



Number Sense

GRADES: 2, 3, 4, 5, 6, 7, 8 | ENTRIES: 3 PER SECTION | TIME: 10 MIN

RESOURCES: SPECIAL TOPICS

2026-2027

Qual • Dist • State*

*Grades 2-3 do not advance to State.

SECTIONS. Each grade competes separately.

ENTRIES. As many as THREE students from each grade levels may be entered in the Number Sense District Contest from each school.

ADVANCING TO STATE. First and second place winners from grades 4 through 8 will advance to State. Third place winners will be alternates. **For grades 2 and 3, this contest concludes at District and does not advance to the State Tournament.**

NATURE OF THE CONTEST. The contest presents 80 problems. Elementary (Grades 2 & 3 and Grades 4 & 5) problems requiring the applications of the four basic operations (+, −, ×, ÷) for their solution constitute the core of what is commonly thought of as number sense. The middle school contest contains problems from whole number arithmetic to advanced topics from the middle school curriculum, including some algebra and geometry, all related to the efficient and/or high speed mental solutions of mathematics problems.

SPECIAL TOPICS. Every two years, new, special topics are presented for Number Sense students in grades 6-8. The new topics for 2026-2028 are (1) Metric Prefixes, (2) Remainder when Dividing by 11, (3) Multiplication by 133, and (4) Arithmetic Mean-Geometric Mean Inequality.

WHAT HAPPENS IN THE CONTEST. The contest director will announce the time and place that contestants and one adult should report for verification of the scoring of tests. Contestant ID numbers will be provided to contestants at roll call and seating of substitutes or alternates. Tests will be distributed to contestants face up, and contestants will be instructed to write their grade levels and their contestant ID numbers in the spaces provided on the front cover. Contestants must not open the test until the start signal is given. (Substitutes taking the place of absent registered contestants should notify the contest director know as they enter the room to save time in roll call.) No alarm watches or other devices that emit sound are allowed in the contest room, except

the contest director's stopwatch to precisely time this contest.

TIME ALLOTTED. Contestants will have 10 minutes beginning at the start signal. No time warning will be given. Contestants shall remain quietly in their seats until the time has expired.

MARKING ANSWERS. Contestants MUST bring to contest and use their own standard **non-erasable BLUE** ball point or ink pen(s) to write answers in the blanks provided on the test. Test is disqualified if the required standard **blue** ink is not used. Pens will NOT be provided by the contest director. Mark-outs and mark-overs on an answer blank constitute a 2-point deduction. Marks of any kind on any portion of the paper, OTHER THAN an answer blank, constitute a disqualification. Any mark in an answer space will constitute an attempt. Problems are arranged in a sequential format (see the Problem Sequence).

RULES FOR WRITING ANSWERS.

(a) **Fractions.** All fractions must be reduced to lowest terms. Improper fractions are acceptable answers. Decimal answers are permitted for the unstarred problems whose answers are exactly expressible as decimals. For example, $\frac{3}{2}$, $\frac{11}{2}$, and 1.5 are all acceptable.

(b) **Symbols.** Symbols such as \$ and % are usually printed on the sheet. Therefore, answers require only the writing of numerals. If a symbol is omitted from the printed sheet, it is not the responsibility of the contestant to make sure the answer is complete. If not printed, the student need not include it in the answer. (This rule excludes dollars and cents markings.)

(c) **Dollars and Cents.** In agreement with the philosophy that answers should be complete, all dollars and cents problems must have complete answers. That is, *twenty-three dollars* must be written as \$23.00 (with .00, even though extraneous zeros after the decimal on other types of problems are prohibited). *Sixteen cents* must be written as \$.16 or 16¢, depending on the answer blank format.

The contestant's adding of a symbol, such as the \$, to a line that already has the symbol posted does not constitute an error.

(d) **Efficient Forms.** Numerical answers should be written so that the answers are complete as in the two examples above. However, the answer should be written in the most efficient form possible. For example, if the answer is 16, the written answer 16.000 is not acceptable for the purposes of the number sense competition. Extraneous zeroes are not to be used. For example, if .16 is the answer, 0.16 is not an acceptable format.

(e) **Exponentials.** An answer such as 3×10^3 should be expressed as 3000 and not left in exponential form.

(f) **Estimation Problems.** Every 10th problem is an estimation problem, denoted by a star. These problems require approximate integral answers, i.e., they permit $\pm 5\%$ error; all other problems require exact answers. Numerals (and commas) are the only symbols allowed on estimation problems. No other symbols should be used on estimation problems.

(g) **Commas.** Commas are allowed but not recommended. Misuse of the comma will constitute an incorrect answer (for example, if the answer is 16,780 and the contestant responds with 167,80 the answer will be counted wrong since the comma is incorrectly placed).

(h) **Units.** The answer must be written in the correct units given in the problem. If the unit is implied in the question, the contestant is NOT responsible for writing the units, but it does not constitute an incorrect answer if the correct units word or abbreviation is spelled out. If the incorrect word or abbreviation is given by the contestant, the question shall be marked wrong. A question that end with "____ (numerals)" is asking for the answer to be written with Arabic numerals (0, 1, 2,...) and NOT spelled out (zero, one, two,...). This direction is sometimes necessary if written words are used for clarity in the question or when the question otherwise has no other unit where one might expect it. It further gives guidance to the contestant about how to answer the question.

(i) **Numbers.** The *natural numbers* are 1, 2, 3, etc. The *whole numbers* are 0, 1, 2, 3, etc.

SCORING. Award 5 points for each correct answer. Deduct 2 points for each incorrect answer, for each answer that was marked through, marked over, or erased, AND for skipped or unanswered test items down through the last item attempted.

VERIFICATION. See page 16.

MATERIALS. A variety of materials from a large number of sources is available for those who wish to get involved in PSIA Number Sense competition. Several are listed below: 1) Previous years' PSIA Number Sense tests are included in both the PSIA Elementary and Middle School Academic Study Materials booklets, which may be ordered from the PSIA Store. 2) *The Elements of Number Sense 2021 Edition* by Doug Ray. A student-friendly resource for learning the basics of Number Sense. Includes a few tricks and tests for honing skills. Available at the PSIA Store Materials. Other resources are available at the Dr. Numsen website: www.academicmeet.com. Additional resource providers are linked to the PSIA website: www.psiacademics.org under Resources.

Shall and Must List

Contestants **shall** write their Contestant ID on the Test Booklet and not their name or their school name.

Result: Contest director should remedy the test by erasing or covering up the identifying information.

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Contestants **must** use a pen with blue ink.

Result: If blue ink is not used, disqualification must result.

♦ ♦ ♦

Contestants **must** not use timers.

Result: Disqualification.

♦ ♦ ♦

Contestants **must** not have any devices emit an audible sound during the 10 minute testing period.

Result: Disqualification.