

1996 SEVENTH GRADE MATHEMATICS COMPETITION

AUSTIN PEAY STATE UNIVERSITY
CLARKSVILLE, TENNESSEE

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UNIVERSITY OF TENNESSEE AT MARTIN
MARTIN, TENNESSEE

Seventh Grade Test
1996
Scoring Formula $4R - W + 40$

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DIRECTIONS:

This is a test of your competence in middle school mathematics. For each problem there are five possible answers listed. You are to work the problems, determine the correct answer, and indicate your choice on the separate answer sheet provided.

SAMPLE:

1. If $x + 1 = 2$, then x equals
 - a. 0
 - b. 2
 - c. -1
 - d. 1
 - e. none of the above

- | | | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | E |
| 1 | ① | ② | ③ | ● | ⑤ |
| | A | B | C | D | E |
| 2 | ① | ② | ③ | ④ | ⑤ |
| | A | B | C | D | E |
| 3 | ① | ② | ③ | ④ | ⑤ |

The correct answer is 1 which is d; so you should answer this problem by darkening the space on the answer sheet corresponding with this choice.

If you change your mind about your 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 and begin. When you have finished one page, go on to the next. The working time for the entire test is 60 minutes.

1. If 12 perfectly round marbles, each 1 cm in diameter, were arranged in a straight row, touching each other, what would be the distance between the centers of the first and last marbles?

- (a) 10 cm
- (b) 11 cm
- (c) 12 cm
- (d) 13 cm
- (e) 14 cm

2. I am 10 years older than my sister. Ten years ago, she was 10. How old will I be in ten years?

- (a) 20
- (b) 30
- (c) 40
- (d) 50
- (e) 60

3. Points A, B, C, and D lie on a line, as shown in the diagram. If $AC = 20$, $BC = 15$, and $AD = 30$, then $CD =$



NOTE: The diagram is not necessarily drawn to scale.

- (a) 5
- (b) 10
- (c) 15
- (d) 20
- (e) 25

4. Jack had a bag of 128 apples. He sold 25% of them to Jill. Next he sold 25% of those remaining to June. Of those apples still in his bag, he gave the shiniest one to his teacher. How many apples did Jack have then?

- (a) 7
- (b) 63
- (c) 65
- (d) 71
- (e) 111

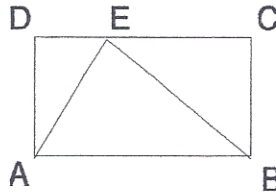
5. How many ways are there to make 20¢ using only pennies, nickels and dimes?

- (a) 9
- (b) 10
- (c) 11
- (d) 12
- (e) 13

6. A bag contains 3 marbles that are identical except for color. One marble is red; the other two are blue. Without looking, a person takes two marbles from the bag at the same time. What is the probability that both of the marbles drawn were blue?

- (a) $\frac{1}{3}$
- (b) $\frac{1}{2}$
- (c) $\frac{2}{3}$
- (d) $\frac{3}{4}$
- (e) $\frac{5}{6}$

7. In the rectangle below, the area of $\triangle ABE$ is 12 square units. What is the area of rectangle ABCD?



- (a) 48 square units
 - (b) 36 square units
 - (c) 28 square units
 - (d) 24 square units
 - (e) 20 square units
8. A 12-oz cup is $\frac{2}{3}$ full and an 8-oz cup is $\frac{3}{4}$ full. The liquid from both of these cups is poured into a 20-oz cup. The 20-oz cup is
- (a) $\frac{2}{3}$ full
 - (b) $\frac{5}{7}$ full
 - (c) $\frac{12}{17}$ full
 - (d) $\frac{7}{10}$ full
 - (e) completely full

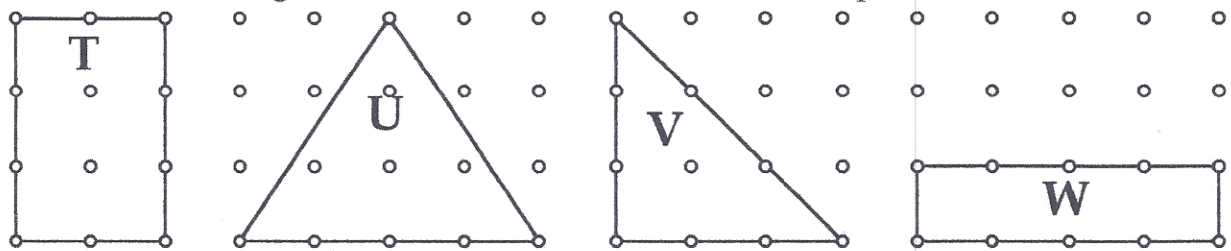
9. If $a + b = 8$, then $4a + 4b - 7 =$

- (a) 25
- (b) 16
- (c) 9
- (d) 5
- (e) 1

10. $4.35 \times 7.92 =$

- (a) 344,520
- (b) 3445.20
- (c) 344.520
- (d) 34.452
- (e) 3.4452

11. Which two figures have the same area but different perimeters?



- (a) T and U
- (b) T and V
- (c) T and W
- (d) U and V
- (e) V and W

12. $5^6 \cdot 2^6 =$

- (a) 1,000
- (b) 10^{12}
- (c) 7^6
- (d) 1,000,000
- (e) 995

13. On a scale drawing, a segment 5 cm long represents a distance of 40 meters. What distance does a segment 6.75 cm long represent?

- (a) 51 meters
- (b) 53 meters
- (c) 54 meters
- (d) 57 meters
- (e) 60 meters

14. Which of the following is NOT a prime number?

- (a) 107
- (b) 87
- (c) 67
- (d) 47
- (e) 41

15. A tennis player burns 800 calories for each hour she is playing. How many calories does she burn if she plays 1 hour and 15 minutes?

- (a) 600
- (b) 800
- (c) 900
- (d) 1000
- (e) 1600

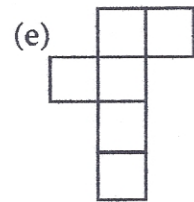
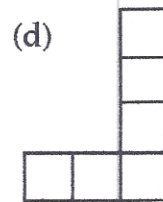
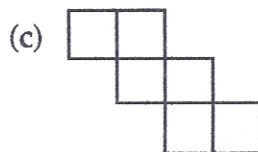
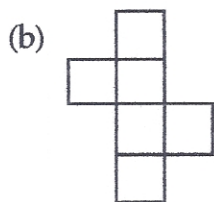
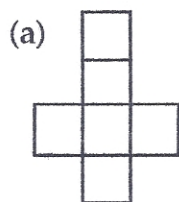
16. If January 1 falls on a Sunday, on what day will January 31 fall?

- (a) Sunday
- (b) Monday
- (c) Tuesday
- (d) Wednesday
- (e) Thursday

17. The perimeter of a square is 32 inches. What is the area of the square?

- (a) 64 square inches
- (b) 64 inches
- (c) 32 square inches
- (d) 32 inches
- (e) 16 square inches

18. Which of the following would NOT fold up to make a cube?



19. What is the sum of the least prime number and the greatest prime number less than 50?

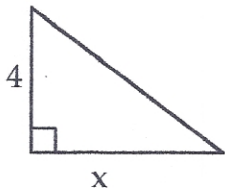
- (a) 44
- (b) 46
- (c) 48
- (d) 49
- (e) 50

20. For every two gidgets purchased at the regular price, you can buy a third gidget for 1¢. A total of 9 gidgets can be purchased for 45¢. What is the regular price of one gidget?
- (a) 5¢
 - (b) 6¢
 - (c) 7¢
 - (d) 8¢
 - (e) 9¢
21. I have twice as many dimes as nickels. The value of my nickels is \$2.10. What is the value of my dimes?
- (a) \$4.20
 - (b) \$6.40
 - (c) \$7.20
 - (d) \$8.20
 - (e) \$8.40
22. Jane has two pennies, two nickels and two dimes. How many different amounts of money can Jane make using exactly two coins?
- (a) 4
 - (b) 5
 - (c) 6
 - (d) 7
 - (e) 8
23. For $\triangle ABC$, $m \angle A = 55^\circ$ and $m \angle B = 67^\circ$, then $m \angle C =$
- (a) 55°
 - (b) 56°
 - (c) 57°
 - (d) 58°
 - (e) 63°
24. Which of the following could NOT be the lengths of the sides of a triangle?
- (a) 5 inches, 6 inches, and 7 inches
 - (b) 5 inches, 8 inches, and 9 inches
 - (c) 5 inches, 10 inches, and 10 inches
 - (d) 5 inches, 10 inches, and 14 inches
 - (e) 5 inches, 9 inches, and 14 inches

25. $15 - 14 + 13 - 12 + 11 - 10 + 9 - 8 + 7 - 6 + 5 - 4 + 3 - 2 + 1 =$

- (a) 20
- (b) 15
- (c) 10
- (d) 9
- (e) 8

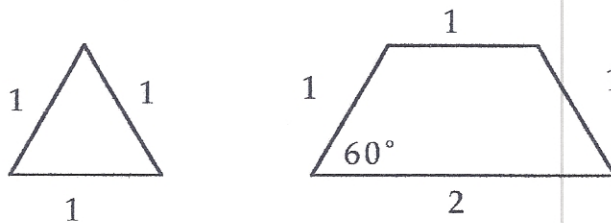
26.



The area of the right triangle pictured above is 16 square units. Then $x =$

- (a) 4
- (b) 6
- (c) 8
- (d) 10
- (e) 12

27. Twenty of the trapezoidal tiles shown below can cover the floor of a shower completely without overlapping. The shower floor can also be completely covered with the triangular tiles shown below without overlapping. How many of the triangular tiles are needed to cover the shower floor?



- (a) 60
- (b) 40
- (c) 36
- (d) 24
- (e) 12

28. There were 72 people seated in a theater. Forty percent of the seats were empty. How many people would the theater seat?

- (a) 100
- (b) 112
- (c) 120
- (d) 180
- (e) 288

29. Which number in the set {9, 10, 12, 15, 16} has the greatest number of divisors?
- (a) 9
 - (b) 10
 - (c) 12
 - (d) 15
 - (e) 16
30. A family plans to take a trip to Fargo. Fargo is 390 miles from their home. If they travel at 60 miles per hour, what time will they need to leave home in order to arrive in Fargo at 11:00?
- (a) 6:00
 - (b) 5:30
 - (c) 5:15
 - (d) 5:00
 - (e) 4:30
31. Of the fractions shown below, which fraction represents the greatest number?
- (a) $\frac{149}{200}$
 - (b) $\frac{301}{400}$
 - (c) $\frac{401}{600}$
 - (d) $\frac{597}{800}$
 - (e) $\frac{893}{1200}$
32. Give the next number in the sequence: 2, 3, 5, 8, 13, 21, ...
- (a) 27
 - (b) 28
 - (c) 29
 - (d) 34
 - (e) 38
33. When a pail containing 40 nails is placed on a scale, the scale reads 475 grams. When the same pail containing only 20 nails is placed on the scale, it reads 395 grams. How much does the pail weigh?
- (a) 315 grams
 - (b) 320 grams
 - (c) 325 grams
 - (d) 350 grams
 - (e) 380 grams

34. How many natural numbers in the set $\{1, 2, 3, 4, \dots, 1000\}$ are perfect cubes?

- (a) 10
- (b) 27
- (c) 81
- (d) 100
- (e) 250

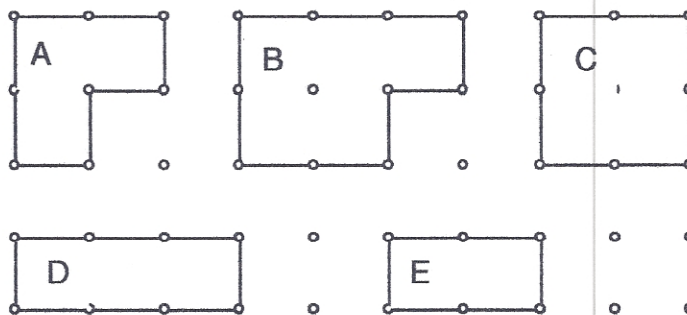
35. It is impossible for a triangle to be both

- (a) scalene and obtuse.
- (b) right and scalene.
- (c) right and isosceles.
- (d) obtuse and scalene.
- (e) right and equilateral.

36. Which of the following numbers is divisible by 12?

- (a) 3,000,000,342
- (b) 3,000,000,432
- (c) 3,000,000,234
- (d) 3,000,000,243
- (e) 3,000,000,423

37. One letter is chosen at random from the set $\{A, B, C, D, E\}$. Each letter represents one of the polygons shown below. What is the probability that the corresponding polygon has a perimeter greater than 7 units and an area less than 4 square units?



- (a) 0
- (b) $\frac{1}{5}$
- (c) $\frac{2}{5}$
- (d) $\frac{3}{5}$
- (e) $\frac{4}{5}$

38. A number is drawn at random from the set {5, 8, 12, 16, 20, 24, 28}. What is the probability that the number selected is divisible by 4 and not divisible by 3?

- (a) $\frac{1}{4}$
- (b) $\frac{3}{8}$
- (c) $\frac{2}{7}$
- (d) $\frac{3}{7}$
- (e) $\frac{4}{7}$

39. A hardware store buys a snowblower at a wholesale price. The retail price the store charges for the snowblower is one third more than the wholesale price. In the spring the store decides to put the snowblower on sale. The sale price is marked down 25% from the retail price. Which of the following statements is true?

- (a) The sale price is the same as the wholesale price.
- (b) The sale price is $8\frac{1}{3}\%$ higher than the wholesale price.
- (c) The sale price is $8\frac{1}{3}\%$ lower than the wholesale price.
- (d) The sale price is 12% higher than the wholesale price.
- (e) The sale price is 12% lower than the wholesale price.

40. A certain kind of pencil was originally priced at 50 cents but not very many pencils were sold at that price. Thus the manager decided to sell the pencils at a reduced price. Within a few days the entire remaining stock of these pencils sold for a total of \$31.93. What was the reduced price of the pencil?

- (a) 49¢
- (b) 31¢
- (c) 29¢
- (d) 28¢
- (e) 17¢