

Middle School Number Sense Problem Sequencing Crosswalk

(Adapted from https://www.uiltexas.org/files/academics/aplus/APlus_NumberSense_SequenceChart_rev1617.pdf)

Problems 1 – 20

110 mastery skills from Number Dojo

1. **Addition, subtraction, multiplication & division of whole numbers, fractions, and decimals**
 - AddAssocPr, AddWhole, SubWhole, AddSubWhole, SubRev2Digit, SubRev3Digit, SubRev4Digit, MultWhole, MultWhole3Num, DivWhole, DivWhole3Num, DivDouble1st, DivMultiples, AddF1/a+1/aa+, AddFracSame, AddFracDiff, AddFracDiffE, SubFracSame, SubFracDiff, MultFrac, DivFrac, DivFrac1000, AddDeci, AddSubDeci, SubDeci, MultDeci, DivWholeDeci, DivDeci, AddDeciFrac, EstAddWhole, EstAddSub, EstAddFrac, EstSubWhole, EstMultWhole, EstMultDeci, EstDivWhole, EstDivDeci, Div9, Div25, ReduceFrac, MultFrac100, MultFracWhole, RepDec.aaaa, Round
2. **Order of operations**
 - OrderOfOper, OrderOfOper2, OrderOfOperF, EstOrderOfOp, ExpandNota, SciNotation
3. **Use of the distributive property**
 - MultDistribPr, MultDistrib2, EstMultDistr2
4. **Comparison of fractions & decimals**
 - CompareFrac, CompareDeciF, Conv%toDeci, Conv%toFrac, ConvDeci%, ConvDeciFrac, ConvFracDeci, ConvFrac%, Conv%FtoFrac
5. **Multiplication short-cuts**
 - Mult5, Mult11, Mult11var, Mult12, Mult12-19, Mult15, Mult25, Mult25var, Mult50, Mult50var, Mult75, Mult101, Mult125, Mult125var, Mult90-99, Mult101-109, Mult10sU+10, MultUs10+10, MultEnd5, DiffSquares1, Double/Half
6. **Squaring numbers**
 - Square11-20, Square21-30, Square31-40, Square41-50, Square51-60, Square90-99, SquareEnd5, Square2Digit, EstSquare
7. **Roman numerals/Arabic numbers**
 - ArabicToRoman, RomanToArabic, RomanOper
8. **Mean, median, mode**
 - FindMeanAvg, FindMedian, FindMode, FindRange
9. **Sums of whole numbers of multiple terms of a finite series**
 - AddSequence, AddSeqOdd, AddSeqEven, AddSeqConsec
10. **Remainder type problems**
 - RemainDiv5, RemainDiv4, RemainDiv8, RemainDiv9, RemainDiv3, RemainDiv11, RemainDiv6

Problems 21 – 40

88 mastery skills from Number Dojo

1. **Addition, subtraction, multiplication & division of mixed numbers and integers**
 - AddMixDiff, SubMixDiff, MultMixF+1, DiffSquareMix, MultMixWhole, MultMixSameF, DivMix, Div40, DivPowers2&5, EstMultFrac, DiffSquares2, AddFracRecip, Multa*a/b, MultFracWho2, MultMixDiff
2. **More multiplication short-cuts**
 - MultSquare, AddSquareTrip, AddSquareDoub, Mult75var, MultNear100+, Mult1001, Mult143, EstMult142857, EstMult3Close, FOIL2by2Digit
3. **Percent problems**
 - Mult%, Mult%2, Mult%3, EstMult%, PercentAis_%, PercentAisB%
4. **Conversion problems (either way): English/metric, length, area, capacity, time**
 - ConvDistance, ConvDistArea, ConvVolume, ConvDistVolu, ConvGalToInch, ConvWeight, ConvTime, ConvMetric, ConvMetricOp, EstConvTime, ConvSpeed, ConvAcreMile
5. **Consumer type problems**
 - ConvCelsFahr, ConvFahrCels, ConvMoney, MoneyMarkup, MoneyDiscount, MoneyInterest, MoneyTaxTip, MoneyCalc
6. **Substitution problems**
 - SubstDirect, SubstRatio
7. **Solving simple equations**
 - SolveX, SolveXDenom, SolveXExpo, SolveXRatio, SolveXSeq
8. **Square roots/cube roots**
 - SquareRoot, EstSquareRoot, SquareRootMix, CubesPowers, CubeRoot, CubeRootMix, EstCubeRoot
9. **Greatest common divisor (gcd) & least common multiple (lcm)**
 - FindGCF, FindLCM, MultGCF, LCM
10. **Number theory – prime numbers and divisors**
 - Prime, PrimeFactor, PrimeTwin, NumPosIntDiv, AddPosIntDiv, NumberLine, OddEven
11. **Perimeter/area of square, rectangle, circle**
 - Squares, Rectangle, Circles, Triangles
12. **Ratio/proportion**
 - Ratio, MoneyRatio
13. **Inverses**
 - Reciprocal, Reciprocal2, FindInvAdd
14. **Multiplication of 101, 111**
 - Mult101var, Mult111, Mult111var, Mult37

Middle School Number Sense Problem Sequencing Crosswalk

Problems 41 – 60

69 mastery skills from Number Dojo

1. **Sets**
 - SetsElements, SetsIntersect, SetsUnion, SetsUnion+Int, SetsSubsets, SetsProperImp, SetsCartesian
2. **Word problems**
 - SolveXWord, FindLgNoProdX, FindLgNoSumX, FindMeanGeom, FindMeanHarmo, Teamwork, NumberSense
3. **Pythagorean theorem**
 - Pythagorean, TriangleRight
4. **Sequences**
 - SeqNextTerm, SeqNthTerm, TriangularNum, PentagonalNum, HexagonalNum, MultConsBy8, MultConsBy9, Mult4Consec+1
5. **Volume/surface area of rectangular solid/cube**
 - Prism, CubesSolid, Pyramid
6. **Base systems: conversions and basic operations**
 - BaseNtoBase10, Base10toBaseN, Base2toBase4, Base4toBase2, Base8toBase2, Base2toBase8, Base3toBase9, Base9toBase3, BaseAtoBaseB, BaseFindBase, BaseAdd, BaseSub, BaseMult, BaseDiv, BaseDiffSq2, BaseNDecTo10F, BaseNto10Deci
7. **Area of parallelogram, rhombus, trapezoid, circle**
 - Parallelogram, Rhombus, Trapezoid
8. **Solving inequalities**
 - Inequality
9. **Basic geometry facts**
 - AngleCentral, AngleCompSupp, AngleCompSup2, AngleExterior, AngleInterior, PolygonSides, PolygonDiag, PolygonArea, PolygonTriang, Polyhedron, Midpoint2Pts, SlopeLine2Pts, SlopeLineEqua, SlopeLinePerp, FindIntercept, GeomCartesian, Function, FunctionExpo
10. **Remainder problems**
 - RemainOther, RemainExpress, RemainExpo

Problems 61 – 80

73 mastery skills from Number Dojo

1. **Repeating decimals**
 - RepDec.abab, RepDec.abbb, RepDec.abcbcb, RepDec.abccc, RepDecFracDec
2. **More number theory**
 - Combination, Palindrome, Permutation, PrimeRelative, ImaginaryNum, UnitsDigit
3. **Powers of numbers**
 - Exponent, ExponentFrac, ExponentVar, ExponentVar2, MultPowers2&5, EstHighPower, EstFourthRoot, Logarithm, SquareRootSim, SquareRoot2, AddSquareSpec, AddSquare7, AddSquareU+10, AddSubSquares, FourthRootMix, FindMeanGeom, SquareRootMem, SolveXSqRoot, DivMultSquare, ExpandCoeff, FOILexpress
4. **Volume of circular cylinder, cone, sphere**
 - Cylinder, Cone, Sphere
5. **Sequences & series**
 - AddSeqGeom, AddSeqCube, AddF1/n(n+1), MultSeqGeom
6. **Factorial**
 - Factorial, FactorialOper, SolveXFacto
7. **Coordinate geometry**
 - ConvDegRad, ConvRadDeg, Parabola, Dist2Pts, AddRoots, MultRoots, AddMultRoots, DiscrimRoot, SolveX2var, ExpandTerms, FactorPolynom, SolveXAbso, AngleClock, TrigValueDeg
8. **Probability/odds**
 - ProbCoin, ProbDice, ProbDeckCards, ProbOther, Odds, OddsDice
9. **More percent type problems: Advanced**
 - Percent<Than, Percent>Than
10. **More remainder type problems**
11. **More multiplication short-cuts**
 - MultReverse, Mult990-999, Mult1001-1009, Square990-999, Square3Digit, Mult1111etc, EstPiPower, EstMult4Close, Mult3367