

Junior High School Mathematics Competition

SEVENTH GRADE TEST

1984

SCORING FORMULA: $4R - W + 40$

Prepared by:

The Dept. of Mathematics and Computer Science
Middle Tennessee State University

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. $8 + 12 \div 4 - 3 \cdot 2 + 4 =$
- a. 8
b. 9
c. 12
d. 6
e. Not given
2. Which of the following numbers is between $\frac{4}{7}$ and $\frac{5}{7}$?
- a. $\frac{15}{27}$
b. $\frac{3}{4}$
c. $\frac{7}{12}$
d. $\frac{13}{18}$
e. None of the above
3. $2,751 \cdot 853 + 2,751 \cdot 147 =$
- a. 3,492,000
b. 2,751,000
c. 1,046,520
d. 956,723
e. 756,950
4. If Bill puts \$440 in the bank and it earns interest at the rate of 7.5% per year compounded annually, how much money will he have after two years?
- a. \$506.00
b. \$473.00
c. \$508.48
d. \$498.67
e. None of the above
5. If two dice are rolled, the probability of getting a total of 5 is:
- a. $\frac{5}{36}$
b. $\frac{1}{4}$
c. $\frac{1}{6}$
d. $\frac{1}{12}$
e. $\frac{1}{9}$
6. What is the median of the following set of numbers?
15, 19, 22, 22, 22, 24, 26, 28, 29, 31, 35, 36, 41, 42
- a. 26
b. 27
c. 28
d. 29
e. None of the above

7. $\frac{4.83}{.01} =$
- a. .0483
 - b. .483
 - c. 4.83
 - d. 48.3
 - e. 483
8. Find the sale price of a T.V. set with list price of \$720 after successive discounts of 25%, 10%, and 5%.
- a. \$432.00
 - b. \$486.00
 - c. \$540.00
 - d. \$461.70
 - e. Not given
9. Which of the following is true?
- a. $0/0 = 1$
 - b. $4/0 = 4$
 - c. $0/4 = 0$
 - d. $0 \cdot 0 = 4$
 - e. $0/4$ is undefined
10. The length of your school building is closest to which of the following?
- a. .01 km
 - b. 1 km
 - c. 100 dm
 - d. 100 m
 - e. 100 hm
11.
$$\frac{2}{1 + \frac{2}{1 + \frac{2}{1 + \frac{2}{1 + \frac{2}{1 + 1}}}}}$$
- a. 2
 - b. 1
 - c. 1/2
 - d. 2/3
 - e. 6/5
12. A recipe that serves 7 people calls for 5 cups of flour. Frances wants to make only enough of the recipe to serve 4 people. How many cups of flour should she use?
- a. $3 \frac{1}{7}$
 - b. 5
 - c. $2 \frac{6}{7}$
 - d. $2 \frac{1}{7}$
 - e. $1 \frac{1}{4}$

13. If one pound sells for \$2.67, how many pounds can be bought for \$75.00?

- a. 28
- b. 26
- c. 27
- d. 33
- e. 23

14. The least common multiple of 42 and 50 is:

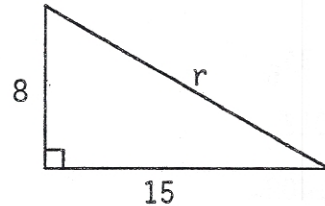
- a. 2100
- b. 105
- c. 1050
- d. 525
- e. 2

15. If $F(n) = (5/8) \cdot n$, then $F(4/15) =$

- a. $1/6$
- b. $3/8$
- c. $3/2$
- d. $F(1/6)$
- e. None of the above

16. For the figure, $r =$

- a. 23
- b. 64
- c. 225
- d. $\sqrt{23}$
- e. 17



17. How many digits are required in a base 16 system of numeration?

- a. 15
- b. 12
- c. 8
- d. 10
- e. None of the above

18. Ginny saves 15% of her allowance. She saved \$1.35 last week. What was her allowance last week?

- a. \$20.25
- b. \$0.20
- c. \$7.65
- d. \$11.11
- e. \$9.00

19. Find the interest on \$456 for 6 months at an annual interest rate of 16%.
- a. \$364.80
 - b. \$72.96
 - c. \$36.48
 - d. \$7.30
 - e. \$3.65
20. A gum ball machine has 30 red, 20 yellow, and 40 green gum balls mixed thoroughly. If Chuck purchases a gum ball, what is the probability that he will get a red one?
- a. $1/3$
 - b. $2/9$
 - c. $1/9$
 - d. $4/9$
 - e. None of the above
21. If $\frac{a+1}{a} = 0$ then $a =$
- a. -1
 - b. 1
 - c. 0
 - d. 0 or 1
 - e. undefined
22. $203_5 \cdot 34_5 =$
- a. 13012_5
 - b. 6902_5
 - c. 111402_5
 - d. 2441_5
 - e. 210202_5
23. $-2(6 - (-4) \cdot (24/(-6) \cdot (-2) + 3)) =$
- a. -52
 - b. 76
 - c. 28
 - d. -100
 - e. 20
24. Joe plans to have a concrete driveway 10 cm thick. If concrete costs \$40.00 per cubic meter and the driveway is 4 m wide and 30 m long, how much will the concrete cost?
- a. \$48000
 - b. \$4800
 - c. \$480
 - d. \$48
 - e. \$4.80

25. If 620 is $6\frac{1}{4}$ times a number, find the number:
- a. 99.2
 - b. 3875
 - c. 180
 - d. .01
 - e. Not given
26. $\frac{\sqrt{12}}{\sqrt{3}} =$
- a. 4
 - b. $\frac{1}{4}$
 - c. 2
 - d. $\frac{1}{2}$
 - e. $\sqrt{9}$
27. 440% of 40 is
- a. 1760
 - b. 17600
 - c. 760
 - d. 176
 - e. Not given
28. Let r , s , and t be integers. If r is divisible by s and s is divisible by t , then which of the following may be false?
- a. t divides $r + s$
 - b. t divides $r \cdot s$
 - c. s divides $r \cdot t$
 - d. r divides $s \cdot t$
 - e. t divides r
29. $29 =$
- a. 11101_{two}
 - b. 10111_{two}
 - c. 1101_{two}
 - d. 101001_{two}
 - e. 11111_{two}
30. During one week, Richard worked $18\frac{1}{2}$ hours. If he earned \$2.40 an hour, how much did he earn during the week?
- a. \$43.20
 - b. \$36.00
 - c. \$44.40
 - d. \$46.40
 - e. Not given

31. A building casts a 450 foot shadow while a 6-foot man casts a 9 foot shadow. How tall is the building?
- a. 270 feet
 - b. 675 feet
 - c. 400 feet
 - d. 300 feet
 - e. None of these
32. A right circular cylinder and a right circular cone have equal bases and equal altitudes. The volume of the cylinder is
- a. the same as the volume of the cone
 - b. twice the volume of the cone
 - c. three times the volume of the cone
 - d. four times the volume of the cone
 - e. more than the volume of the cone but the correct answer depends on the altitude.
33. How many persons could be served with 10 liters of punch if average consumption is 200 cubic centimeters?
- a. 5
 - b. 10
 - c. 100
 - d. 20
 - e. 50
34. Sam orders four 3-pound bricks of mellow cheese at \$15 per brick and three 6-pound bricks of sharp cheese at \$30 per brick. He must add 6.75% sales tax to his order. How much money must he spend?
- a. \$240.19
 - b. \$161.22
 - c. \$159.31
 - d. \$150.00
 - e. \$160.13
35. An early computer took .1 second to multiply two 10-digit numbers. A modern computer takes .000001 seconds to find the same product. How many times faster is the modern computer?
- a. 100,000
 - b. .099999
 - c. 99,999
 - d. 1/1,000,000
 - e. 1,000,000

36. The measures of the sides of a rectangle are integers. If the area is 72 square units and the perimeter is a minimum, what is the measure of the shorter side?

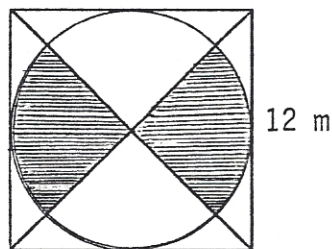
- a. 6
- b. 8
- c. 4
- d. 9
- e. 12

37. A grain bin in the shape of a cylinder has a radius of 7 feet and a height of 18 feet. If there are about 1.25 cubic feet per bushel, how many bushels of grain will the bin hold?

- a. 2200
- b. 3450
- c. 640
- d. 1000
- e. 2680

38. A circle is inscribed in a square. Find the area of the shaded region.

- a. 56.52 m^2
- b. 15.48 m^2
- b. 14.13 m^2
- d. 113.04 m^2
- c. 28.26 m^2



39. There are 6 coins (nickels, dimes, and pennies) in a box. There are more nickels than pennies and more pennies than dimes. What is the value of the coins?

- a. 41¢
- b. 23¢
- c. 27¢
- d. 36¢
- e. None of these

40. Catherine has decided to paint her room. The dimensions of the room are 10 feet by 12 feet, with 8-foot tall walls. If she paints everything but the floor, what is the total area to be painted? (Deduct 30 sq. ft. for the door and windows.)

- a. 450 sq. ft.
- b. 322 sq. ft.
- c. 442 sq. ft.
- d. 930 sq. ft.
- e. None of these

