Junior High School Mathematics Competition

SEVENTH GRADE TEST

1983

SCORING FORMULA: 4R - W + 40

Prepared by:

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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	Х	+	1	=	2,	then	Х	equals
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- (a) 0
- (b) 2
- (c) -1
- (d) 1
- (e) none of the above

1cas	- b	TC 1	entition.	:e:
2 cas	b=	r, C 3	r d	-e:
3 < a ≥	∴b ·:	-C-	: d:	e
4 ca =	·=b.:	- C :	: d :	: e
5 (2)	: h ::	C C 2	- 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 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. 0.35 =
 - a. $\frac{3}{50}$
 - b. $\frac{7}{20}$
 - c. $\frac{3}{10}$

- d. $\frac{2}{7}$
- e. $\frac{3}{5}$

- 2. $8 + 64 \div 2^2 \cdot 2$
 - a. 36
 - b. 16
 - c. 8

- d. 40
- e. 9
- 3. 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
- 4. $2\frac{11}{12} \div 5\frac{5}{8} =$
 - a. $16\frac{13}{32}$
 - b. $\frac{44}{75}$
 - c. $11\frac{7}{15}$

- d. $\frac{22}{27}$
- e. $\frac{14}{27}$
- 5. One meter is the same length as
 - a. $\frac{1}{100}$ cm
 - b. 100 cm
 - c. 1000 cm

- d. $\frac{1}{100}$ km
- e. 100 mm

- 6. A number is called "perfect" if it equals the sum of its proper divisors. For instance, 6 is a perfect number since its proper divisors are 1, 2, and 3, and 1 + 2 + 3 = 6. Which of the following numbers is perfect?
 - a. 8

d. 28

b. 12

e. 40

- c. 20
- 7. 6% · 6% =
 - a. .36%

d。 360%

b. 3.6%

e。 none of the above

- c. 36%
- 8. How many volumes of a set of encyclopedias can be placed on a shelf 3 feet long if each volume is 1.5 inches thick?
 - a. 20

d. 54

b. 24

e. 2

- c. 45
- 9. The least common multiple of $3^2 \cdot 5 \cdot 7^3 \cdot 11$ and $2^3 \cdot 3 \cdot 7^2 \cdot 13^2$ is
 - a. $3 \cdot 7^2$

- d. $2^3 + 3^2 + 5 + 7^3 + 11 + 13^2$
- b. $2^3 \cdot 3^3 \cdot 5 \cdot 7^3 \cdot 11 \cdot 13^2$
- e. $2^3 \cdot 3^2 \cdot 5 \cdot 7^3 \cdot 11 \cdot 13^2$
- c. 2 · 3 · 5 · 7 · 11 · 13
- 10. 3.6 ÷ .0012 =
 - a. 3

d. 300

b. 30

e. 30,000

- c. 3000
- 11. $.\overline{5} =$
 - a. $\frac{1}{2}$

d. $\frac{5}{11}$

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

e. $\frac{11}{20}$

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

12.	Which	of	the	following	numbers	is	between	.75	and	.76?
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a. .751

d. .7

b. .751

e. .7

c. .761

13. 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. 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}

14. (1.1)(.12) =

a. 13.2

d. .0132

b. 1.32

e. .00132

c. .132

15. What is the mean for the set of scores 85, 95, 72, 84, 94, 68?

a. 83

d. 96

b. $84\frac{1}{2}$

e. 85

c. 68

16. $(7 \circ 6)4 = 4(7 \circ 6)$ is an instance of which property?

- a. Associative property of multiplication
- b. Commutative property of multiplication
- c. Distributive property
- d. Closure property
- e。 Identity property

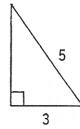
- 17. Which of the following numbers is between $\frac{2}{3}$ and $\frac{3}{4}$?
 - a. $\frac{5}{6}$

d. $\frac{17}{24}$

b. $\frac{7}{12}$

e. $\frac{19}{24}$

- c. $\frac{31}{48}$
- 18. Which of the following is a true sentence?
 - a. $\frac{4}{0} = 0$ and $\frac{0}{4} = 0$.
 - b. $\frac{4}{0} = 4$ and $\frac{0}{4} = 4$.
 - c. $\frac{4}{0} = 0$ and $\frac{0}{4}$ is not defined.
 - d. $\frac{4}{0}$ is not defined and $\frac{0}{4} = 0$.
 - e. $\frac{4}{0}$ is not defined and $\frac{0}{4}$ is not defined.
- 19. What is the area of the right triangle in the diagram?
 - a. $7\frac{1}{2}$ square units
 - b. 12 square units
 - c. 6 square units
 - d. 15 square units
 - e. 8 square units



- 20. January 1, 1983, was a Saturday. What day of the week will January 1, 1984, be?
 - a. Sunday

d. Wednesday

b. Monday

e. Thursday

c. Tuesday

- 21. A first circle has a radius of r units and a second circle has a radius of r + 1 units. How much larger in area is the second circle than the first?
 - a. $2\pi r + \pi$

d. 2π

b. π

e. $2\pi r + 2\pi$

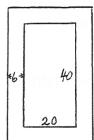
- c. $\pi r^2 + 2\pi r + 1$
- 22. A man fenced in a square plot of land. The posts were spaced evenly. There were ten posts on each side. How many posts were there altogether?
 - a. 20

d. 36

b. 30

e. 40

- c. 32
- 23. What is the area of a concrete border 6 feet wide around a swimming pool that is 20 by 40 feet?
 - a. 864 square feet
 - b. 800 square feet
 - c. 1024 square feet
 - d. 1664 square feet
 - e. 126 square feet



- 24. There were some students seated in a circle in a classroom. A box of candy that contained 71 pieces of candy was passed around. Each child took one piece of candy and the candy was passed around again and again each child took one piece. This process was continued until no candy was left. A particular student got the first and also the last piece. Which of the following is a <u>false</u> sentence?
 - a. There could have been 14 students in the classroom.
 - b. There could have been 10 students in the classroom.
 - c. There could have been 9 students in the classroom.
 - d. There could have been 7 students in the classroom.
 - e. There could have been 5 students in the classroom.

25.	A tank $\frac{1}{2}$ full of oil has 65 gallons many gallons does the tank hold?	pump	ed out leaving the tank $\frac{1}{3}$ full. How
	a. 130	d.	390
	b. 195	e.	none of the above
	c. 325		
26.	Let S = {1, 2, 3,, 50}. How man	ny∙in	tegers in S are not divisible by 7?
	a. 7	d.	49
	b. 1	e.	43
	c. 42		
27.	What is the measure of the angle mad of a clock at 2:00 o'clock?	de by	the hour hand and the minute hand
	a. 30 ⁰	d.	75 ⁰
	b. 45 ⁰	e.	90 ⁰
	c. 60 ⁰		
28.	A class has a ratio of 3 boys to 4 gas a total of 28 people in the class?	girls	. How many boys are there if there is
	a. 7	d.	13
	b. 12	e.	15
	c. 9		
29.	14,621 ÷ 17 + 19,379 ÷ 17 =		
	a. 2000	d.	1,541
	b. 1,856	e.	2,361
	c. 1,900		
30.	Tom gave $\frac{1}{3}$ of his marbles to Jane and marbles left, how many marbles did h	-	
	a. 24	d.	54
	b. 48	e.	42
	c. 36		

31.
$$\frac{1}{x} + \frac{1}{y} =$$

a.
$$\frac{2}{x + y}$$

d.
$$\frac{x + y}{xy}$$

b.
$$\frac{1}{x + y}$$

e.
$$\frac{xy}{x+y}$$

c.
$$\frac{1}{xy}$$

32. A hat contains slips of paper numbered 1 through 9 and one slip is drawn at random. What is the probability that the number drawn is not divisible by 3?

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

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

b. $\frac{1}{3}$

e. $\frac{7}{9}$

33. If the pattern at the right is continued, what is the number on the tenth row that immediately precedes the equals sign?

$$1 + 2 = 3$$
 $4 + 5 + 6 = 7 + 8$
 $9 + 10 + 11 + 12 = 13 + 14 + 15$

34. $\frac{1}{1 \cdot 2} + \frac{1}{2 \cdot 3} + \frac{1}{3 \cdot 4} + \cdots + \frac{1}{23 \cdot 24} =$

a.
$$\frac{11}{12}$$

d.
$$\frac{23}{24}$$

b.
$$\frac{15}{16}$$

e.
$$\frac{25}{23}$$

c.
$$\frac{22}{23}$$

35. An advertisement for a tire company states that they are having a 20-20 sale. They explain that this means that the tires were discounted 20% and then were discounted 20% again. What single discount would be equivalent?

36.	Find the smallest of three consecuti	ve even integers whose sum is 108.
50.	a. 38	d. 32
	b. 36	e. 18
	c. 34	
		urns up heads each time. What is the
37.	A fair coin is tossed 3 times and to probability of a head on the 4 th tos	
	a. $\frac{1}{2}$	$d \cdot \frac{1}{8}$
	b. $\frac{1}{16}$	e. 2
	c. 1	
38	. What is the unit's digit for 6^{83} ?	
	a. 1	d. 6
	b. 2	e. 8
	c. 4	
39	 How many squares are pictured alto 	gether?
0.	a. 16	
	b. 20	
	c. 25	
	d. 28	
	e. 30	
2	10. The average of three numbers is 8 is the other number?	30. If two of them are 74 and 78, then what
	a. 76	d. 86
	b. 84	e. none of the above
	c. 88	