AUSTIN PEAY STATE UNIVERSITY
CLARKSVILLE, TENNESSEE 37040

JUNIOR HIGH/MIDDLE SCHOOL
MATHEMATICS COMPETITION

Prepared by:

SEVENTH GRADE TEST
1990
SCORING FORMULA: 4R - W + 40

Department of Mathematics
Union University
Jackson, Tennessee

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

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 proglem. 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. $0.\overline{27} =$

   a. $1/27$ b. $8/30$ c. $27/100$

   d. $17/62$ e. $3/11$

2. Round 2,807,371 to the nearest 10,000.

   a. 2,800,000   b. 2,900,000   c. 2,817,000

   d. 2,810,000   e. none of the above

3. $0.5(2.86) + 0.25(32.84) =$

   a. 9.64   b. 96.4   c. 964

   d. 822.43   e. 835.3

4. Find the greatest common factor (GCF) of 48, 57, and 105.

   a. 2   b. 3   c. 5

   d. 7   e. 19

5. Find the least common multiple of 18, 45, and 63.

   a. 9   b. 30   c. 90

   d. 210   e. 630

6. A skater received scores of 4.4, 5.6, 3.7, 4.0, 3.7, and 3.4 from six judges. What was her average score?

   a. 4.0   b. $4.1333\overline{3}$ c. $4\ 13/100$

   d. 4.1   e. $4\ 1/3$

7. Suppose your body burns 4 calories per minute while walking, 8 calories per minute while swimming, and 6 calories per minute while bicycling. How many calories would you burn if you spent 5 hours walking, 4.5 hours bicycling, and 1 hour and 45 minutes swimming?

   a. 61   b. 3660   c. 3990

   d. 4140   e. 366

8. After spending $1/4$ of her paycheck on books and $2/3$ of her paycheck on clothes, Pam had $16.00 left. How much was her paycheck?

   a. $96.00   b. $192.00   c. $112.00

   d. not given   e. $144.00

9. Write the numbers $7/3$, $2\ 1/4$, $2\ 2/5$ in order from greatest to least:

   a. $7/3$, $2\ 1/4$, $2\ 2/5$

   b. $2\ 1/4$, $7/3$, $2\ 2/5$

   c. $2\ 1/4$, $2\ 2/5$, $7/3$

   d. $2\ 2/5$, $7/3$, $2\ 1/4$

   e. $2\ 2/5$, $2\ 1/4$, $7/3$

10. $(7\ 1/3 - 1\ 7/10) + 2\ N/6 = 8\ 7/15$ Find the missing number N.

    a. 5

    b. 6

    c. 4

    d. 2

    e. 3

11. Given that $23_b = 15_{10}$, find the value of X for $9_{10} = X_b$.

    a. 6

    b. 9

    c. 13

    d. 10

    e. none of the above

12. Kevin is rowing his kayak up stream in a river. He can row 700 meters in 10 minutes. When he stops rowing, the current carries him back 100 meters in 10 minutes. If he alternates rowing upstream for 10 minutes and floating back for 10 minutes, how long will it take him to be 3.7 km from the starting point.

    a. 2 hours

    b. 2 hours 8 minutes

    c. 1 hour 50 minutes

    d. 1 hour 40 minutes

    e. between 2 and 2 1/2 hours

13. $4 + 6 \div 2 \times 3 - 1 =$

    a. 14

    b. 4

    c. $4\ 3/2$

    d. 12

    e. $4\ 6/5$

14. $8{,}171 \times 628 - 7{,}671 \times 628 =$

    a. 31,400

    b. 314,000

    c. 3,140

    d. 3,140,000

    e. 3.14×10^4

15. Which of the following is true?

    a. $0/2$ is not defined

    b. $2/0$ is not defined

    c. $0/0 = 1$

    d. $0/0 = 0$

    e. $2/0 = 0$

16. A rectangular painting is 50cm long and 40cm wide. An enlarged copy of the painting is to be used as a poster. If the poster is to have a 5cm margin on all sides and the length of the poster including the margins is 135cm, what is the width of the enlarged painting?

    a. 100 cm

    b. 108 cm

    c. 98 cm

    d. 110 cm

    e. none of the above

17. The town council had to retile the council meeting hall floor. The meeting hall is 30 feet wide and 60 feet long. If each square tile is 9 inches wide, how many tiles will it take?

a. 6400   b. 3200   c. 1800

d. 1350   e. 2400

18. Carl has 6 green socks and 4 yellow socks in a drawer. He picks 1 sock and then another without replacing the first. What is the probability that he will pick 2 green socks?

a. $\frac{1}{3}$ b. $1\frac{1}{10}$ c. $\frac{52}{45}$

d. $\frac{3}{10}$ e. $\frac{1}{6}$

19. Mikhail is sorting artifacts that were excavated in western Colorado. One-third of the items are weapons. Of the remaining items, 1/2 are tools, 12 are jewelry, and 6 are masks. How many artifacts does Mikhail have?

a. 60   b. 120   c. 50

d. 54   e. 108

20. From 5 p.m. to 10 p.m. the temperature dropped from 4°C to -16°C. What was the average temperature change per hour?

a. -5°   b. 4°C   c. -4°C

d. -2.4°C   e. -5°F

21. If Bill spent $5.22 for 18 soft drinks that sold for 27¢ each, how much in tax did Bill pay?

a. 29¢   b. 38¢   c. $1.36

d. 46¢   e. 36¢

22. Peggy lost 12 lbs. during the basketball season and this was a 10% decrease in her weight. What was her original weight?

a. 120 lbs.   b. 100 lbs.   c. 108 lbs.

d. 132 lbs.   e. none of these

23. A circle is enclosed in a square. The numbers denoting the area and the perimeter of the square are equal. What is the radius of the circle?

a. 1   b. 4   c. $\frac{3}{4}$

d. $\frac{3}{2}$ e. 2

24. If $W \underset{Z}{\overset{X}{\times}} Y = \dfrac{X + Y}{Z + W}$, express the value of $14 \underset{10}{\overset{12}{\times}} 18$ in simplest form

a. $\frac{5}{4}$ b. $\frac{3}{8}$ c. $\frac{5}{3}$

d. $\frac{6}{5}$ e. $\frac{13}{14}$

7-3

25. If the value of 20 quarters and 10 dimes equals the value of 10 quarters and n dimes, then n = ?

  a.   30   b.   10   c.   35

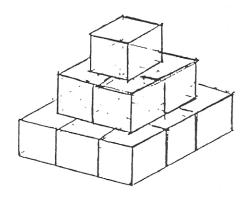 d.   20   e.   45

26. An artist has 14 cubes, each with an edge of 2 feet. She stands them on the ground to form a sculpture as shown. She then paints the exposed surfaces of the sculpture. How many square feet does she paint?

  a.   142   b.   112   c.   152

  d.   132   e.   336

27. Mike buys Little Debbie cakes at a price of 8 for $1.00 and sells them 5 for $1.25. How many cakes will he have to sell to make a profit of $35.00?

  a.   80   b.   180   c.   280

  d.   200   e.   240

28. $1\frac{2}{3} \times 4\frac{1}{2} \times 2\frac{1}{7} =$

  a. $8\frac{13}{42}$ b. $16\frac{1}{14}$ c. $8\frac{2}{35}$

  d. $5\frac{11}{14}$ e. $8\frac{1}{3}$

29. Sara lives $1\frac{1}{3}$ km north of the school and Kim lives $\frac{4}{5}$ km south of the school. If Kim rides her bicycle from home to Sara's and back to school, how far has she gone?

  a. $2\frac{2}{15}$ km   b. $\frac{8}{15}$ km   c. $3\frac{7}{15}$ km

  d. $2\frac{14}{15}$ km   e. $4\frac{14}{15}$ km

30. Find the simple interest on $750 at 7% for 5 years 6 months.

  a. $2887.50   b. $262.50   c. $26.25

  d. $288.75   e. $350.97

31. There are 25 students in a class. Two of these students will be selected to represent the class in a school meeting. The students will be selected by drawing two names in succession from a box. If Sue is not the first student drawn, what is the probability she will be selected?

    a. 1/25
    b. 1/600
    c. 1/12
    d. 1/24
    e. 2/25

32. The difference between the largest number and the smallest number in the set {0.3, 0.35, 0.315, 0.3005} is:

    a. 0.015
    b. 0.05
    c. 0.495
    d. 0.035
    e. 0.15

33. A recipe that serves 12 people calls for 2.25 cups of flour. How much flour is needed for making enough to serve 5 people?

    a. 3/80 of a cup
    b. 26/5 of a cup
    c. 43/48 of a cup
    d. 1.06 cups
    e. 15/16 of a cup

34. The store has 16 full-time and 8 part-time employees. If 50% of the part-time employees and 75% of the full-time employees are off on Mondays, how many have to work on Mondays?

    a. 18
    b. 8
    c. 16
    d. 10
    e. 14

35. Three television shows X, Y and Z, were on different times of the day. A poll was taken among 30 people to find which shows they watch. The results included:
    No shows (8),   X only (2),   Y only (6),   Z only (1),   only X and Y (5),
    only X and Z (3),   only Y and Z (0)

    How many altogether watch show Y?

    a. 6
    b. 10
    c. 11
    d. 16
    e. none of these

36. 29.8 billion can be written in scientific notation as:

    a. 2.98×10^8
    b. 2.98×10^5
    c. 2.98×10^{10}
    d. 2.98×10^{14}
    e. 2.98×10^{11}

37. A * B = AB + A + B - 1. If A = 2, B = 3, and C = 4, find (A * B) * C.

    a. 54
    b. 12
    c. 33
    d. 53
    e. 24

38. If $\frac{9}{2} x = 3$, then $6x - \frac{2}{3} =$

    a. 8 1/3
    b. 19/12
    c. 10/3
    d. 6
    e. 3/10