AUSTIN PEAY STATE UNIVERSITY
CLARKSVILLE. TENNESSEE 37040

Junior High School
Mathematics Competition

EIGHTH GRADE TEST

1983

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: ━ :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.
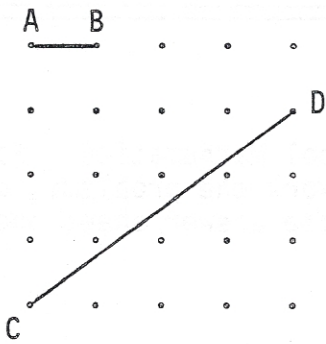
1. Assuming no intermarriages, how many great-great-great grand parents does each person have?

   a. 6
   b. 10
   c. 16

   d. 32
   e. 64

2. A $20 item is on sale for $15. What percent discount is being used in the sale?

   a. 40
   b. 75
   c. 25

   d. $33\frac{1}{3}$
   e. 30

3. In the picture below AB = 1. Then CD =

   a. 5
   b. 4
   c. 6
   d. $\sqrt{28}$
   e. $\sqrt{41}$

4. Suppose today is Tuesday. What day of the week will it be 100 days from now?

   a. Sunday
   b. Monday
   c. Tuesday

   d. Wednesday
   e. Thursday

5. $3 \cdot 11 + 3 \cdot 16 = 3(11 + 16)$ is an instance of which property?

   a. Commutative Property of Addition
   b. Associative Property of Multiplication
   c. Closure Property for Multiplication
   d. Identity Property of Addition
   e. Distributive Property

6. $1\frac{3}{7} \div 1\frac{2}{3} =$

   a. $\frac{6}{7}$ d. $\frac{7}{6}$

   b. $\frac{50}{21}$ e. $\frac{13}{12}$

   c. $\frac{65}{21}$

7. $33 - 3 + 15 \div 5 \cdot 3 =$

   a. 27   d. 21

   b. 39   e. 29

   c. 31

8. How many ways can 15¢ be made with coins?

   a. 4   d. 6

   b. 8   e. 5

   c. 7

9. Which of the following is a true sentence?

   a. $.99999\ldots = 1$ d. $\frac{9}{4} = \frac{3}{2}$

   b. $\frac{1}{3} = .33$ e. All of the above are false.

   c. $\frac{1}{7} = .1428$

10. If a gasoline tank holds 20 gallons and the gauge indicates that the tank is $\frac{5}{8}$ full, how many gallons are required to fill the tank?

   a. $17\frac{1}{2}$ gallons   d. $9\frac{1}{2}$ gallons

   b. $11\frac{1}{2}$ gallons   e. $12\frac{1}{2}$ gallons

   c. $7\frac{1}{2}$ gallons

11. A bag contains 4 yellow marbles, 3 blue marbles and 2 green marbles. What is the probability of selecting on the first draw a blue or green marble?
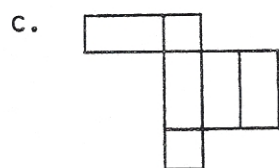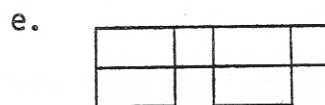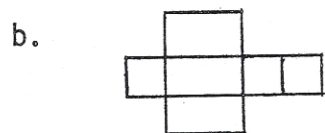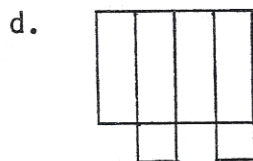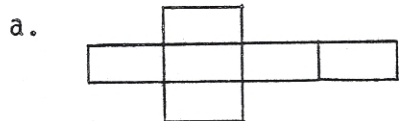
   a. $\frac{1}{4}$

   b. $\frac{4}{9}$

   c. $\frac{3}{5}$

   d. $\frac{5}{9}$

   e. $\frac{6}{9}$

12. Which of the following shapes could be folded into a box with a lid?

   a.

   b.

   c.

   d.

   e.

13. $3.6 \div .0012 =$

   a. 3000

   b. 30

   c. 3

   d. 300

   e. 30,000

14. A class has a ratio of 3 boys to 4 girls. How many boys are there if there is a total of 28 people in the class?

   a. 7

   b. 12

   c. 9

   d. 16

   e. 21

15. B is a set with the properties that $\{1, 3, 4\} \subset$ B, $\{3, 5, 7\} \subset$ B, $\{2, 4, 6, 8\} \cap$ B = $\{4, 6\}$ and B has 6 elements. Then B =

    a. $\{1, 2, 3, 4, 5, 6\}$ d. $\{1, 2, 3, 4, 5, 7\}$

    b. $\{2, 3, 4, 5, 6, 7\}$ e. $\{1, 3, 4, 5, 6, 7\}$

    c. $\{2, 3, 4, 5, 6, 8\}$

16. The number 67,000,000 expressed in scientific notation is

    a. 67×10^6 d. 0.67×10^8

    b. 6.7×10^6 e. none of the above

    c. 6.7×10^7

17. Mr. Brown's garden, which is rectangular in shape, has 40 m of fencing around it. If the garden is 7 m wide, what is its area?

    a. 40 m^2 d. 91 m^2

    b. 49 m^2 e. 169 m^2

    c. 231 m^2

18. $14{,}621 \div 17 + 19{,}379 \div 17 =$

    a. 1,856   d. 1,541

    b. 2000   e. 2,361

    c. 1,900

19. $\frac{1}{x} + \frac{1}{y} =$

    a. $\dfrac{2}{x + y}$ d. $\dfrac{1}{xy}$

    b. $\dfrac{1}{x + y}$ e. $\dfrac{xy}{x + y}$

    c. $\dfrac{x + y}{xy}$

8-5

20. 3 decimeters =

    a. 0.0003 km

    b. 0.00003 km

    c. 0.003 km
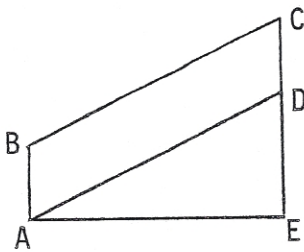
    d. 0.03 km

    e. none of the above

21. The Least Common Multiple of two numbers is 60 and the Greatest Common Divisor of these numbers is 3. What are the numbers?

    a. 6 and 10

    b. 4 and 15

    c. 9 and 15

    d. 6 and 12

    e. 12 and 15

22. In the figure pictured below quadrilateral ABCD is a parallelogram, $\angle E$ is a right angle AE = 10, DE = 5, and CE = 8. Then the area of quadrilateral ABCD is

    a. 30 square units

    b. 15 square units

    c. 50 square units

    d. 25 square units

    e. 20 square units

23. A cube with volume 64 cu. ft. has a surface area of

    a. 24 sq. ft.

    b. 64 sq. ft.

    c. 16 sq. ft.

    d. 96 sq. ft.

    e. none of the above

24. Which one of the following sentences is not true?

    a. $\sqrt[2]{4} + 1 = 3$

    b. $2^4 < 8$

    c. $4^2 \neq 8$

    d. $8^{\frac{1}{3}} = 2$

    e. $8^2 > 16$

25. Mr. Lewis is carpeting a hallway 3 feet wide and 75 feet long. The carpet he has chosen cost $12 per square yard. The total cost of the carpet is

    a. $2700   d. $800

    b. $1200   e. $900

    c. $300

26. At a sale where all items were reduced by 20%, James paid $20 for a sweater. What was its original price?

    a. $25   d. $16

    b. $24   e. none of the above

    c. $40

27. Which of the following numbers is between $\frac{2}{3}$ and $\frac{3}{4}$?

    a. $\frac{5}{6}$ d. $\frac{17}{24}$

    b. $\frac{7}{12}$ e. $\frac{19}{24}$

    c. $\frac{31}{48}$

28. Ten identical cards are numbered 0, 1, 2, ..., 9 and placed in a box. A student is asked to draw one card from the box. What are the odds in favor of drawing a card containing a number greater than 5?

    a. 2 to 5   d. 1 to 1

    b. 1 to 2   e. 3 to 2

    c. 2 to 3

29. What will be the output of line 60 of the BASIC program?

    a. 5   10   50

    b. 10   50   15

    c. 10   50   60

    d. 50   60   15

    e. 50   15   60

```
10 LET A = 5
20 LET B = 2 * A
30 LET C = A * B
40 LET D = A + B
50 LET E = B + C
60 PRINT C, D, E
70 END
```

30. The first 3 test scores for Kim were 86, 85, and 93. What equal scores on tests 4 and 5 will result in an average of 90 for all 5 tests?

a. 96

b. 92

c. 93

d. 100

e. none of the above

31. A cylindrical can with a radius of 10 inches and a height of 9 inches is filled with water. If all the water is poured into a second cylindrical can with a radius of 15 inches and a height of 6 inches, then how far from the top of the second can does the water reach?

a. 900π sq. in.

b. 4 in.

c. 3 in.

d. 2 in.

e. it is full

32. A temperature of 35° Celsius is about

a. 52° Fahrenheit

b. 77° Fahrenheit

c. 95° Fahrenheit

d. 63° Fahrenheit

e. 32° Fahrenheit

33. If each starting player on a basketball team shakes hands with each other starting player on his team, how many handshakes will there be altogether (There are 5 starting players on a basketball team)?

a. 5

b. 25

c. 32

d. 10

e. 20

34. The area of square DEFG is 1 cm^2. What is the area of $\triangle ABC$?
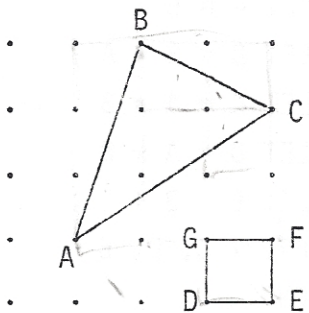
a. $3\frac{1}{2}$ cm^2

b. 3 cm^2

c. $4\frac{1}{2}$ cm^2

d. 4 cm^2

e. $4\frac{3}{4}$ cm^2

35. A car travels 100 miles at 40 m.p.h. What average speed must the car maintain for the next 100 miles so that the average for the 200 miles is 50 m.p.h.?

a. 55 m.p.h.

b. $66\frac{2}{3}$ m.p.h.

c. 60 m.p.h.

d. 65 m.p.h.

e. none of the above

36. Which of the following numbers is between $.\overline{75}$ and $.\overline{76}$?

a. .751

b. $.\overline{751}$

c. $.\overline{761}$

d. $.\overline{7}$

e. .7

37. What is the unit's digit for 2^{100}?

a. 0

b. 2

c. 4

d. 6

e. 8

38. The quadrilateral ABCD is a square with AB = 6. Also E is the midpoint of $\overline{AD}$. The area of $\triangle ACE$ is

a. 6 square units

b. 8 square units

c. 9 square units

d. 10 square units

e. 12 square units

39. What is the measure of the angle made by the hour hand and minute hand of a clock at 7:20?

a. 80°

b. 85°

c. 90°

d. 95°

e. 100°

40. If you are to travel from A to B going only in the direction of the arrows, how many different trips are possible?

a. 20

b. 18

c. 10

d. 6

e. 16