

Junior High School Mathematics Competition

SEVENTH GRADE TEST
1987

SCORING FORMULA: $4R - W + 40$

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DIRECTIONS:

This is a test of your competence in Junior High School Mathematics. For each problem there are 5 possible answers listed. You are to work the problems, determine the correct answer, and indicate your choice on the separate answer sheet provided you.

SAMPLE:

1. If $x + 1 = 2$, then x equals

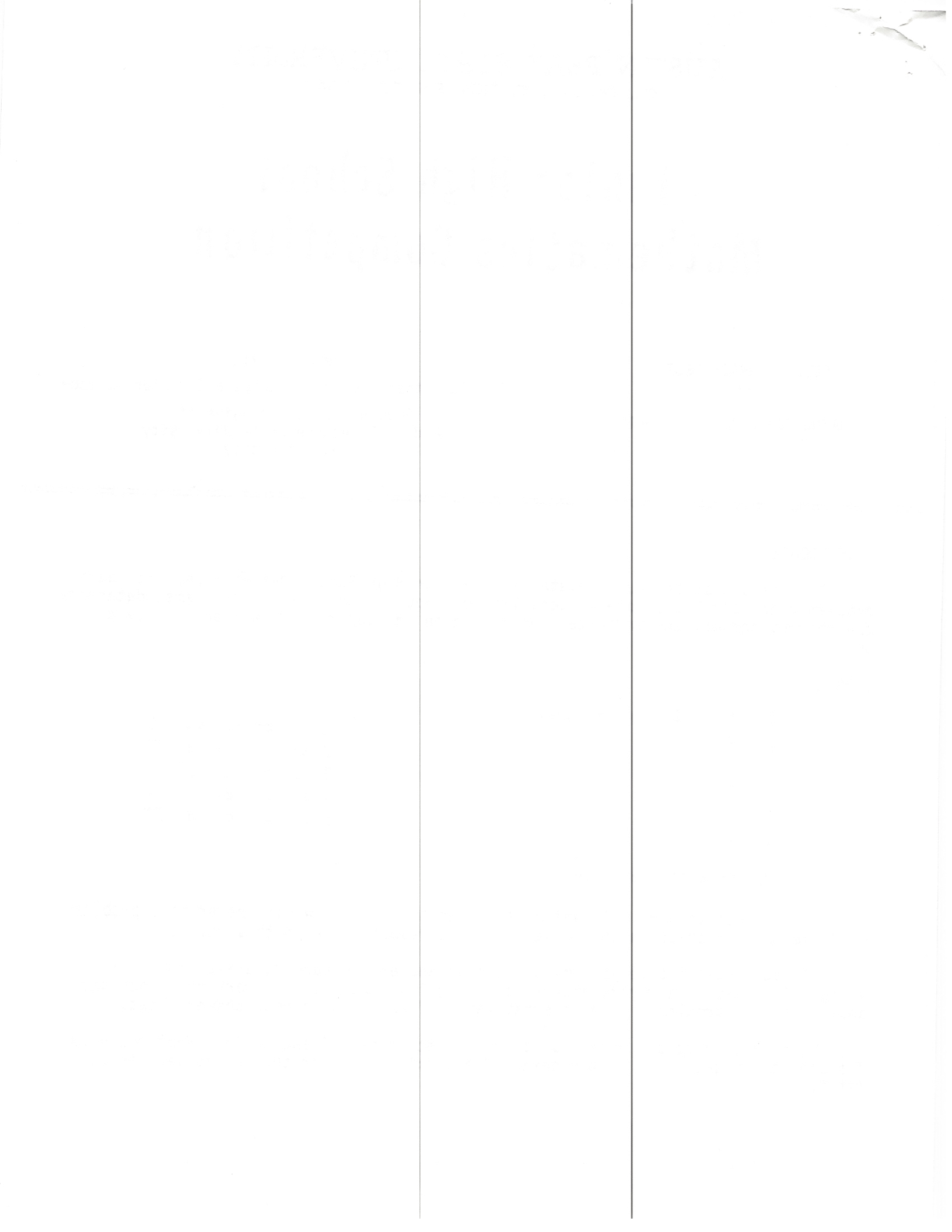
- (a) 0
- (b) 2
- (c) -1
- (d) 1
- (e) none of the above

1 (a) (b) (c) (d) (e)
2 (a) (b) (c) (d) (e)
3 (a) (b) (c) (d) (e)
4 (a) (b) (c) (d) (e)
5 (a) (b) (c) (d) (e)

The correct answer is 1, which is answer (d), so you would answer this problem by darkening the space on the answer sheet corresponding with this choice.

If you should change your mind about an answer, be sure to erase completely. Avoid wild guessing as wrong answers count against you. Do not mark more than one answer for any problem. Make no stray marks of any kind on your answer sheet.

When told to do so, open your test booklet to page 2 and begin. When you have finished one page, go on to the next. The working time for the entire test is 80 minutes.



1. If I spent \$4.65, which includes 25 cents tax, for soft drinks which cost 40 cents each, how many soft drinks did I buy?
- a. 9
b. 10
c. 15
d. 11
e. none of these
2. -2^2 equals:
- a. 4
b. $1/4$
c. -4
d. $-1/4$
e. none of these
3. If x and 14 are relatively prime, then x could be a multiple of:
- a. 8
b. 9
c. 21
d. 10
e. 4
4. I have sold $2/3$ of my pencils for 15 cents each. If I have 8 pencils left, how much money did I collect for the pencils sold?
- a. \$1.20
b. \$0.60
c. \$1.80
d. \$2.40
e. \$3.00
5. If $2/N = 5/8$, then the ratio of N to 8 is:
- a. 5:2
b. 2:5
c. 5:16
d. 16:5
e. none of these
6. $5 + 2 \cdot 6 - 3 =$
- a. 39
b. 11
c. 14
d. 21
e. -126

7. A Tennessee farmer plants acres of corn and soybeans in the ratio of 3 to 5, in that order. If 135 acres of corn are planted, how many acres of soybeans are planted?
- a. 225
 - b. 881
 - c. 405
 - d. 675
 - e. not given
8. If the operation $*$ is defined as follows: $x * y = (x-y)(x+y)x + xy$, then $4 * 3 =$
- a. 18
 - b. 12
 - c. -10
 - d. 40
 - e. 24
9. A piece of wire 5.8 meters long is cut into 20 equal pieces. How many millimeters are there in each piece?
- a. 2.9 mm
 - b. 29 mm
 - c. 290 mm
 - d. 2900 mm
 - e. none of these
10. What is the greatest common divisor of 48, 72, and 216?
- a. 8
 - b. 16
 - c. 12
 - d. 18
 - e. 24
11. A gardener fenced in a plot of ground 24 by 48 feet. He planned to place a border of solid grass 1 yard wide on the inside of the plot next to the fence. Exactly how many square yards of sod must he buy to do this?
- a. 43 sq. yds.
 - b. 488 sq. yds.
 - c. 24 sq. yds.
 - d. 44 sq. yds.
 - e. 36 sq. yds.
12. In how many ways can 5 children line up on a snow sled if one of them is afraid to sit in the front?
- a. 120
 - b. 24
 - c. 20
 - d. 96
 - e. 256

13. If the length $s > 0$ of a side of a square is increased by one unit, then the total area of the two squares would be:

a. $s^2 + 1$

b. $s^2 + s + 1$

c. $2s^2 + s + 1$

d. $2s^2 + s + 2$

e. $2s^2 + 2s + 1$

14. Which of the following is between $\frac{1}{7}$ and $\frac{2}{7}$?

a. $1/14$

b. $3/8$

c. $1/5$

d. $4/9$

e. none of these

15. How many rectangles are in this figure?

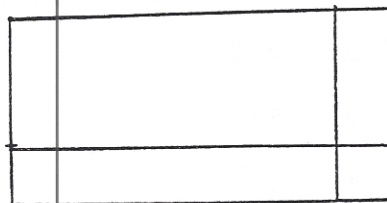
a. 4

b. 5

c. 8

d. 9

e. 6



16. Mary Lou lost 10 pounds over the summer and this was an 8% decrease in her weight. What was her original weight?

a. 80 lbs.

b. 160 lbs.

c. 120 lbs.

d. 125 lbs.

e. none of these

17. A tank has the following dimensions: 40cm by 50cm by 60cm. What is its capacity in liters?

a. 120,000

b. 1.2

c. 12

d. 120

e. 1,200

18. A square room has area 64 m^2 . A second square room has its perimeter equal to one-half the perimeter of the first room. The area of the second room is:

a. 36 m^2

b. 18 m^2

c. 32 m^2

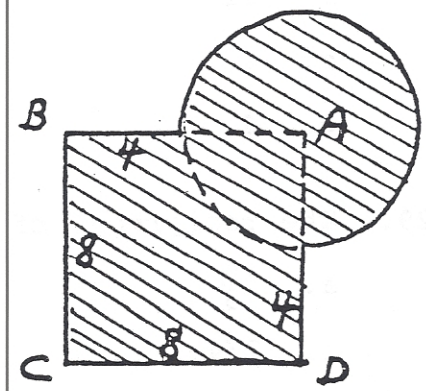
d. 16 m^2

e. none of these

19. Which of the following is the correct way to write 0.00240 in scientific notation?
- a. 2.40×10^{-3} b. 2.4×10^3
c. 2.4×10^{-3} d. 2.40×10^{-4}
e. 24×10^{-4}
20. $0.45\overline{45}$ is the same as:
- a. 45/100 b. 454545/1000000
c. 4545/9999 d. 5/11
e. none of these
21. Suppose you choose one letter at random from the word TENSION. What is the probability that you will get an N?
- a. 2/9 b. 2/8
c. 5/7 d. 5/9
e. 2/7
22. A runner can run 440 yards in 2.4 minutes. What is the runner's speed in miles per hour?
- a. 0.15 mph b. 576 mph
c. 6.25 mph d. 62.5 mph
e. 1.5 mph
23. A plane leaves San Francisco at 9:30 AM, Pacific Standard time on Jan. 1, 1987, and arrives in New York at 6:30 PM Eastern Standard time on Jan. 1, 1987. How many hours did it take to make the trip?
- a. 12 hrs. b. 9 hrs.
c. 6 hrs. d. 15 hrs.
e. none of these
24. The sentence $3(5 + 6) = 3(5) + 3(6)$ is an example of which property?
- a. the associative property b. the distributive property
c. the closure property of addition d. the commutative property of multiplication
e. none of these

25. 7.62 multiplied by 10 to the fifth power is:
- a. 361.05
 - b. 3610
 - c. 76,200,000
 - d. 762,000
 - e. 0.0000762
26. Which of the following is true?
- a. $0/6$ is not defined
 - b. $0/0 = 1$
 - c. $6/0$ is not defined
 - d. $6/0 = 0$
 - e. $0/0 = 0$
27. In a supermarket there is a long line at the checkout counter. The manager decides to open another register and immediately 6 people rush over to it. In how many different ways can these 6 people line up at the register?
- a. 720
 - b. 6
 - c. 120
 - d. 20
 - e. 36
28. Mr. Scott tells 3 jokes each semester. He only knows 4 jokes and his policy is to never repeat exactly the same 3 jokes in any of the semesters. How many semesters will these 4 jokes last him?
- a. 12
 - b. 3
 - c. 4
 - d. 2
 - e. 6
29. The reciprocal of $1\frac{3}{4}$ is:
- a. $1\frac{4}{3}$
 - b. $4/7$
 - c. $7/4$
 - d. $4/3$
 - e. none of these
30. What is the least common multiple of 12, 14, and 16?
- a. 672
 - b. 48
 - c. 168
 - d. 336
 - e. 84

31. Widgets sell for \$1.40 for 1/2 pound. What is the cost of 20 ounces of widgets?
- a. \$3.50
 - b. \$1.75
 - c. \$7.00
 - d. \$5.60
 - e. \$4.20
32. At the beginning of a club meeting each member of the club shakes hands with all other members exactly once. If six members attend a meeting, how many handshakes are made? A handshake is defined as two people shaking hands.
- a. 36
 - b. 15
 - c. 30
 - d. 25
 - e. 120
33. The numbers 0,1,2,3,. . . ,20 are painted on 21 marbles so that each number appears on exactly one marble. If the marbles are placed in a bag and one is selected at random, what is the probability that the number on the marble is prime?
- a. $\frac{8}{21}$
 - b. $\frac{3}{7}$
 - c. $\frac{10}{21}$
 - d. $\frac{4}{5}$
 - e. $\frac{9}{20}$
34. Given that A is the center of the circle and ABCD is a square, find the total area of the shaded region in square units.
- a. $64 + 16\pi$
 - b. $64 + 12\pi$
 - c. $32 + 12\pi$
 - d. $32 + 16\pi$
 - e. $24 + 12\pi$
35. A die is tossed twice. What is the probability that the sum of the numbers on the top faces is 10?
- a. $\frac{1}{9}$
 - b. $\frac{1}{6}$
 - c. $\frac{3}{8}$
 - d. $\frac{1}{4}$
 - e. $\frac{1}{12}$



36. The sales tax on a \$110 suit is $8\frac{1}{4}\%$. What will the total bill be?
- a. \$120 b. \$122.28
c. \$119.08 d. \$110
e. \$118.25
37. The numbers denoting the area and perimeter of a square are equal. What is the perimeter?
- a. 4 b. 16
c. 8 d. 12
e. 25
38. $7,869 \cdot 723 + 7,869 \cdot 277 =$
- a. 623,284 b. 12,492
c. 8,392,400 d. 7,869,000
e. none of these
39. The sum of 10^3 and 10^5 is:
- a. 10^8 b. 10^{15}
c. 101,000 d. 20^8
e. none of these
40. The mean of the numbers 70, 80, 85, 75, x and y is 85. The mean of x and y is:
- a. 120 b. 200
c. 85 d. 45
e. 100

