those views are shown above. What could the solid be?

- (A) Cone
 (B) Cylinder
 (C) Sphere
 (D) Cube

N212701

13. Which of the patterns below can be folded along the dotted lines to form an open box in the shape of a cube with a bottom but no top?



- (A) II only
 (B) I and II only
 (C) I and III only
 (D) I, II, and III

N232001

14.

TRAFFIC VOLUME SURVEY	
Time Period	Tally
9:00- 9:15	
9:15- 9:30	
9:30- 9:45	
9:45-10:00	
12:00-12:15	
12:15-12:30	
12:30-12:45	
3:00- 3:15	

The chart above shows the number of cars passing a certain highway marker in a given period of time. What is the total number of cars passing the marker from 12:00 to 12:45?

- (A) 10
 (B) 15
 (C) 29
 (D) 39

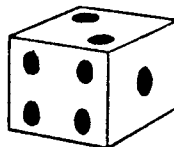
N224401

15. In $\triangle ABC$, $AB = BC$. Which of the following must be true?

- (A) $m\angle A + m\angle C = 90^\circ$
 (B) $m\angle A = m\angle C$
 (C) $m\angle A > m\angle B$
 (D) $m\angle C < m\angle B$

N213501

16.



Scott rolls a number cube with 1, 2, 3, 4, 5, and 6 dots on its faces. What is the probability of Scott NOT getting a 4 on his roll?

- (A) 0
 (B) $\frac{1}{6}$
 (C) $\frac{2}{6}$
 (D) $\frac{3}{6}$
 (E) $\frac{4}{6}$
 (F) $\frac{5}{6}$

N262802

Questions 17-18. The formula for the relationship between Fahrenheit and Celsius temperatures is $F = \frac{9}{5}C + 32$, where C is degrees Celsius and F is degrees Fahrenheit.

17. For every increase of one degree Celsius, what is the corresponding increase in degrees Fahrenheit?

- (A) 1 (C) $33\frac{4}{5}$ (E) $\frac{5}{9}$
 (B) 32 (D) $\frac{9}{5}$

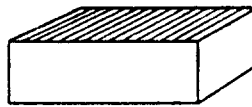
N255901

18. What is C when F = 122?

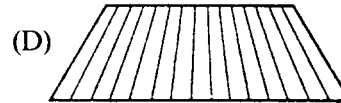
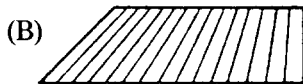
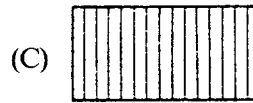
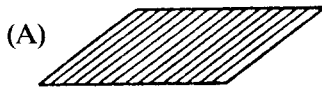
- (A) 50 (C) $85\frac{5}{9}$ (E) $251\frac{3}{5}$
 (B) $67\frac{7}{9}$ (D) 162

N255902

19. This is a picture of a block of wood.



If you looked straight down at the top of the block of wood shown above, what shape would you see?



N215001

20. $\frac{+10}{-5} =$

- (A) +2 (C) +5 (E) $-\frac{1}{2}$
 (B) -2 (D) $+\frac{1}{2}$

N286502

21. The number of tomato plants (t) is twice the number of pepper plants (p). Which equation best describes the sentence above?

- (A) $t = 2p$ (C) $t = 2 + p$
 (B) $2t = p$ (D) $2 + t = p$

N208601

22.

•Matt

•Ann

•P

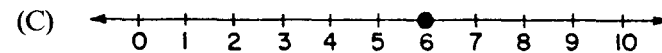
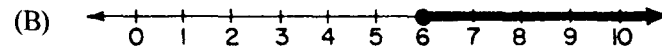
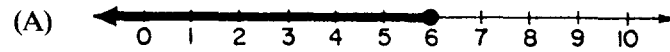
•Raúl

The teacher put a dot on the chalkboard and marked it P. Then she asked three children to measure 2 centimeters from P and put a dot. The picture shows where the children put their dots. If 20 children measured and each put a different dot, the picture would look most like a

- (A) circle (C) square
 (B) rectangle (D) triangle

N234901

23. If x is a real number, which one of the following is the graph of the solution of $3x \geq 18$?



N271401

24. Which of the following procedures will give the average grade for the test scores given below?

Score	A = 4	B = 3	C = 2	D = 1	F = 0
Frequency	8	7	0	3	5

(A) $\frac{4 + 3 + 2 + 1 + 1}{18}$

(B) $\frac{(8 \times 4) \times (3 \times 7) \times (2 \times 0) \times (1 \times 3) \times (0 \times 5)}{23}$

(C) $\frac{(8 \times 4) + (7 \times 3) + (0 \times 2) + (3 \times 1) + (5 \times 0)}{23}$

(D) $\frac{(4 \times 8) + (3 \times 7) + (3 \times 1)}{18}$

N225301

25. Larry says that $n^2 \geq n$ for all real numbers. Of the following, which value of n shows the statement to be FALSE?

(A) $-\frac{1}{2}$

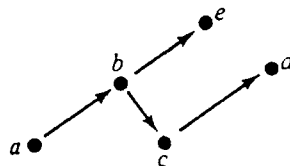
(C) $\frac{1}{10}$

(B) 0

(D) 1

N220801

26.



The letters in the diagram above represent numbers. If $\begin{matrix} \bullet & \longrightarrow & \bullet \\ & x & y \end{matrix}$

means $x < y$, which of the following is NOT necessarily true?

(A) $b > d$

(C) $a > d$

(B) $e > d$

(D) $a > c$

N220701

27.

If G, then H.
 If H, then K.
 If K, then L.
 L is NOT true.

According to the information above, which of these are FALSE?

- (A) K only (C) K and L only
 (B) L only (D) G, H, K, and L
- N221601

28. What is the distance all the way around a rectangle that is 8 meters long and 5 meters wide?

- (A) 13 meters (C) 40 meters
 (B) 26 meters (D) 80 meters
- N252001

29. A theorem of geometry states that “the sum of the angles of a triangle is 180 degrees.” This statement is called a theorem because

- (A) it has been proved using the definitions and axioms of geometry.
 (B) it has been demonstrated by measuring the angles of many triangles.
 (C) it is true, but it cannot be proved.
 (D) it is assumed true without proof.
- N228701

30. Christine borrowed \$850 for one year from the Friendly Finance Company. If she paid 12% simple interest on the loan, what was the total amount she repaid?

- (A) \$862 (C) \$10,200
 (B) \$102 (D) \$952
- N279301

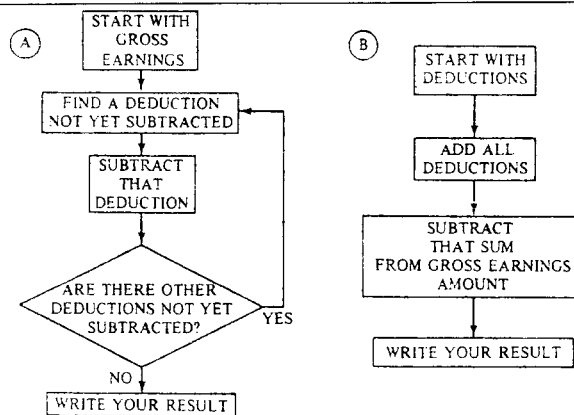
31. SIMPLIFY. $3 - 5(4 - x)$

- (A) $-8 + 2x$ (C) $-17 + 5x$
 (B) $-8 - 2x$ (D) $-17 - 5x$
- N270702

32. The area of a rectangle is 24, and the measures of its length and width are whole numbers. Which of the following are NOT possible dimensions for the rectangle?

- (A) $L = 8, W = 3$ (C) $L = 6, W = 4$
 (B) $L = 12, W = 12$ (D) $L = 24, W = 1$
- N218501

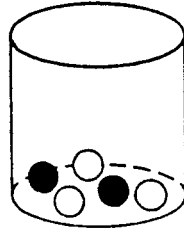
33.



Which of the procedures above can be used to figure out net earnings?

- (A) A only (C) A or B
 (B) B only (D) Neither A nor B
- N230401

34.



The jar shown above contains 2 black and 3 white marbles. Al picks one marble without looking. What is the probability that he picks a black marble?

(A) $\frac{1}{5}$

(B) $\frac{2}{5}$

(C) $\frac{2}{3}$

(D) 5

N221901

35. The perimeter of a square is 24 centimeters. What is the area of that square?

(A) 36 square cm

(B) 48 square cm

(C) 96 square cm

(D) 576 square cm

N268901

36. The number 1.875 is used as an approximation of 1.8746. The number 1.8746 was rounded to the nearest

(A) thousand

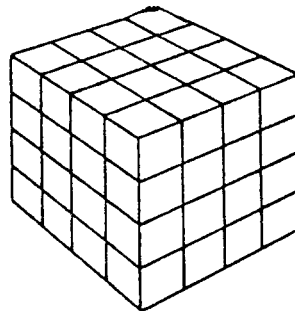
(B) hundredth

(C) ten thousandth

(D) thousandth

N200201

37.



A pile of cubes 1 inch by 1 inch by 1 inch are glued together to make the block pictured above. How many of the original small cubes are completely hidden inside the big block?

(A) 8

(B) 9

(C) 16

(D) 27

N215101

38. Allen's batting average is 0.425. What is his batting average as a percent?

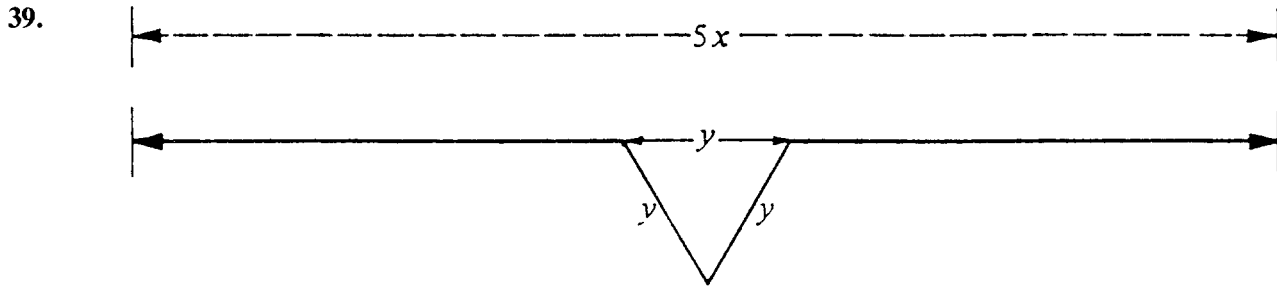
(A) 0.0425%

(B) 4.25%

(C) 42.5%

(D) 425%

N202501



Which one of the following is a formula for L, the length of the solid line?

- (A) $L = 5x - 2y$ (C) $L = 5x + y$ (E) $L = 5x + 3y$
 (B) $L = 5x - y$ (D) $L = 5x + 2y$

N269401

40. ESTIMATE.



- (A) \$6 (C) \$12 (E) \$25
 (B) \$7 (D) \$15

N261601

41. Jane has seven fewer cookies than Keri. If C represents the number of cookies Jane has, which expression describes the number of cookies Keri has?

- (A) $C + 7$ (C) $7 - C$
 (B) $C - 7$ (D) $C \div 7$

N208501

42. Dawn has 3 skirts and 5 blouses. How many different skirt-blouse outfits can she make with these?

- (A) 3 (B) 5 (C) 8 (D) 15

N223301

43. If $7(t - 5) = \square - 35$, what is \square ?

(A) $2t$

(B) $7t$

(C) $t7 - 35$

(D) 30

N209401

44. 7 is what percent of 175?

(A) 4%

(B) 12.25%

(C) 25%

(D) 40%

N278904

45. In each number sentence above, the \circ represents an operation on the two given numbers. According to the pattern, what is $11 \circ 10$?

(A) 24

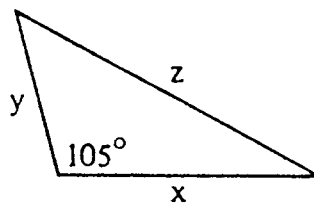
(B) 31

(C) 32

(D) 37

N219701

46.



In the triangle above, x , y , and z represent the lengths of the sides. Which of the following correctly expresses the relationship among those sides?

(A) $z = x + y$

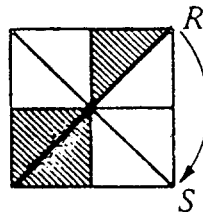
(B) $z^2 > x^2 + y^2$

(C) $z^2 < x^2 + y^2$

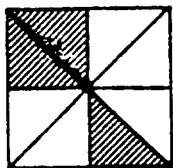
(D) $z^2 = x^2 + y^2$

N233101

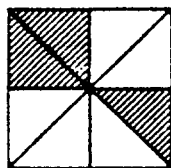
47.



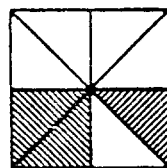
If you turn the square figure shown above about its center so that the corner labeled R ends up at S , which diagram shows what the figure will look like?



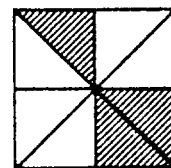
(A)



(B)



(C)



(D)

N226401

48. Which of the following are equivalent equations?

(A) $x + 2 = 9$ and $x - 2 = 9$

(B) $y - 3 = 7$ and $y + 5 = 15$

(C) $z - 6 = 3$ and $z = 3$

(D) $1 + 2 = w$ and $w + 1 = 2$

N209301

49. If x is less than 9, which one of the following **MUST** be true about $x + 5$?

- (A) It is less than 4.
- (B) It is less than 5.
- (C) It is less than 14.
- (D) It is greater than 5.

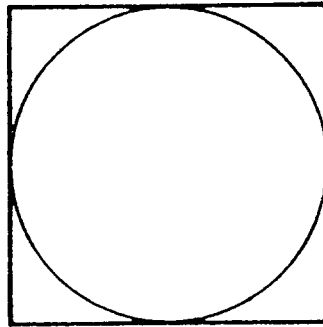
N255302

50. One liter is how many milliliters?

- (A) 10
- (B) 100
- (C) 1000

N265901

51.



The length of a side of this square is 6. What is the radius of the circle?

- (A) 2
- (B) 3
- (C) 4
- (D) 6
- (E) 8
- (F) 9

N251701

52. If a triangle has two equal sides, what can you say about the angles of the triangle?

- (A) Two angles must be equal.
- (B) One angle must be a right angle.
- (C) Two angles must be 45 degree angles.
- (D) All three angles must be equal.

N264601

53. If you add the page numbers for two facing pages in a book, the sum is 89. What is one of the page numbers?

- (A) 40
- (B) 44
- (C) 89
- (D) Any of the above

N203201

54. A coin is tossed and a die is rolled. What is the probability that the coin comes up heads and the die comes up 3?

- (A) $\frac{1}{12}$
- (B) $\frac{1}{8}$
- (C) $\frac{1}{5}$
- (D) $\frac{6}{12}$

N223001

55. $\frac{-15}{-5} =$

- (A) +3
 (B) -3
 (C) -5

- (D) +5
 (E) -20

N236501

56.

MUSICAL FAVORITES	
SINGERS	NUMBER OF VOTES
Michael Jackson	20
Diana Ross	10
Julio Iglesias	10
Willie Nelson	5
Culture Club	5

According to the chart above, what percent of all the votes went to Michael Jackson?

- (A) 20%
 (B) 40%

- (C) 50%
 (D) $66\frac{2}{3}\%$

N204401

57. It took 3 games for a basketball player to score a total of 51 points. If the player keeps this scoring average, how many total points will the player have scored by the end of the seventh game?

- (A) 17
 (B) 51

- (C) 119
 (D) 153

- (E) 170
 (F) 357

N263901

58. How many square feet are there in a square yard?

- (A) 6

- (B)
- $\frac{1}{3}$

- (C) 9

- (D) 3

N266001

59. A jar contains 5 red, 6 blue, and 7 green marbles. One marble is drawn from the jar. What is the probability that the marble drawn at random is red or green?

- (A)
- $\frac{1}{12}$

- (B)
- $\frac{1}{5}$

- (C)
- $\frac{1}{2}$

- (D)
- $\frac{2}{3}$

N222501

WHEN YOU HAVE FINISHED

Please check to make sure you have marked *one* answer for each question. When you have checked your answers, place your *Answer Sheet* inside the front cover of the test booklet. All of the booklets will be collected at the same time after everyone is finished. Please sit quietly while others are completing their work.

LONGITUDINAL STUDY OF AMERICAN YOUTH

MATH TEST (FORM T)

Student's Name _____	CORRECT MARK A B C <input checked="" type="radio"/> E	<ul style="list-style-type: none"> • Use black lead No. 2 pencil. • Make heavy marks the full length of the boxes. • Make only one mark per question. • Erase cleanly any unintended marks.
	INCORRECT MARKS X O / ~ =	

PAGE 1

- 1 A B C D E
- 2 A B C D
- 3 A B C D
- 4 A B C D

PAGE 2

- 5 A B C D
- 6 A B C D
- 7 A B C D
- 8 A B C D
- 9 A B C D
- 10 A B C D

PAGE 3

- 11 A B C D E
- 12 A B C D
- 13 A B C D
- 14 A B C D
- 15 A B C D
- 16 A B C D E F

PAGE 4

- 17 A B C D E
- 18 A B C D E
- 19 A B C D
- 20 A B C D E
- 21 A B C D
- 22 A B C D

PAGE 5

- 23 A B C
- 24 A B C D
- 25 A B C D
- 26 A B C D

PAGE 6

- 27 A B C D
- 28 A B C D
- 29 A B C D
- 30 A B C D
- 31 A B C D
- 32 A B C D
- 33 A B C D

PAGE 7

- 34 A B C D
- 35 A B C D
- 36 A B C D
- 37 A B C D
- 38 A B C D

PAGE 8

- 39 A B C D E
- 40 A B C D E
- 41 A B C D
- 42 A B C D

PAGE 9

- 43 A B C D
- 44 A B C D
- 45 A B C D
- 46 A B C D
- 47 A B C D
- 48 A B C D

PAGE 10

- 49 A B C D
- 50 A B C
- 51 A B C D E F
- 52 A B C D
- 53 A B C D
- 54 A B C D

PAGE 11

- 55 A B C D E
- 56 A B C D
- 57 A B C D E F
- 58 A B C D
- 59 A B C D

FOR LSAY USE ONLY

0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9