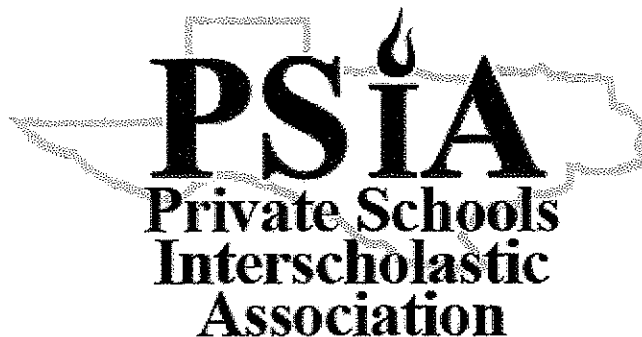


CONTESTANT ID #: \_\_\_\_\_

GRADE LEVEL : \_\_\_\_\_

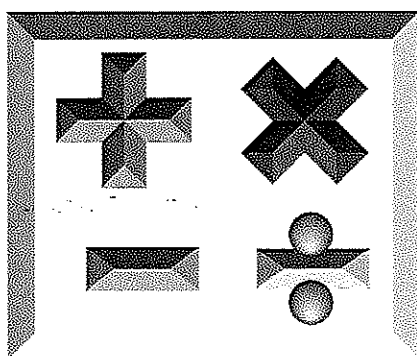
*Place Contestant ID label here BEFORE  
Contest Begins*



# Mathematics

## State Contest

### Grades 4-5



## 2023

FINAL SCORE: \_\_\_\_\_

**(Please do not open test until the signal is given to begin.)**

**Directions:** Choose the best answer for each of the following problems. Choice E is “NOT” for “None of these”.

1.  $3000 - 1782 =$

- A. 1318      B. 1328      C. 1218      D. 1228      E. NOT

2.  $158 + 160 + 162 =$

- A. 470      B. 480      C. 490      D. 500      E. NOT

3. What is the difference between “five hundred sixty-one” and “three hundred ninety-nine”?

- A. 164      B. 162      C. 154      D. 152      E. NOT

4.  $CCLXI + CXLIV - XXXII =$  \_\_\_\_\_ (Arabic numerals)

- A. 373      B. 383      C. 273      D. 283      E. NOT

5.  $\frac{7}{12} - \frac{2}{5} =$

- A.  $\frac{1}{30}$       B.  $\frac{7}{30}$       C.  $\frac{11}{60}$       D.  $\frac{13}{60}$       E. NOT

6. Round  $18\frac{5}{6}$  to the nearest tenth’s place.

- A. 18.6      B. 18.7      C. 18.8      D. 18.9      E. NOT

7.  $453 \times 8 =$

- A. 3624      B. 3844      C. 3784      D. 3324      E. NOT

## PSIA — Mathematics – Grades 4 and 5

8. A 12" by 8" pan of brownies was cut into 2" squares. How many brownies came from this pan?
- A.  $1\frac{1}{2}$  dozen      B. 2 dozen      C.  $2\frac{1}{4}$  dozen      D.  $2\frac{1}{2}$  dozen      E. NOT
9.  $72 \times 45 =$
- A. 3160      B. 3040      C. 3360      D. 3240      E. NOT
10. Which property is shown?  $5 \times (7 + 3) = 5 \times (3 + 7)$
- A. associativity of addition      B. commutativity of addition  
C. associativity of multiplication      D. commutativity of multiplication      E. NOT
11. Lessa has 14 *zebs* and 21 *gracs*. If 3 *gracs* equals 1 *zeb* and 7 *zebs* equal 2 *doons*, how many *doons* can Lessa exchange her money for?
- A. 6      B. 3      C. 12      D. 9      E. NOT
12. What is the average of the set {39, 42, 43, 47, 48, 51}?
- A. 45      B. 46      C. 47      D. 48      E. NOT
13. If  $M = 17$ , which expression is equal in value to  $\frac{2M + 1}{M - 10}$ ?
- A.  $5M - 61$       B.  $\sqrt{M - 1}$       C.  $\frac{M + 3}{5}$       D.  $\frac{M - 2}{3}$       E. NOT
14. What is the remainder when 63852 is divided by 21?
- A. 7      B. 15      C. 17      D. 12      E. NOT

## PSIA — Mathematics – Grades 4 and 5

15. If  $Q$  represents a single digit in the numbers and  $Q4Q \times 2Q = 1Q79Q$ , what is the value of  $3Q \times Q3$ ?
- A. 2701      B. 3154      C. 2268      D. 1462      E. NOT
16. Reduce  $\frac{455}{585}$  to lowest terms.
- A.  $\frac{11}{12}$       B.  $\frac{8}{11}$       C.  $\frac{7}{9}$       D.  $\frac{4}{5}$       E. NOT
17.  $\frac{3}{4} \times \frac{8}{25} \times \frac{5}{21} =$
- A.  $\frac{1}{12}$       B.  $\frac{2}{35}$       C.  $\frac{3}{28}$       D.  $\frac{3}{70}$       E. NOT
18. How many positive integral divisors does 40 have?
- A. 8      B. 12      C. 6      D. 9      E. NOT
19. What percent of 80 is 12?
- A. 20%      B. 15%      C.  $17\frac{1}{2}\%$       D.  $12\frac{1}{2}\%$       E. NOT
20. What is the 41st term in the sequence 1, 7, 13, 19, ...?
- A. 301      B. 281      C. 261      D. 241      E. NOT
21. Evaluate  $a^2 - b^2$  when  $a = 47$  and  $b = 46$ .
- A. 93      B. 143      C. 73      D. 123      E. NOT

## PSIA — Mathematics – Grades 4 and 5

22. A train traveled at 42 mph for 75 minutes. How far did the train travel?
- A. 50 miles      B.  $52\frac{1}{2}$  miles      C. 54 miles      D.  $57\frac{1}{2}$  miles      E. NOT
23.  $\frac{9^2 + 4 \times 6}{\sqrt{25}} =$
- A. 21      B. 8      C. 76      D. 102      E. NOT
24.  $9\frac{4}{5} \div 1\frac{3}{5} =$
- A.  $6\frac{1}{3}$       B.  $6\frac{1}{8}$       C.  $6\frac{1}{4}$       D.  $6\frac{2}{5}$       E. NOT
25. Joy has 15 coins in nickels, dimes, and quarters. She has a different number of coins of each type and she has at least 3 of each coin. What is the largest amount of money she could have?
- A. \$2.40      B. \$2.25      C. \$2.70      D. \$2.55      E. NOT
26. When the numbers 0.034, 0.304, 0.403, 0.0403, and 0.343 are arranged in order from least to greatest, what number is in the middle?
- A. 0.304      B. 0.343      C. 0.0403      D. 0.034      E. NOT
27. A football team has 8 players. How many ways can the coach pick the quarterback, running back, and kicker?
- A. 512      B. 240      C. 336      D. 56      E. NOT

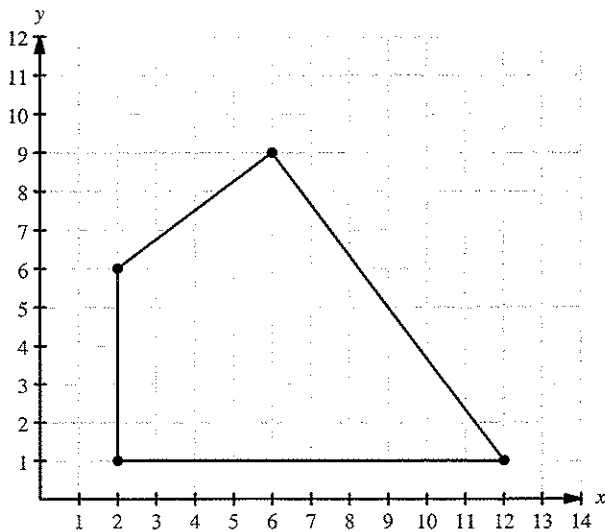
28.  $1 + 3 + 5 + 7 + \dots + 61 =$

- A. 1860      B. 961      C. 1891      D. 991      E. NOT

29. How many times larger is the circumference of a circle than its diameter?

- A.  $\pi$       B.  $2\pi$       C.  $\frac{\pi}{2}$       D.  $4\pi$       E. NOT

30. Find the perimeter of the polygon.



- A. 28  
B. 32  
C. 24  
D. 30  
E. NOT

31. The letter C represents a single digit in the numbers in  $90 \times 7843672 = 70C930480$ . What is the value of C?

- A. 7      B. 6      C. 5      D. 4      E. NOT

32. A special deck of 30 cards has five colors: red, yellow, green, blue, and purple. The numbers 1 through 6 are represented with each color. No two cards have the same color and number. A single card is dealt from the deck. What is the probability the card is blue and has a number smaller than 4?

- A.  $\frac{1}{6}$       B.  $\frac{1}{5}$       C.  $\frac{1}{10}$       D.  $\frac{1}{15}$       E. NOT

33. Megan's gas tank holds 12 gallons of gas. Gas costs \$3.00 per gallon. Her tank currently has  $G$  gallons of gas. How much will it cost (in dollars) her to fill up her tank?
- A.  $36 \times G$       B.  $3 \times G$       C.  $3 \times 12 - G$       D.  $3 \times (12 - G)$       E. NOT
34. If  $5^3 = Z$ , what is  $5^6$ ?
- A.  $Z^2$       B.  $Z^3$       C.  $15Z$       D.  $5Z$       E. NOT
35. How many vertices does the Platonic solid icosahedron have?
- A. 8      B. 12      C. 20      D. 30      E. NOT
36. The tax rate is  $7\frac{1}{2}\%$ . Find the total cost after tax of a book that sells for \$28.00.
- A. \$30.00      B. \$31.10      C. \$32.20      D. \$33.30      E. NOT
37. Which symbol goes in the box to make the statement true?  $8\frac{1}{3} \times \frac{4}{5} \square 8\frac{1}{3} \div 1\frac{4}{5}$
- A.  $>$       B.  $<$       C.  $=$       D. Cannot be determined      E. NOT

38. The ratio of the length to width of a rectangle is 5:3. If the perimeter is 48 cm, what is the area?
- A.  $540 \text{ cm}^2$       B.  $135 \text{ cm}^2$       C.  $270 \text{ cm}^2$       D.  $75 \text{ cm}^2$       E. NOT
39. When teacher placed her markers in 9 cups evenly, she had 3 left over. When she placed the markers in 11 cups evenly, she had 1 left over. Assuming she has been 100 and 200 markers, which of the following ranges is the number of markers she has between?
- A. 110 to 130      B. 130 to 150      C. 150 to 170      D. 170 to 190      E. NOT
40. Abby and Evie live 1200 feet away from each other. Abby walks toward Evie's house at 5 feet per second. Evie walks toward Abby's house at 3 feet per second. Both girls leave at the same time. How long will it take them to meet?
- A.  $2\frac{1}{5}$  minutes      B.  $2\frac{1}{3}$  minutes      C.  $2\frac{1}{4}$  minutes      D.  $2\frac{1}{2}$  minutes      E. NOT





# Mathematics Grades 4-5

## State Contest

### Contestant Answer Sheet

GRADERS: Write scores and initial.

Score 1: \_\_\_\_\_

Score 3: \_\_\_\_\_

Score 2: \_\_\_\_\_

FINAL: \_\_\_\_\_

Contestant ID: \_\_\_\_\_ Grade Level: \_\_\_\_\_

INSTRUCTIONS: Place the PRINTED CAPITAL letter of each answer choice (A, B, C, D, or E) in the blank corresponding to the test item number. SCORING: +5 for each correct answer; -2 for each incorrect answer; no deduction for skipped or unanswered items. Visible erasures and mark-outs constitute a 2-point deduction ONLY if a correct answer is not written in the answer space.

1. \_\_\_\_\_

16. \_\_\_\_\_

31. \_\_\_\_\_

2. \_\_\_\_\_

17. \_\_\_\_\_

32. \_\_\_\_\_

3. \_\_\_\_\_

18. \_\_\_\_\_

33. \_\_\_\_\_

4. \_\_\_\_\_

19. \_\_\_\_\_

34. \_\_\_\_\_

5. \_\_\_\_\_

20. \_\_\_\_\_

35. \_\_\_\_\_

6. \_\_\_\_\_

21. \_\_\_\_\_

36. \_\_\_\_\_

7. \_\_\_\_\_

22. \_\_\_\_\_

37. \_\_\_\_\_

8. \_\_\_\_\_

23. \_\_\_\_\_

38. \_\_\_\_\_

9. \_\_\_\_\_

24. \_\_\_\_\_

39. \_\_\_\_\_

10. \_\_\_\_\_

25. \_\_\_\_\_

40. \_\_\_\_\_

11. \_\_\_\_\_

26. \_\_\_\_\_

12. \_\_\_\_\_

27. \_\_\_\_\_

13. \_\_\_\_\_

28. \_\_\_\_\_

14. \_\_\_\_\_

29. \_\_\_\_\_

15. \_\_\_\_\_

30. \_\_\_\_\_



## Mathematics Grades 4-5

State 2023

## ANSWER KEY

REMINDERS: PRINTED CAPITAL letters only. SCORING: +5 for each correct answer; -2 for each incorrect answer; no deduction for skipped or unanswered items. Visible erasures and mark-outs constitute a 2-point deduction ONLY if a correct answer is not written in the answer space.

- |       |       |                 |
|-------|-------|-----------------|
| 1. C  | 16. C | 31. C           |
| 2. B  | 17. B | 32. C           |
| 3. B  | 18. A | 33. D           |
| 4. A  | 19. B | 34. A           |
| 5. C  | 20. D | 35. B           |
| 6. C  | 21. A | 36. E (\$30.10) |
| 7. A  | 22. B | 37. A           |
| 8. B  | 23. A | 38. B           |
| 9. D  | 24. B | 39. A           |
| 10. B | 25. D | 40. D           |
| 11. A | 26. A |                 |
| 12. A | 27. C |                 |
| 13. D | 28. B |                 |
| 14. D | 29. A |                 |
| 15. C | 30. D |                 |