

Longitudinal Study of American Youth

MATHEMATICS

Form (X)

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.

Public Opinion Laboratory

Northern Illinois University

DeKalb, Illinois 60115

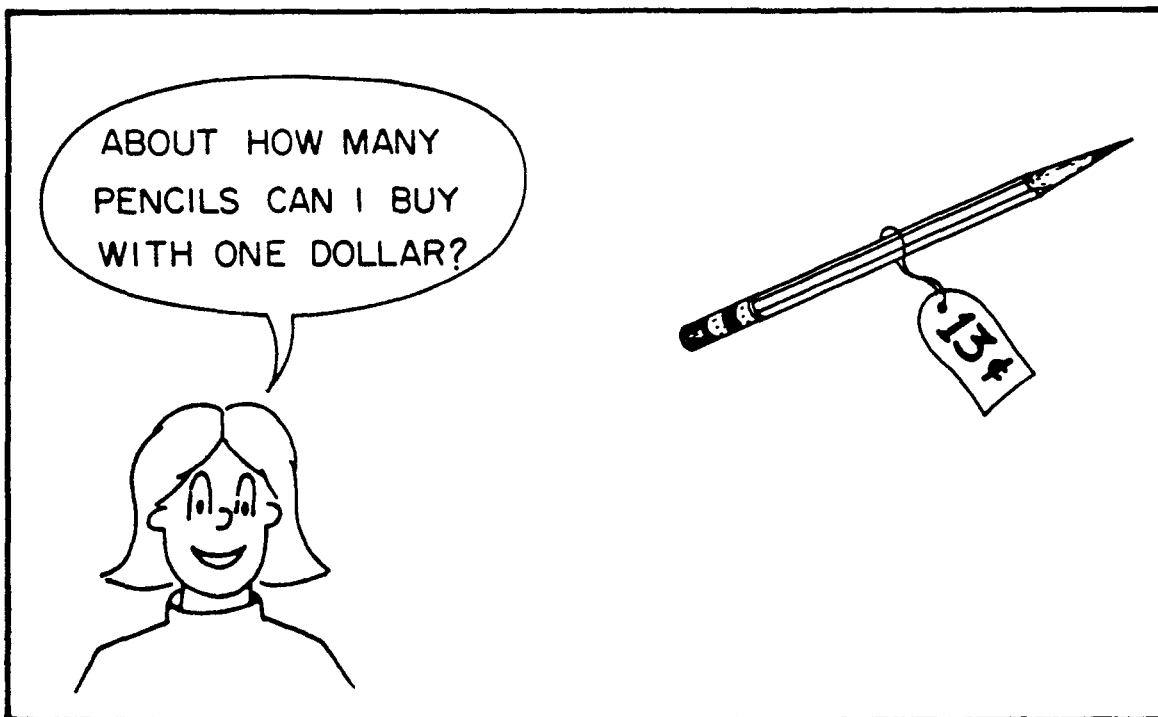
1. Here are the ages of five children:

13, 8, 6, 4, 4

What is the average age of these children?

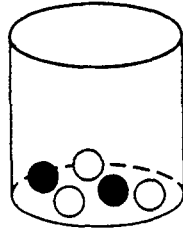
- (A) 4 (D) 8
(B) 6 (E) 9
(C) 7 (F) 13
- N263501
2. What is 8% of 25?
- (A) 2 (C) 31.25
(B) 20 (D) 200
- N278902
3. When the students in Mrs. Bird's room are put in teams of 2 or 5 or 6, there is always 1 student left over. How many students are in Mrs. Bird's room if there are fewer than 50?
- (A) 11 (C) 30
(B) 29 (D) 31
- N203601

4. ESTIMATE.



- (A) Less than 5 (D) Between 16 and 20
(B) Between 5 and 10 (E) More than 20
(C) Between 11 and 15
- N261501
5. If an object is measured to the nearest centimeter there may be some error. How large could the error be?
- (A) 0.1 centimeter (C) 1 centimeter
(B) 0.5 centimeter (D) 5 centimeters
- N216301

6.



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

7. In each number sentence below, the \circ represents an operation on the two given numbers.

$3 \circ 4 = 10$	$8 \circ 8 = 24$
$5 \circ 4 = 14$	$10 \circ 9 = 29$
$6 \circ 1 = 13$	$16 \circ 2 = 34$

According to the pattern, what is $11 \circ 10$?

- (A) 24
- (B) 31
- (C) 32
- (D) 37

N219701

8. 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

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



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

- (A) 
- (B) 
- (C) 
- (D) 

N215001

10.

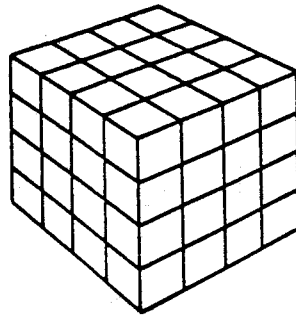
$$4 \times \square = \square \text{ and } \square \times 3 = \square$$

The same number must go in each box above. What number would make both sentences true?

- (A) 0
- (B) 1
- (C) 3
- (D) 4

N206801

11.



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 (C) 16
(B) 9 (D) 27

N215101

12. Carol buys a ball for 55 cents and a game for 37 cents. How much change does she get back from \$1.00?

- (A) 8¢ (D) 63¢
(B) 18¢ (E) 92¢
(C) 45¢

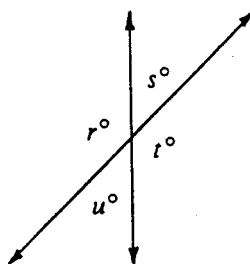
N268201

13. Find the quotient: $\frac{-15}{-5} =$

- (A) +3 (D) +5
(B) -3 (E) -20
(C) -5

N286501

14.



For the figure above, 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

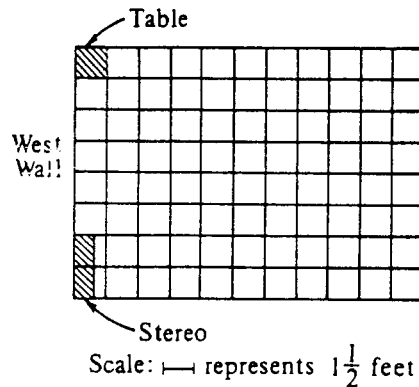
N213601

15. The temperature at noon was 10° . In the afternoon, the temperature dropped 4° . By midnight, the temperature dropped 14° more. What was the temperature at midnight?

- (A) 28° (C) -8°
(B) 0° (D) -18°

N204701

16.



The scale drawing above shows the floor plan of a living room. A sofa is to be placed along the west wall between the table and the stereo. What is the maximum length for the sofa?

- (A) 5 feet
- (B) $6\frac{1}{2}$ feet
- (C) $7\frac{1}{2}$ feet
- (D) 8 feet

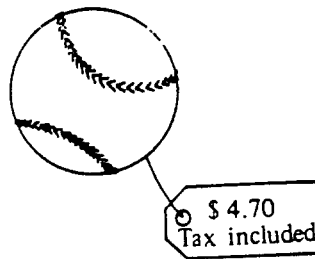
N232901

17. 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
- (B) 800
- (C) 1,200
- (D) 2,500

N206701

18.



Which is the smallest bill that is enough to pay for 4 baseballs?

- (A) Five-dollar bill
- (B) Ten-dollar bill
- (C) Twenty-dollar bill
- (D) Fifty-dollar bill

N206601

19. Carlos' basketball team won 75% of its games last season. If they played 80 games, how many games did they win?

- (A) 20
- (B) 60
- (C) 68
- (D) 75

N259901

20. Here are some clues about the number N. N is less than 20. You say the number N when you count by 3. You say the number N when you count by 5. Which is the number?

- (A) 6
- (B) 12
- (C) 15
- (D) 30

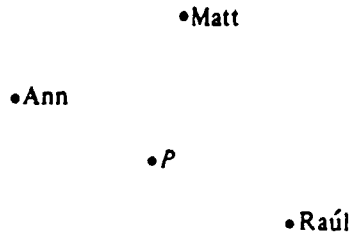
N207401

21. Change .35 to a percent.

- (A) 0.35% (B) 3.5% (C) 35% (D) 350%

N274801

22. 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.

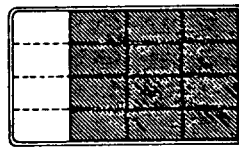


If 20 children measured and each put a different dot, the picture would look most like a

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

N234901

23.

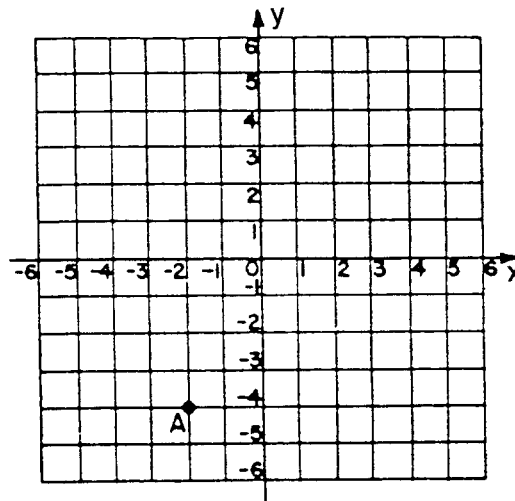


Joan and Joe told their mother that part of the chocolate cake had disappeared. Joan said, “Look, $\frac{4}{16}$ of the cake has disappeared!” Joe said, “No, only $\frac{1}{4}$ of the cake is gone.” Which of the following is true?

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

N201801

24.



What are the coordinates of point A?

- (A) (2,4) (B) (-4,-2) (C) (-2,4) (D) (2,-4) (E) (-2,-4)

N282701

25. A taxi driver estimates that she drives about 200 miles a day. If she drives every day of the week, about how many miles does she drive in one week?

- (A) 1,000 miles
- (B) 2,000 miles
- (C) 3,000 miles
- (D) 10,000 miles

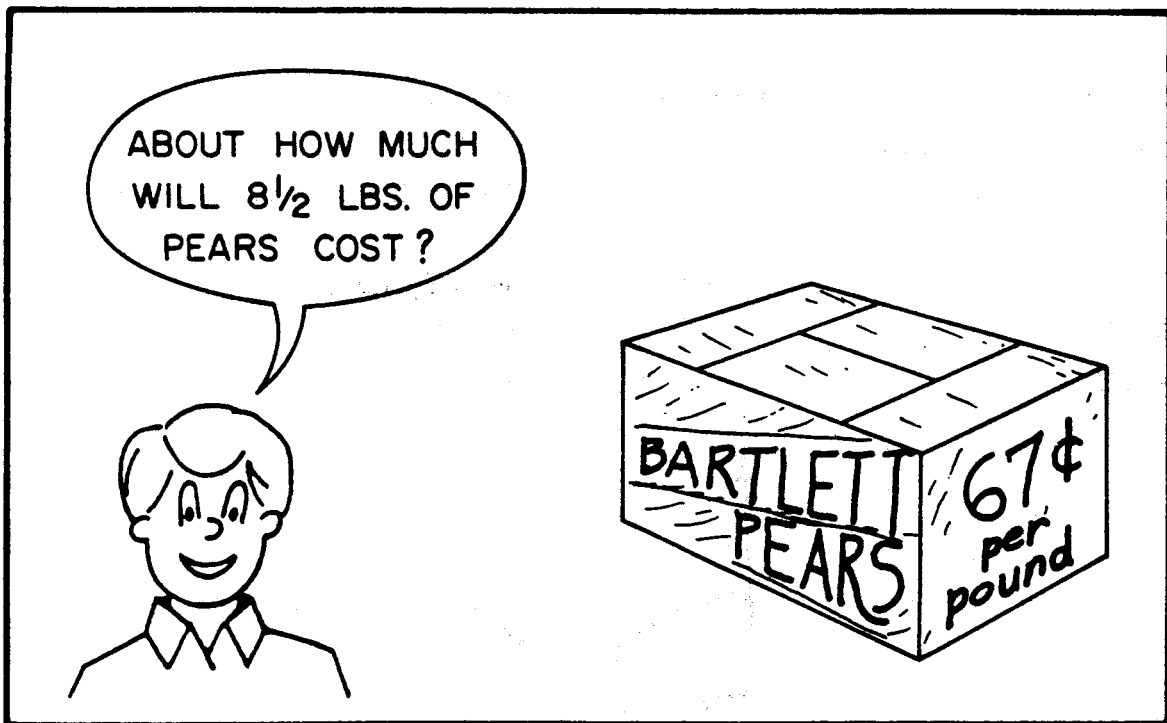
N206501

26. On the average, a baby's head is one-fourth the total length of the baby. If a baby's head is 10 centimeters long, about how long is the baby?

- (A) 2.5 cm
- (B) 14 cm
- (C) 24 cm
- (D) 40 cm

N207801

27. ESTIMATE.



- (A) \$6
- (B) \$9
- (C) \$50
- (D) \$60
- (E) \$90

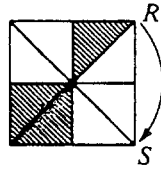
N281401

28. Find the quotient: $\frac{+10}{-5} =$

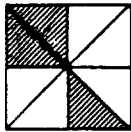
- (A) +2
- (B) -2
- (C) +5
- (D) $\frac{+1}{2}$
- (E) $\frac{-1}{2}$

N286502

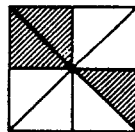
29.



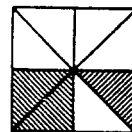
If you turn the square figure shown above about its center so that the corner labeled *R* ends up at *S*, which diagram shows what the figure will look like?



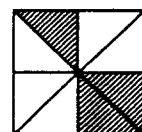
(A)



(B)



(C)



(D)

N226401

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

(A) Two angles must be equal.

(C) Two angles must be 45 degree angles.

(B) One angle must be a right angle.

(D) All three angles must be equal.

N264601

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

(A) 0.0425%

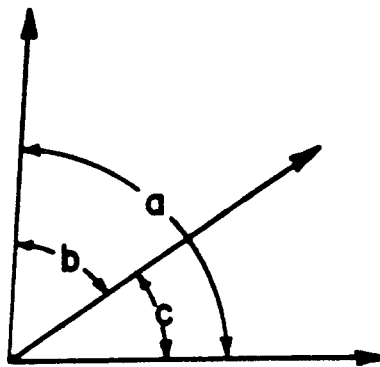
(C) 42.5%

(B) 4.25%

(D) 425%

N202501

32.



If angle *a* measures 85° and angle *b* measures 52° , what does angle *c* measure?

(A) 33°

(C) 137°

(B) 38°

(D) Not enough information given

N254301

33.

$$61 + 42 + 57 + 46 + \square = 250$$

Which of the following is closest to the number that goes in the box?

(A) 25

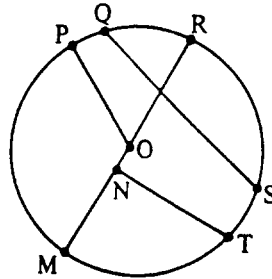
(C) 75

(B) 50

(D) 100

N261001

► Questions 34-36 refer to the following figure.



34. Which of the following is a diameter of the circle?

- (A) \overline{OP}
- (B) \overline{QS}
- (C) \overline{RM}
- (D) \overline{NM}

N212901

35. Which of the following is a radius of the circle?

- (A) \overline{OP}
- (B) \overline{QS}
- (C) \overline{RM}
- (D) \overline{NT}

N212902

36. Which points are the end points of an arc?

- (A) O, P
- (B) Q, S
- (C) N, T
- (D) N, M

N212903

37. One kilogram is how many grams?

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

N265903

38. 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
- (B) 9×10^8
- (C) 90×10^5
- (D) 90 million $\times 10^7$

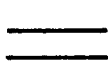
N201101

39. $3\frac{1}{5} =$

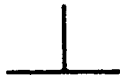
- (A) $3 \div \frac{1}{5}$
- (B) $3 - \frac{1}{5}$
- (C) $3 \times \frac{1}{5}$
- (D) $3 + \frac{1}{5}$

N230201

43. Which of the drawings below shows PERPENDICULAR LINES.



(A)



(B)



(C)



(D)

N254602

44. Which one of the following is the LARGEST unit of measurement?

(A) centimeter

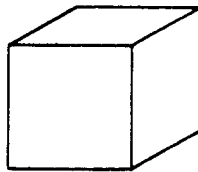
(C) meter

(B) kilometer

(D) millimeter

N266101

45.



A blade slices completely through the wooden cube shown above. Which figure CANNOT be a surface resulting from the slice?

(A)



(C)



(B)



(D) All the figures could be the sliced surfaces.

N229801

46. ESTIMATE.



(A) \$6

(D) \$15

(B) \$7

(E) \$25

(C) \$12

N261601

47. A penny was tossed 20 times. Which of the following is most likely to be the number of times heads came up?
- (A) 0 (D) 9
(B) 2 (E) 19
(C) 5

N285701

48. Which of the following is closest to the height of the door to your classroom?
- (A) 1 foot (C) 12 feet
(B) 7 feet (D) 36 feet

N266801

► Questions 49-50 refer to the following.

John won $\frac{5}{8}$ of the games he played, Ted won $\frac{3}{4}$, Jim won $\frac{9}{16}$, and Rocky won $\frac{2}{3}$.

49. Which of the players had the best record?
- (A) John (C) Jim
(B) Ted (D) Rocky
50. Which of the players had the worst record?
- (A) John (C) Jim
(B) Ted (D) Rocky

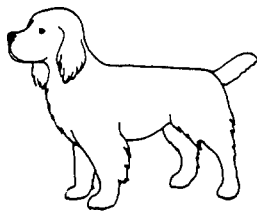
N201401

N201402

51. One gram is how many milligrams?
- (A) 10
(B) 100
(C) 1000

N265902

52.



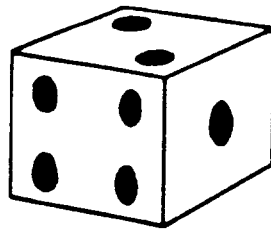
Gretchen

- Two months ago Gretchen weighed 33 kilograms. Then she gained 7 kilograms and had to go on a diet. She lost 4 kilograms. How many kilograms does she weigh now?
- (A) 44 (C) 36
(B) 40 (D) 27
53. Ten students paid a total of \$56 for tickets to the zoo. Which shows how to find how much each ticket cost?
- (A) $\$56 \times 10$ (C) $\$56 + 10$
(B) $\$56 \div 10$ (D) $\$56 - 10$

N219101

N205001

► Questions 54-56 refer to the following picture.



54. Scott is rolling a number cube with 1, 2, 3, 4, 5 and 6 dots on its faces. What is the probability of Scott getting a 4 on his next roll?

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

N262801

55. Scott rolls the number cube again. What is the probability of Scott NOT getting a 4 on this roll?

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

N262802

56. Scott rolls five 5's in a row. What is the probability of getting a 5 on his next roll?

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

N262803

57. Which of the following is closest to the height of the door to your classroom?

- (A) 1 meter
- (B) 2 meters
- (C) 4 meters
- (D) 7 meters

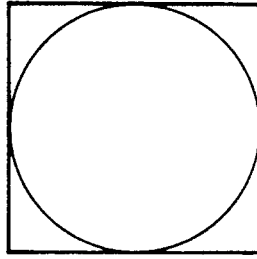
N266701

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

- (A)
- (B)
- (C)

N271401

59.



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

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

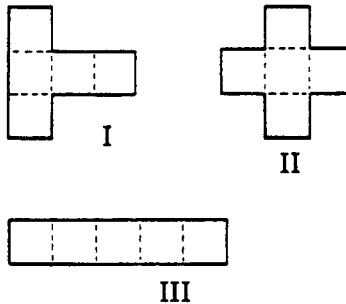
N251701

60. 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 (C) 89
 (B) 44 (D) Any of the above

N203201

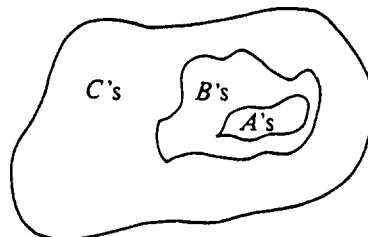
61. Which of the patterns below can be folded along the dotted lines to form an open box in the shape of a cube with a bottom but no top?



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

N232001

62.




Which two of the following may be concluded from this diagram?

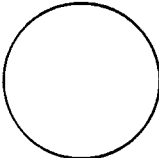
- I. All B's are A's
 II. All A's are C's
 III. Some B's are A's
 IV. No B's are C's
- (A) I and III only (C) II and III only
 (B) I and IV only (D) II and IV only

N220401

63. 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 (D) 153
(B) 51 (E) 170
(C) 119 (F) 357
- N263901

- 64.
- 

Side



Top
- A geometry solid is viewed from the side and from the top. Those views are shown above. What could the solid be?
- (A) Cone (C) Sphere
(B) Cylinder (D) Cube
- N212701

65. 7 is what percent of 175?
- (A) 4% (C) 25%
(B) 12.25% (D) 40%
- N278904

66. Karen used her hand calculator to divide 9 by 4. She got 2.25 for an answer. This number is between which of the following pairs of numbers?
- (A) 1 and 2 (C) $2\frac{1}{2}$ and 3
(B) 2 and $2\frac{1}{2}$ (D) 3 and $3\frac{1}{2}$
- N257901

67. Which of the following sets CANNOT be measures in degrees of the interior angles of a triangle?
- (A) 60, 60, 60 (D) 100, 50, 40
(B) 90, 45, 45 (E) 150, 15, 15
(C) 90, 80, 10
- N253202

68. Bill made the lowest score on the test. He only got 27 points. The teacher said the class mean was 63 and the range was 61. Jane made the highest score on the test. What score did Jane make?
- (A) 61 (C) 88
(B) 63 (D) 90
- N225601

GO TO THE NEXT PAGE

ABOUT THIS TEST

Please answer the following questions after you have completed this test. Record your answers in the box at the end of the answer sheet.

- A. How much of the material covered on this test has been taught in your classes?
- B. How difficult was this test for you?
- C. How well do you think you did on this test?
- D. How hard did you work to do well on this test?

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.

