

# Longitudinal Study of American Youth

## MATHEMATICS

### (Form E)

#### 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.

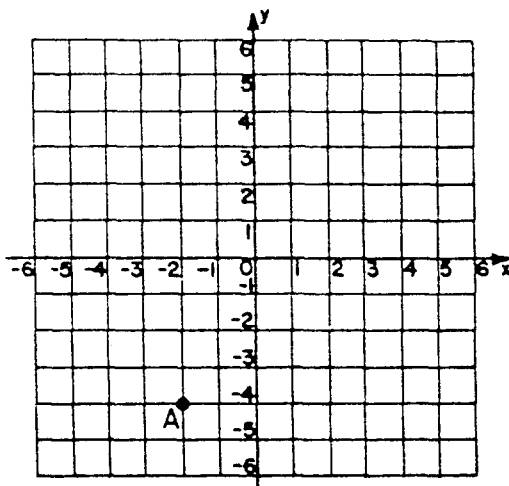
#### MARKING YOUR ANSWERS

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. Look at the graph, then answer the question below.



What are the coordinates of point A?

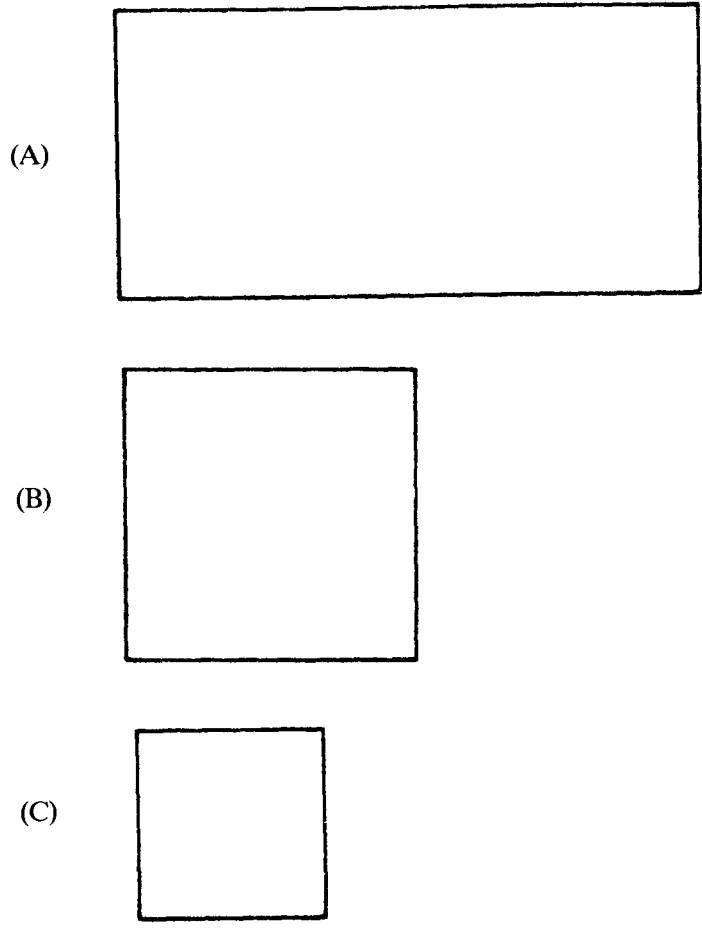
- (A) (2,4)                      (C) (-2,4)                      (E) -2, -4  
(B) (-4, -2)                      (D) (2, -4)

2. Joe has 35 stamps in his collection. He buys 42 more. How many does he have in all?

- (A) 7
- (B) 35
- (C) 42
- (D) 77
- (E) 87

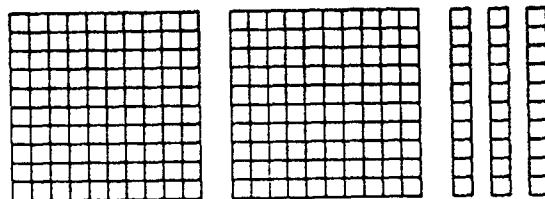
N277401

3. Figure x is smaller than figure y, and figure z is larger than figure y. Which figure below is figure x?



N262201

4.



The picture shows small squares in groups of hundreds and tens. What is the total number of small squares in the picture?

- (A) 203
- (B) 230
- (C) 233
- (D) 2,300

N200401

5. In a certain school, 10% of the students bring their lunch, 60% buy a lunch in the cafeteria, and the remaining students go home for lunch. What percent of the students go home for lunch?

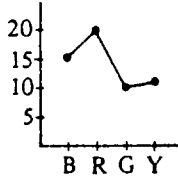
- (A) 30%
- (B) 50%
- (C) 70%
- (D) More facts are needed to answer.

N204101

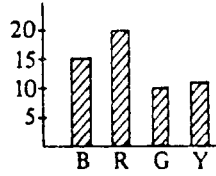
6.

Favorite Color	
Blue (B)	### ### ###
Red (R)	### ### ### ###
Green (G)	### ###
Yellow (Y)	### ###

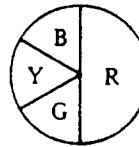
Which graph below best fits the data in the tally chart above?



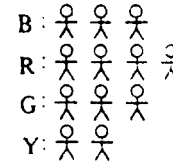
(A)



(B)



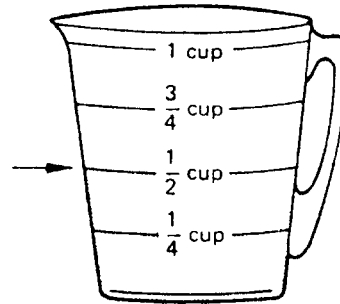
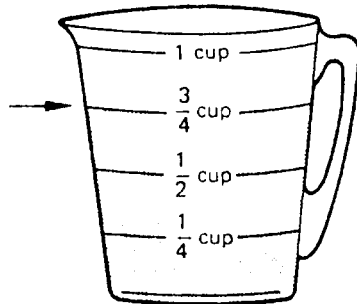
(C)



(D)

N231101

7.



The measuring cup on the left is filled with water to the line marked with the arrow. The measuring cup on the right is filled with water to the line marked with the arrow. How much water is in both cups together?

- (A)  $\frac{4}{6}$  cups
- (B)  $\frac{3}{8}$  cups

- (C) 2 cups
- (D)  $1\frac{1}{4}$  cups

N285201

8. If  $7x + 4 = 5x + 8$ , then  $x =$

- (A) 1
- (B) 2

- (C) 4
- (D) 6

N210601

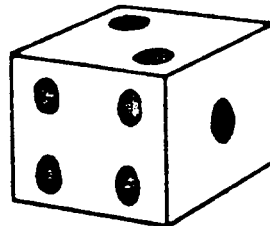
9. Which one of the following is the LARGEST unit of measurement?

- (A) centimeter
- (B) kilometer

- (C) meter
- (D) millimeter

N266101

10.



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?

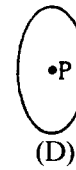
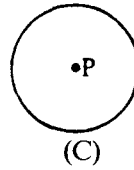
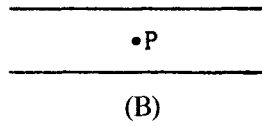
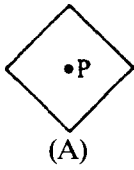
- (A) 0
- (B)  $\frac{1}{6}$

- (C)  $\frac{2}{6}$
- (D)  $\frac{3}{6}$

- (E)  $\frac{4}{6}$
- (F)  $\frac{5}{6}$

N262801

11. Which of these figures has all of its points the same distance from point P?



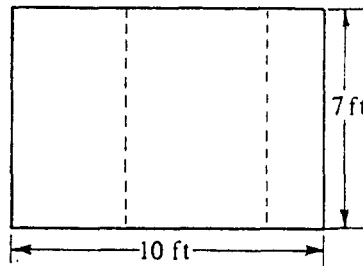
N213001

12.  $2x + 3y + 4x =$

- (A)  $9xy$   
 (B)  $9x^2y$   
 (C)  $5xy + 4x$   
 (D)  $6x + 3y$

N255701

13.



If the rectangle above is cut along the dotted lines and the three pieces are separated, what is the combined area of the three pieces?

- (A) 49 sq ft  
 (B) 70 sq ft  
 (C) 100 sq ft  
 (D) It cannot be determined from the information given.

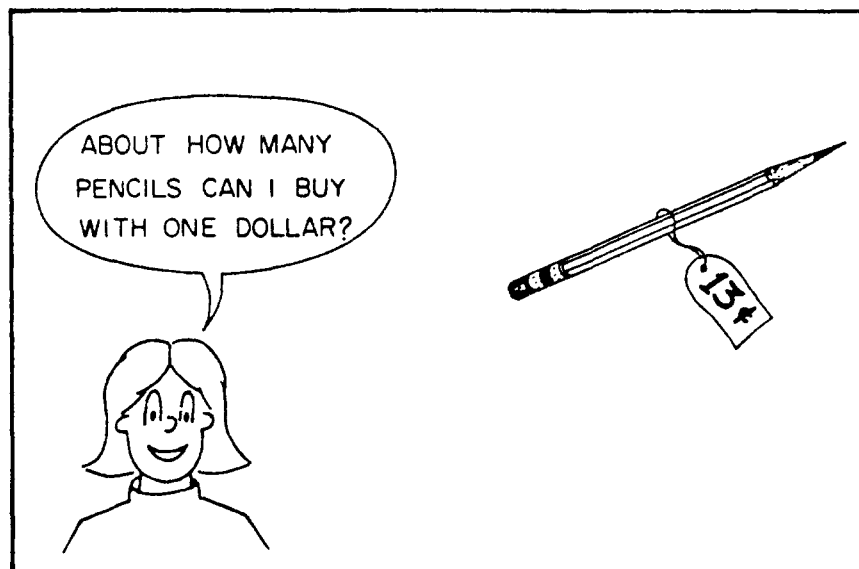
N231801

14. Ten students paid a total of \$56 for tickets to the zoo. Which shows how to find how much each ticket costs?

- (A)  $\$56 \times 10$   
 (B)  $\$56 \div 10$   
 (C)  $\$56 + 10$   
 (D)  $\$56 - 10$

N205001

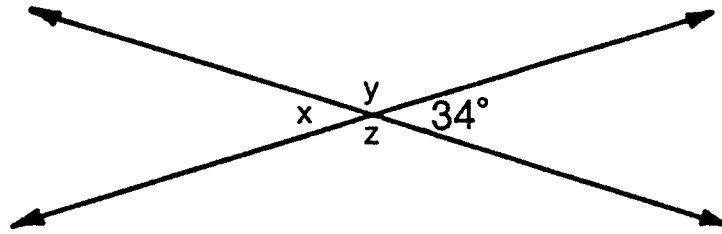
15. ESTIMATE.



- (A) Less than 5  
 (B) Between 5 and 10  
 (C) Between 11 and 15  
 (D) Between 16 and 20  
 (E) More than 20

N261501

16.

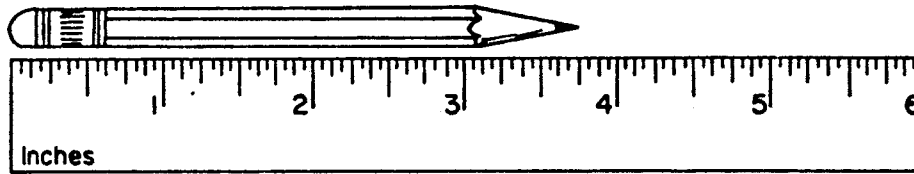


What is the measure of angle  $x$ ?

- (A)  $34^\circ$
- (B)  $56^\circ$
- (C)  $68^\circ$
- (D)  $124^\circ$
- (E)  $146^\circ$
- (F) Not enough information given

N270301

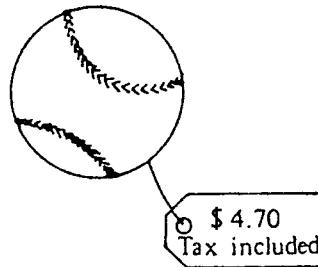
17. What is the length of this pencil to the nearest quarter inch?



- (A)  $3\frac{1}{4}$
- (B)  $3\frac{3}{4}$
- (C)  $4\frac{1}{4}$
- (D) 4

N267201

18.



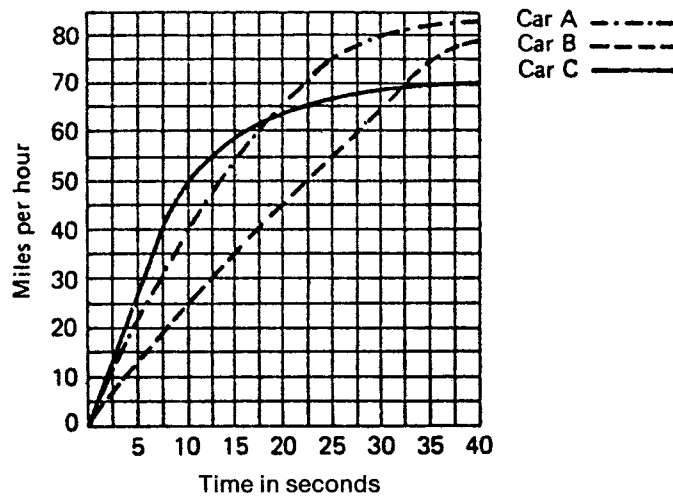
Which is the smallest bill that is enough to pay for 4 baseballs?

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

N206601

19.

SPEED CURVES OF THREE TEST CARS

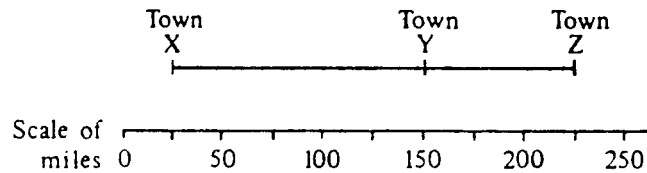


According to the graph, which car reached 60 miles per hour in the shortest time?

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

N263202

20.



According to the scale above, about how far is it from Town X to Town Y?

- (A) 100 miles (C) 175 miles  
 (B) 125 miles (D) 200 miles

N231501

21. Change 75% to a common fraction.

- (A)  $\frac{1}{75}$  (C)  $\frac{5}{7}$   
 (B)  $\frac{3}{4}$  (D)  $\frac{7}{5}$

N274802

22. The temperature at noon was  $10^\circ$ . In the afternoon, the temperature dropped  $4^\circ$ . By midnight, the temperature dropped  $14^\circ$  more. What was the temperature at midnight?

- (A)  $28^\circ$  (C)  $-8^\circ$   
 (B)  $0^\circ$  (D)  $-18^\circ$

N204701

23.

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

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

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

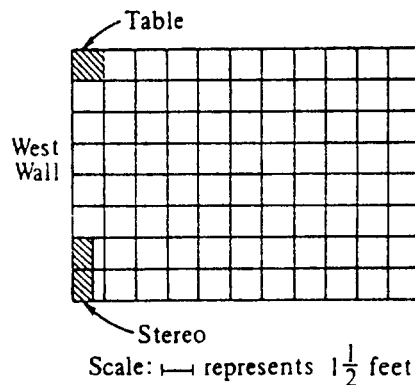
N206801

24. Jan has 3 dimes in her pocket and nothing else. If she takes 1 coin from her pocket, what is the probability that it will be a dime?

- (A)  $\frac{1}{10}$  (B)  $\frac{3}{10}$  (C)  $\frac{1}{3}$  (D) 1

N236101

25.



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

N232901

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

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

N259901

27. Hank, Jim, Roberto and Willie were on the same side in a baseball game. One of them hit a home run. From the following information, see if you can determine which one.

- (1) The one who hit it plays shortstop and lives on Vine Street.
- (2) Willie had to leave at the end of the 6th inning when the score was 2-0 in favor of the other side.
- (3) Roberto pitched all innings of the game with no walks.
- (4) After the game, Roberto and Jim went home together since they live next to each other on Cypress Street.

Which boy hit the home run?

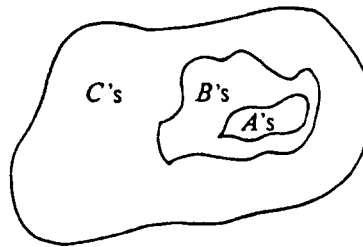
- (A) Hank
  - (B) Jim
  - (C) Roberto
  - (D) Willie
- N262701

28. If a fair coin is tossed, the probability that it will land heads up is  $\frac{1}{2}$ . In four successive tosses the coin lands heads up each time. What happens when it is tossed a fifth time?

- (A) It will most likely land tails up.
  - (B) It is more likely to land tails up than heads up.
  - (C) It is more likely to land heads up than tails up.
  - (D) It is equally likely to land heads up or tails up.
- N222401

29. 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
  - (B) I and IV only
  - (C) II and III only
  - (D) II and IV only
- N220401

► Questions 30-31

POPULATIONS OF DETROIT AND LOS ANGELES  
1920-1970

YEAR	CITY	
	DETROIT	LOS ANGELES
1920	950,000	500,000
1930	1,500,000	1,050,000
1940	1,800,000	1,500,000
1950	1,900,000	2,000,000
1960	1,700,000	2,500,000
1970	1,500,000	2,800,000

30. How many more people were living in Los Angeles in 1960 than 1940?

- (A) 100,000
  - (B) 500,000
  - (C) 800,000
  - (D) 1,000,000
  - (E) 2,500,000
- N286001

31. What was the first year listed in which the population of Los Angeles was greater than the population of Detroit?

- (A) 1920
  - (B) 1930
  - (C) 1940
  - (D) 1950
  - (E) 1960
  - (F) 1970
- N286002

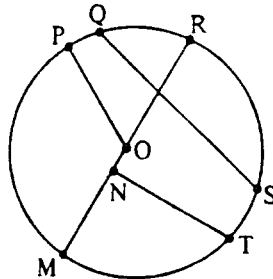
32. Which of the following sentences is true when any number is substituted for  $x$ ?

- (A)  $x + 1 = x$
- (B)  $x + 0 = 0$

- (C)  $x \cdot 1 = 1$
- (D)  $x \cdot 1 = x$

N264701

33.



Which of the following is a diameter of the circle?

- (A)  $\overline{OP}$
- (B)  $\overline{QS}$

- (C)  $\overline{RM}$
- (D)  $\overline{NM}$

N212901

34.

PIZZA	80¢ slice
SODA	40¢
BURGER	90¢
POTATO CHIPS	35¢

Which of the following would cost more than \$2?

- (A) Burger, soda, and potato chips
- (B) 1 slice of pizza and 2 sodas

- (C) 2 slices of pizza and soda
- (D) 2 burgers and soda

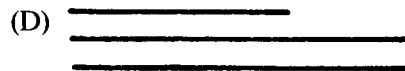
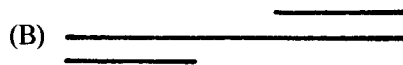
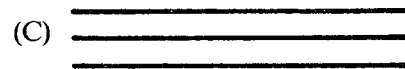
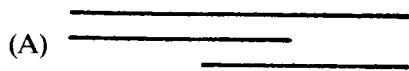
N216601

35. What can be said about the sum of two even numbers?

- (A) It is always an odd number.
- (B) It is always an even number.
- (C) It is always a prime number.
- (D) It is sometimes an even number and sometimes an odd number.

N282202

36. Which set of line segments CANNOT make a triangle?



N253701

37. In a pet shop there are 12 animals. Seven are dogs and the rest are cats. What is the ratio of dogs to cats?

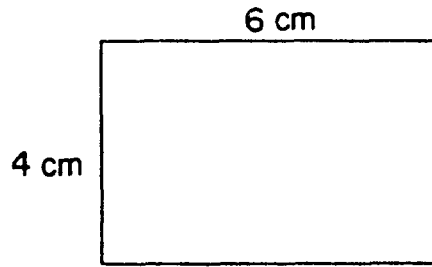
- (A) 12:7
- (B) 5:7

- (C) 7:12
- (D) 7:5

N208101



38.



What is the area of this rectangle?

- (A) 4 square cm (C) 10 square cm (E) 24 square cm  
 (B) 6 square cm (D) 20 square cm

N269001

39. Here are the ages of five children:

13, 8, 6, 4, 4

What is the average age of these children?

- (A) 4 (C) 7 (E) 9  
 (B) 6 (D) 8 (F) 13

N263501

40. Chang has three coins. Only one is a penny. Exactly two are each worth less than a dime. Each of the coins is worth less than a quarter. What three coins does Chang have?

- (A) 1 penny, 2 dimes (C) 3 dimes  
 (B) 1 penny, 1 nickel, 1 dime (D) 1 penny and 2 quarters

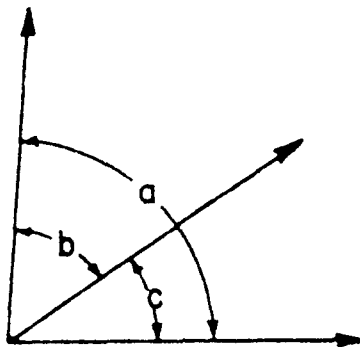
N262301

41. If  $V = \frac{6a^2b^3}{5}$ , what is the value of V when  $a = 1$  and  $b = 2$ ?

- (A)  $\frac{288}{5}$  (C)  $\frac{72}{5}$   
 (B)  $\frac{216}{5}$  (D)  $\frac{48}{5}$

N210401

42.

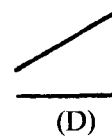
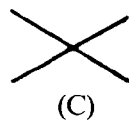
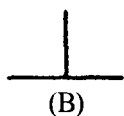
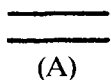


If angle a measures  $85^\circ$  and angle b measures  $52^\circ$ , what does angle c measure?

- (A)  $33^\circ$  (C)  $137^\circ$   
 (B)  $38^\circ$  (D) Not enough information given

N254301

43. Which drawing below shows PERPENDICULAR LINES?



N254602

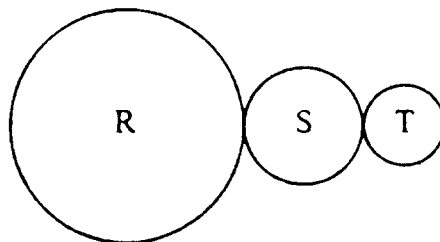
44. SIMPLIFY.  $4(1 + 6y) + 15$

- (A)  $24y + 19$   
 (B)  $28y + 15$

- (C)  $6y + 19$   
 (D)  $24y + 64$

N270701

45.



The three gears above are connected so that S rotates 2 times and T rotates 3 times for each complete rotation of R.

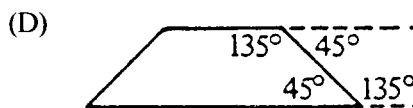
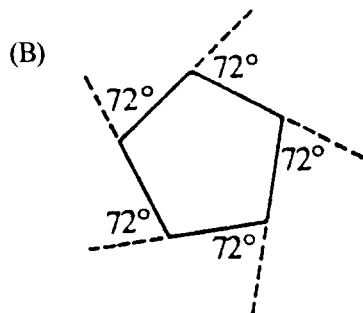
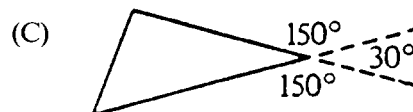
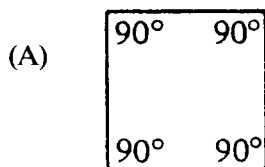
When S makes 10 rotations, how many rotations are made by T?

- (A)  $3\frac{1}{3}$   
 (B)  $6\frac{2}{3}$

- (C) 11  
 (D) 15

N233402

46. In geometry it is proved that the sum of the exterior angles of a polygon is  $360^\circ$ . Which figure shows that relationship?



N214101

47. 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¢  
 (B) 18¢

- (C) 45¢  
 (D) 63¢

- (E) 92¢

N268201

48. Change .35 to a percent.

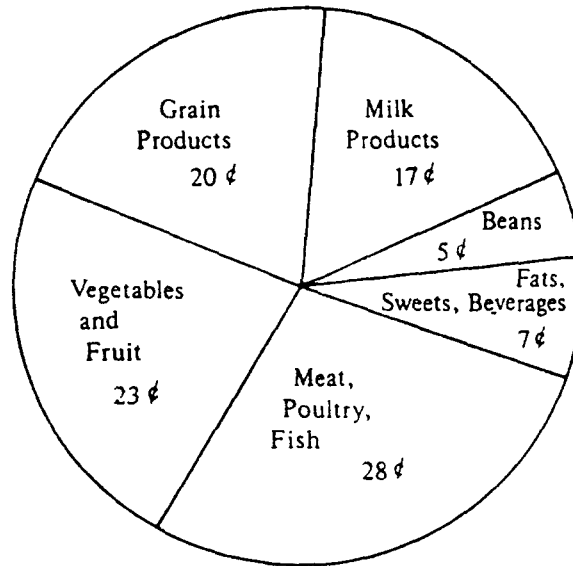
- (A) 0.35%  
 (B) 3.5%

- (C) 35%  
 (D) 350%

N274801

49.

HOW GOVERNMENT NUTRITIONISTS RECOMMEND SPENDING YOUR FOOD DOLLAR

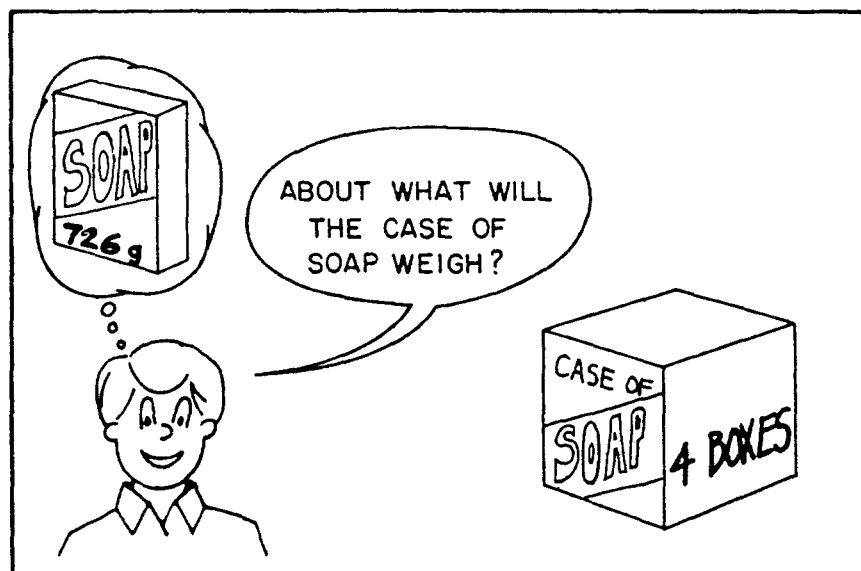


According to the graph above, which of the following is true?

- (A) The largest portion of spending should be for vegetables and fruit.
- (B) More should be spent on milk products than on grain.
- (C) Spending for vegetables and fruit, plus meat, poultry, and fish should be approximately half the total.
- (D) As much should be spent on fats, sweets, and beverages as on milk.

N224801

50. ESTIMATE.



- (A) 2800 g
- (B) 2900 g
- (C) 3200 g
- (D) 28,000 g

N261201

51.  $61 + 42 + 57 + 46 + \square = 250$

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

- (A) 25 (C) 75  
(B) 50 (D) 100

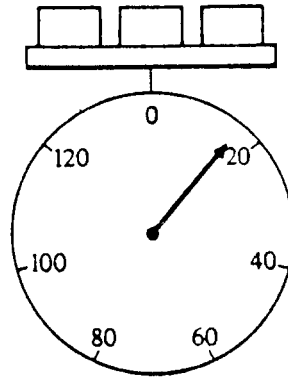
N261001

52. 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

53.

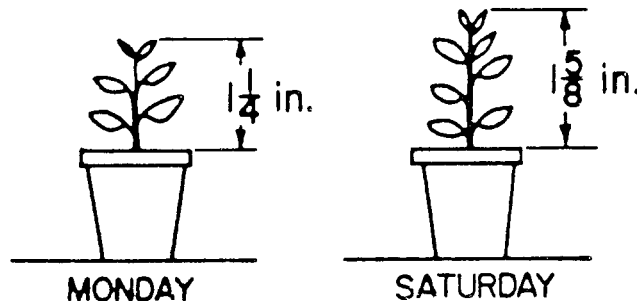


Each of the three blocks in the figure above weighs the same. The weight of each block is closest to how many units?

- (A) 3 (C) 9  
(B) 6 (D) 20

N219001

54.



Which one of the following expressions represents how many inches this plant grew from Monday to Saturday?

- (A)  $1\frac{1}{4} + 1\frac{5}{8}$  (C)  $1\frac{5}{8} - 1\frac{1}{4}$   
(B)  $1\frac{5}{8}$  (D)  $1\frac{1}{4} - 1\frac{5}{8}$

N258901

55. 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 (C) 24 cm  
(B) 14 cm (D) 40 cm

N207801

### 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 E)

Student's Name \_\_\_\_\_

CORRECT MARK  
 A  B  C  D  E

INCORRECT MARKS

- 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.

PAGE 1

1  A  B  C  D  E

PAGE 6

20  A  B  C  D  
 21  A  B  C  D  
 22  A  B  C  D  
 23  A  B  C  D  
 24  A  B  C  D  
 25  A  B  C  D  
 26  A  B  C  D

PAGE 11

49  A  B  C  D  
 50  A  B  C  D

PAGE 2

2  A  B  C  D  E  
 3  A  B  C  
 4  A  B  C  D  
 5  A  B  C  D

PAGE 7

27  A  B  C  D  
 28  A  B  C  D  
 29  A  B  C  D  
 30  A  B  C  D  E  
 31  A  B  C  D  E  F

PAGE 12

51  A  B  C  D  
 52  A  B  C  D  
 53  A  B  C  D  
 54  A  B  C  D  
 55  A  B  C  D

PAGE 3

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  E  F

PAGE 8

32  A  B  C  D  
 33  A  B  C  D  
 34  A  B  C  D  
 35  A  B  C  D  
 36  A  B  C  D  
 37  A  B  C  D

PAGE 4

11  A  B  C  D  
 12  A  B  C  D  
 13  A  B  C  D  
 14  A  B  C  D  
 15  A  B  C  D  E

PAGE 9

38  A  B  C  D  E  
 39  A  B  C  D  E  F  
 40  A  B  C  D  
 41  A  B  C  D  
 42  A  B  C  D  
 43  A  B  C  D

PAGE 5

16  A  B  C  D  E  F  
 17  A  B  C  D  
 18  A  B  C  D  
 19  A  B  C

PAGE 10

44  A  B  C  D  
 45  A  B  C  D  
 46  A  B  C  D  
 47  A  B  C  D  E  
 48  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