

# A+ Elementary Number Sense

Test Writer's Perspective

# Andy Zapata

Married

4 children

3 grandchildren

Classroom Teacher 42 years

Co-founder Texas Math and Science Coaches Association (TMSCA)

Azle Junior High – (1974 – 1982)

Azle High School – (1982 – 2016)

Physics teacher (1982 – 2016)

AP Physics reader – (2004 – 2016)

AISD Grant Writer – (2017)

High School Aerospace Scholar counselor – (2006 – 2010)

Coached – JH slide rule (1974 – 1982)

HS slide rule, number sense, calculator applications, mathematics, science (1982 – 2016)

Coached numerous high school state champions and state championship teams.

Azle HS UIL academic coordinator

2001 – 2002 UIL sponsor excellence award winner

UIL A+ Number Sense, Calculator, Mathematics consultant (2007 – present)

**adzapata74@gmail.com**

# Elementary Problem Guidelines

## **Problem 1 – 20**

1. Addition, subtraction, multiplication, & division of whole numbers
2. Recognizing place value
3. Rounding off whole numbers
4. Multiplication short-cuts
5. Remainder type problems
6. Even & odd number type problems
7. Expanded notation
8. Sums of whole numbers with regrouping
9. Differences of whole numbers with regrouping
10. Roman numerals/Arabic numbers conversion

## Problem 1 – 20

(1)  $22 - 19 =$  \_\_\_\_\_

(2)  $7 \times 12 =$  \_\_\_\_\_

(3)  $220 \div 4 =$  \_\_\_\_\_

(4)  $2021 + 2022 =$  \_\_\_\_\_

(5)  $12 \times 5 \times 10 =$  \_\_\_\_\_

(6)  $132 \times 5 =$  \_\_\_\_\_

(7)  $143 \div 11 =$  \_\_\_\_\_

(8)  $73 - 28 - 25 =$  \_\_\_\_\_

(9)  $24 \times 25 =$  \_\_\_\_\_

\*(10)  $201 \times 2021 =$  \_\_\_\_\_

(11) 414599.6206 rounded to the thousands place is

\_\_\_\_\_

(12)  $22 \times 18 =$  \_\_\_\_\_

(13) Which digit is in the hundred-thousandths place in  
21340.65789? \_\_\_\_\_

(14)  $24 \times 12 =$  \_\_\_\_\_

(15) What is the remainder for  $2918 \div 9$ ? \_\_\_\_\_

(16) There are \_\_\_\_\_ whole numbers between 6 and 26.

(17)  $2 \times 10^4 + 6 \times 10^1 + 8 \times 10^{-1} =$  \_\_\_\_\_ (decimal)

(18)  $8 \times 15 - 15 \times 2 =$  \_\_\_\_\_

(19) MMXXI = \_\_\_\_\_ (Arabic Numeral)

\*(20)  $2022 \times 21 - 2022 =$  \_\_\_\_\_

# Elementary Problem Guidelines

## **Problems 21 – 40**

1. Addition/subtraction of fractions with common denominators
2. Addition, subtraction, multiplication, & division of decimal fractions
3. Comparing decimal fractions
4. Conversion problems (either way): fraction/decimal, percent/fraction, percent/decimal
5. Order of operations
6. More multiplication short-cuts
7. Ratio/proportion
8. Consumer type problems

# Elementary Problem Guidelines

## Problems 21 – 40 (continued)

- 9. Problems about prime numbers
- 10. Greatest common divisor (GCD) & least common multiple (LCM)
- 11. Conversion problems (either way): length, measurements, time

Please note that problem types in one category should not be found in a previous category. However, problem types of one category can be found in subsequent categories.

For example, one would not expect to see the problem  $\frac{4}{9} + \frac{2}{9}$  in problems 1 – 20. However, one can see this problem  $\left(\frac{4}{9} + \frac{2}{9}\right)^2$  in problems 61 – 80.

## Problem 21 – 40

(21)  $14 + 16 + 18 + 20 =$  \_\_\_\_\_

(22)  $8 \div 2 \times 3 =$  \_\_\_\_\_

(23)  $4\frac{1}{7}$  weeks = \_\_\_\_\_ days

(24)  $5\frac{3}{4}\%$  = \_\_\_\_\_ decimal

(25)  $\frac{13}{24} + \frac{5}{24} =$  \_\_\_\_\_

(26)  $92 \times 93 =$  \_\_\_\_\_

(27)  $0.96 =$  \_\_\_\_\_ common fraction

(28) If 48 ♣ costs 64¢ then 36 ♣ cost \_\_\_\_\_ ¢

(29)  $79 \times 11 =$  \_\_\_\_\_

\*(30)  $667 \times 239 =$  \_\_\_\_\_

(31) 17 quarters = \_\_\_\_\_ nickels

(32) The sum of the two largest primes less than 10 is \_\_\_\_\_

(33) \$3.20 minus 3 quarters = \$ \_\_\_\_\_

(34)  $\frac{9}{100} \div \frac{27}{100} =$  \_\_\_\_\_

(35) 72 inches = \_\_\_\_\_ feet

(36) The LCM of 12 and 9 is \_\_\_\_\_

(37)  $48 \times 101 =$  \_\_\_\_\_

(38)  $87\frac{1}{2}\%$  = \_\_\_\_\_ common fraction

(39) The ratio of ounces in 1 pint to 1 quart is \_\_\_\_\_

\*(40)  $44\frac{4}{9}\% \times 6299 =$  \_\_\_\_\_

# Elementary Problem Guidelines

## **Problems 41 – 60**

1. Addition, subtraction, multiplication & division of fractions and mixed numbers
2. Substitution problems
3. Perimeter/area of: square, rectangle, triangle
4. Radius/diameter of a circle
5. Powers & roots of numbers
6. Solving simple equations
7. Sequences
8. Sets
9. Word problems

# Elementary Problem Guidelines

## **Problems 41 – 60 (continued)**

- 10. Volume of cube/rectangular box
- 11. Right triangle problems
- 12. More multiplication short-cuts
- 13. Base systems conversions

## Problem 41 – 60

- (41)  $16^2 =$  \_\_\_\_\_
- (42)  $4^3 =$  \_\_\_\_\_
- (43) The volume of a cube with side 4-cm is \_\_\_\_\_  $\text{cm}^3$
- (44) The perimeter of a rectangle with sides 11-m and 19-m is \_\_\_\_\_ m
- (45) If  $15 + x = 36$ , then  $x =$  \_\_\_\_\_
- (46)  $\frac{9}{10} \div \frac{3}{5} =$  \_\_\_\_\_
- (47)  $6\frac{1}{3} \times 6\frac{2}{3} =$  \_\_\_\_\_ (mixed number)
- (48)  $37 \times 33 =$  \_\_\_\_\_
- (49) If  $x = 15$ , then  $3x - 20 =$  \_\_\_\_\_
- \*(50)  $13 \times 15 \times 17 =$  \_\_\_\_\_
- (51) What is the number,  $k$ , in the sequence:  
1, 1, 2, 3,  $k$ , 8, 13, ...? \_\_\_\_\_
- (52) If the area of a circle is  $144\pi$ , what is the diameter of the circle? \_\_\_\_\_
- (53) What is the area of a right triangle with hypotenuse 5 in. and leg 4 in.? \_\_\_\_\_  $\text{in}^2$
- (54)  $125 \times 16 =$  \_\_\_\_\_
- (55) What whole number squared minus eight equals twenty-eight? \_\_\_\_\_
- (56) A triangle has sides of 10-in, 12-in and 14-in. What is its semi-perimeter? \_\_\_\_\_ in
- (57) How many elements are in the intersection of the sets  $\{1, 2, 3, \dots, 10\}$  and  $\{2, 4, 6, \dots, 20\}$ ?  
\_\_\_\_\_
- (58) How many elements are in the power set of  $\{T, H, R, E, E\}$ ? \_\_\_\_\_
- (59) What is the perimeter of the rhombus with a side length of  $16\frac{1}{4}$ ? \_\_\_\_\_
- \*(60) 2991 weeks = \_\_\_\_\_ days

# Elementary Problem Guidelines

## **Problems 61 – 80**

1. Addition, subtraction, multiplication & division of integers
2. Inverses
3. Basic geometry facts
4. More area problems
5. Squaring two-digit numbers
6. More multiplication short-cuts
7. More powers and roots of numbers
8. More consumer type problems
9. Inequalities
10. Probability
11. More area problems: parallelogram, rhombus, trapezoid

## **Problem 61 – 80**

(61)  $27$  (base 10) = \_\_\_\_\_ (base 9)

(62)  $-2^4 \div 4 =$  \_\_\_\_\_

(63) 10 square feet = \_\_\_\_\_ sq.in.

(64)  $32^2 =$  \_\_\_\_\_

(65) Two fair dice are thrown. What is the probability that the sum of the two sides showing is 5? \_\_\_\_\_

(66) 15 quarters plus 18 nickels plus 9 dimes plus 15 cents = \$ \_\_\_\_\_

(67) The volume of a rectangular box that measures 10-m by 8-m by 12-m is \_\_\_\_\_  $\text{m}^3$

(68) If  $x + 12 < 8$ , then  $x <$  \_\_\_\_\_

(69)  $\frac{7}{9} + \frac{9}{7} =$  \_\_\_\_\_ (mixed number)

\*(70)  $1111 \times 809 + 1 =$  \_\_\_\_\_

(71) 390 seconds = \_\_\_\_\_ minutes

(72) For a rectangle with sides 4-cm and 8-cm, what is the ratio of its perimeter to its area?  
\_\_\_\_\_

(73) If 9% of  $x$  is 4.5% of 6, then  $x =$  \_\_\_\_\_

(74)  $(-18) + (-24) \div (-2) =$  \_\_\_\_\_

(75)  $36^2 + 12^2 =$  \_\_\_\_\_

(76)  $28^2 - 18^2 =$  \_\_\_\_\_

(77) What is the distance between -12 and 12 on the number line? \_\_\_\_\_

(78)  $143 \times 28 =$  \_\_\_\_\_

(79) The area of a square with diagonal 8 is \_\_\_\_\_

\*(80)  $\sqrt{81796} =$  \_\_\_\_\_

# Certain Facts Students Should Know!

Squares up to 25.

Cubes up to 10.

Common English measurement conversions (length, weight, area, volume, time)

American monetary conversions

Basic metric measurement conversions

Fraction, decimal, percent - equivalencies (thirds, fourths, fifths, sixths, eighths, ninths, elevenths, twelfths, sixteenths)

# Number Sense Resources 2021 – 2022

## A+ Academics Resources

This is a list of independent companies who advertise preparatory materials for UIL elementary and junior high academic contests. **The University Interscholastic League is not affiliated with any of the companies and cannot be responsible for any of their products or services.**

# Number Sense Resources

## 2021 – 2022

### **AD Testing Service**

Social Studies, Current Events, Accounting (NEW!), Computer Science, Number Sense, Science, Literary Criticism and Extemp Speaking

PO Box 1222, San Marcos, Texas 78667

Phone: 512-557-4621 / Fax: 214-296-9665

Web: [www.itsasport.com](http://www.itsasport.com)

E-mail: [adtestingservices@gmail.com](mailto:adtestingservices@gmail.com) or [contactus@itsasport.com](mailto:contactus@itsasport.com) or [sales@itsasport.com](mailto:sales@itsasport.com)

### **AMT Test Writing Service**

- 675 Miller Rd., Azle, TX 76020
- Phone: 817-444-3655
- Email: [entermeet@gmail.com](mailto:entermeet@gmail.com)
- Offers Number Sense: Elements of Number Sense by Jim Cummings. Contains preparatory material for the Number Sense Contest. Accepts School PO's, checks, M/C, Visa, Amex, Disc.

# Number Sense Resources

## 2021 – 2022

### **Best of Texas**

**Accounting, Calculator Applications, Computer Applications, Computer Science, Current Issues and Events, Literary Criticism, Mathematics, Number Sense, Science, Social Studies, and Spelling and Vocabulary**

Peggy Markham

- 6318 Palmetto Way, San Antonio, TX 78253
- Phone: (210) 241-4734; Fax: (210) 236-9445
- Email: Peggy Markham [peggy@bestoftexascontest.com](mailto:peggy@bestoftexascontest.com)
- Website: [www.bestoftexascontest.com](http://www.bestoftexascontest.com)

Apps for smart phones and tablets -- both iOS and Android -- in Spelling, Social Studies, Art, and Music Memory.

# Number Sense Resources

## 2021 – 2022

### **Computer Software Number Sense Computerized – by Larry White**

Larry White Box 25 Millersview, Tx UIL State NS & Mathematics Contest Director

Phone:(325) 483-5446

Email: [texasmath@centex.net](mailto:texasmath@centex.net)

I have put together a group of programs that can assist you in coaching and teaching number sense shortcuts. I have completed NSC-1 containing 23 programs and NSC-2 containing 20 more programs and have another 20 in the works. The programs are excellent for beginners as well as great review for the more advanced number sense. A High School version and a Middle School version of NSC-1 and NSC-2 are available. Also, a set of 25 specially built programs for Elementary School is available.

# Number Sense Resources

## 2021 – 2022

### **D&R Enterprises / Don Skow - Number Sense**

booklet: *NO SENSE IN MATHEMATICS*

Don Skow, 4716 W. Monte Cristo Rd, Edinburg, TX 78541

E-mail: [dps1221@hotmail.com](mailto:dps1221@hotmail.com)

### **Dr. Numsen/Doug Ray**

- PO Box 312578, New Braunfels, TX 78131
- Phone: 512-797-2158; Fax: 208-575-9617
- Email: [doug@academicmeet.com](mailto:doug@academicmeet.com)
- Website: [www.academicmeet.com](http://www.academicmeet.com)

Provides workbooks and practice tests for elementary and junior high Number Sense, Calculator Applications, and Mathematics. Available for Workshops. Author of Mastering Number Sense and Mastering Calculator Applications workbooks. Also available: Mastering Number Sense Drill Master (online practice software) and Trick Center (online videos).

# Number Sense Resources

## 2021 – 2022

### **Hexco, Inc.**

- PO Box 199, Hunt, TX 78024-0199
- 800/391-2891 or 830-367-3825; Fax: 830-367-3824
- Email: [hexco@hexco.com](mailto:hexco@hexco.com)
- Website: [www.hexco.com](http://www.hexco.com)
- Supplies materials for both High School and Grade School contests – Accounting, Art, Computer Applications, Computer Science, Current Issues & Events, Dictionary Skills, Journalism, Literary Criticism, Maps Graphs and Charts, Number Sense, Oral Reading, Ready Writing, Science, Social Studies, Storytelling, and Spelling & Vocabulary. Hexco offers an array of software, videos, online flashcards, and printed products. The company also writes and sells invitational tests for 12 dates per year. Experienced authors and editors.

### **Joe Cuellar - Number Sense**

2309 Adrian Street, Harlingen, TX 78552

956/412-8116

E-mail: [jcuellar@mail.com](mailto:jcuellar@mail.com)

# Number Sense Resources 2021 – 2022

## **Leo Ramirez, Sr.**

- 9801 W. Parmer Lane #2622, Austin, TX 78717
- Phone: 956-491-3155 (cell)
- Email: [toywiz127@aol.com](mailto:toywiz127@aol.com)
- Website: [www.rammaterials.com/](http://www.rammaterials.com/)

Number Sense, Calculator Applications, Mathematics and Science practice tests, DVDS, and workbooks (including UIL, PSIA, and TMSCA Number Sense and UIL, PSIA, and TMSCA Mathematics workbooks) are available. Mr. Ramirez is also available for writing invitational meet tests and conducting workshops.

# Number Sense Resources

## 2021 – 2022

### **MRC Jr.**

- Jamie Pennington
- 412 Paradise Canyon Circle, Paradise, TX, 76073
- Phone: 817-403-0669
- Email: [info@uiltests.com](mailto:info@uiltests.com)
- Website: [www.uiltests.com](http://www.uiltests.com)

Offers practice test sets and invitational tests for 5th/6th and 7th/8th Grade Social Studies, Science I & II, Maps, Charts, and Graphs, Dictionary Skills, Math, and Number Sense.

# Number Sense Resources

## 2021 – 2022

**myQBook Online Preparation Programs in Number Sense and Mathematics for all levels**

**myQBook Meets: Monthly Free Online Meets in Number Sense and Mathematics for all levels.**

- Contact: Mary Jacob
- 1008 Big Canyon Drive, Flower Mound, TX 75028
- myQBook Programs: [www.myqbook.com](http://www.myqbook.com); E-mail: [info@myqbook.com](mailto:info@myqbook.com); Phone: 972-968-8072
- myQBook Meets: [www.myqbookmeets.org](http://www.myqbookmeets.org); E-mail: [info@myqbookmeets.org](mailto:info@myqbookmeets.org); Phone: 214-469-9521
- **myqBook** provides complete online preparation programs in Number Sense and Mathematics for elementary, middle and high school levels. Each program offers more than 350 concept explanations with many solved sample problems and 5 to 10 additional practice questions for each concept. Each program also offers 20 full-length online tests. Visit [www.myQBook.com](http://www.myQBook.com) and register with the ambassador code 2WFTNSMATH to get free trial access. Please email or call to get special discounted rates for schools.

**myQBook Meets** offers free monthly online meets in Number Sense and Mathematics from October to April. Monthly cash awards are given to Teachers of winning teams. Visit [www.myQBookMeets.org](http://www.myQBookMeets.org) to register your team and participate.

# Number Sense Resources

## 2021 – 2022

### **Number Dojo**

- Website: [www.NumberDojo.com](http://www.NumberDojo.com)
- Email: [numdojo@gmail.com](mailto:numdojo@gmail.com)
- Facebook: [www.facebook.com/numberdojo](http://www.facebook.com/numberdojo)

Free resources include the Number Dojo iPhone app, Number Sensei blog with over 100 concepts and free worksheets, Mathing Bee contest info, and contest maps listing information for all published number sense meets. Also flash cards, worksheets, curriculum and concept reference indexes (solution manuals) for purchase.

### **Texas Math & Science Coaches Association (TMSCA)**

- PO Box 206, Olney TX 76374
- Phone: 940-563-1005; Fax: 940-563-1006
- Email: [execsectmsca@gmail.com](mailto:execsectmsca@gmail.com)
- Web: [www.tmsca.org](http://www.tmsca.org)

Membership provides an information forum for coaches of math/science contests; access to purchase Practice Materials and Tournaments Tests for number sense, calculator, mathematics and science for high school, middle school and elementary levels; and access to enter on-line and state meets for all grade levels.

# Number Sense Resources

## 2021 – 2022

### **The Virtual Challenge High School & Middle School Meets**

- Owner/Director: Chuck Thompson
- Email: cthompson1313@gmail.com
- Phone: 940-782-9898
- Website: [www.virtualchallengemeets.com](http://www.virtualchallengemeets.com)

Offers a statewide testing program for the following contests for grades 9 – 12:

Number Sense, Calculator, Mathematics, Science, Current Events, Social Studies, Literary Criticism, Spelling, Computer Science, Accounting.

- For grades 5-8: Number Sense, Calculator, Listening, Mathematics, Science I and II, Dictionary Skills, Maps, Graphs & Charts, Social Studies, and Spelling.
- The High School & Middle School Virtual Challenge Meets allow your team to compete in a season of 3 meets to prepare students for their UIL District Meet.
- Your combined elementary/middle school teams will enjoy unlimited entries in 16 different events in all 3 meets with no travel costs and all testing done on a customized schedule, all for one inexpensive combined Entry Fee.

Last year at the HS level, over 350 schools participated posting over 21,000 scores.