

MOTIV8TION MOMENT

NUMBER FLUENCY

TOOLKIT COMPONENTS

- Number Line
- Dice in Dice
- Card Deck
- 10 Frames
- Target Game
- Fraction/Decimal/Percent cards
- Equivalency Mat



MEDIATION CONNECTIONS

- Utilize the **number line** to identify partners to tens within composing and decomposing numbers
 - Example: $8 + 6 \rightarrow$ begin at 8, hop 2 increments to 10, then 4 more
- Assess and strengthen number fluency by plotting quantities and determining appropriate benchmarks on the **number line**.
 - Model multiplication as repeated jumps on a **number line** to discuss operational relationships; Example - 6 “jumps” of 3 is 18, ($6 \times 3 = 18$); How many 3’s fit in 18? ($18 \div 3 = 6$); If you share \$18 with 6 people, how much does each person receive? ($18 \div 6 = 3$)
- Use **card decks** or **double dice** to roll/build novel numbers that will spark number conversations about place value, inequalities, patterns, and mental math operations.
- Build understanding of quantity representations by comparing fraction/decimal/percent values on the **equivalency mat** and then create new equivalent values. Include real-world connections such as money, temperature, recipes, or grade averages.

MOTIV8TION MOMENT

NUMBER FLUENCY

GAMES

TARGET builds number fluency and develops computational strategy. Apply partners to 10 and choose target numbers that relate to new learning (prime/composite, multiples of, factors of...). See “Target Rules” for more detailed information on game play on your **NILD TARGET game board**.

FILL THE FRAME uses counters on a blank **ten frame**. Roll a die and add counters. The first to make exactly 10 wins. Alternatively, student rolls double dice using **double 10 frames**.

ONE MORE/ONE LESS/TEN MORE/TEN LESS uses the NILD Motiv8 Math **game board** numbered 1-36 to develop processing speed and mental math skills. Player rolls a **die** and lands on a number. They must instantly say:

- one more / one less than the quantity
- ten more / ten less than the quantity

Alternatively, student gives factors/multiples, doubles/halves of the quantity.

RACE TO 50 gives students the opportunity to practice cumulative addition. Roll 2 **dice** and add to a running total. Student must say the new total instantly. The first to 50 wins. alternatively, you could **RACE TO ZERO**, beginning with 50 and subtracting with each roll.

COGNITIVE OUTCOMES

- Strengthen mental computation grounded in number experiences
- Develop ability to generalize number patterns
- Make abstract numbers concrete
- Build strategic efficiency and math agility

MOTIV8TION MOMENT

MEASUREMENT & CONVERSIONS

TOOLKIT COMPONENTS

- tape measure (metric/customary)
- number line
- equivalency mat
- dice



MEDIATION CONNECTIONS

- Use the **number line** to link measurement to number magnitude. Ask students to use the **number line** to “zoom in” on a portion of the **ruler/tape measure** and analyze measurement increments and their proportionality. Discuss what the numbers on the ruler represent.
 - Example: “How are a ruler and a number line the same/different?”, “What does each inch represent on this number line?”
- To compare units of customary and metric systems and practice numeric reasonableness, incorporate the **equivalency mat** to determine units that are larger or smaller, and then ask students to share real-world examples of the most reasonable unit to use.
 - Example: Using a dry erase marker, write the words “gallon” and “pint” on each end of the **equivalency mat**. Guide students to complete the inequality. Then compare items in their fridge/pantry that would be measured in each unit.

MOTIV8TION MOMENT

MEASUREMENT & CONVERSIONS

GAMES

ROLL A CREATURE allows students to practice measuring with both metric and customary units of length. Using your kit's **tape measure** and **dice**, students roll to determine a body part length in inches or centimeters:

- Head = 1 die
- Body = 2 dice
- Legs = 3 dice (double dice)

Students measure and draw each part to scale.

MEASUREMENT SCAVENGER HUNT provides estimation experiences for your students using your therapy station. Roll **dice** to create a target length to search for in the room. Determine if you will search for the length in inches, feet, millimeters, centimeters, or meters. Students find objects shorter than, longer than, or equal to that length. Measure to justify estimated objects.

MEASUREMENT BOWLING compares student estimations with accurate measurements while having a ball! Students roll the **NILD ball**; marking where it stops.

- Estimate the distance rolled.
- Measure using the **tape measure**, both in metric and customary units.
- Student earns points based on accuracy.

COGNITIVE OUTCOMES

- Explore length, weight, and measurement conversions, both metric and customary
- Develop measurement reasonableness and strengthen estimation skills

MOTIV8TION MOMENT

TIME

TOOLKIT COMPONENTS

- analog clock
- card deck
- dice
- number line



MEDIATION CONNECTIONS

- Note to therapists: Time is intangible—our students can't "see" it pass. We utilize manipulatives to make time visual, tactile, and sequential. Our **analog clock** supports conceptual and concrete understanding within our CRA (concrete/representational/abstract) model before moving to more abstract, elapsed-time problem-solving.
- Daily Schedule Reasoning-Name an activity from a typical daily routine and have student create times that match using their **analog clock**, visually sequencing the day. Then compare the same time at AM/PM:
 - Example: Wake up at 7:00 AM, compare to activities at 7:00 PM
 - Compare using sequence such as, "What comes before? What comes after? What takes longer?"
- Time Hop-Guide student in labeling the **number line** with clock times in increments of 5 (e.g., 2:00, 2:05, 2:10 ... 3:00), relating this to the clock face. Place **NILD ball** at the starting time. Have student "hop" along the number line as time elapses, verbalizing multiples of 5 or 10. Teacher gives various destinations as student determines the elapsed time. Relate the labeled number line to the blank **analog clock** and label accordingly.

MOTIV8TION MOMENT

TIME

GAMES

CLOCK COVER UP encourages students to visualize the movement of an analog clock and then justify their thinking. Set a time on your toolkit **analog clock**. Cover the clock with a post it note or sheet of paper. Roll the **die** and then move the current time forward mentally 5 minutes for each number rolled. (Ex. Roll a five, mentally move 25 minutes). Uncover to move clock hands and justify your new declared time. Recall the visual memory strategies used to determine the new time.

ROLL AND REASON Roll 2 **dice**. The first die represents the hour hand. With the second die, student represents the minute hand by choosing “past” or “to”. Finally, set toolkit **analog clock** and say the time using correct mathematical language

“It is ___ minutes past ___.”

“It is ___ minutes to ___.”

Extension: How does this language/thinking relate to “a quarter until” and “half past”?

BEFORE OR AFTER? Tell the current time on your classroom clock together. Student then draws one blue (only using numbers 1-12) and one yellow card from your toolkit **card decks**. The blue number represents a new hour and the yellow card represents the new minutes. Determine if the new time is BEFORE or AFTER the current time. What if we changed AM to PM? Or PM to AM? Use your **analog clock**, if needed to justify your answer.

COGNITIVE OUTCOMES

- Develop temporal and visual-spatial reasoning through the manipulation of an analog clock
- Strengthen fractional and proportional thinking
- Use precise temporal language to justify elapsed time thinking

MOTIV8TION MOMENT

MONEY

TOOLKIT COMPONENTS

- money (both coins and bills)
- equivalency mat
- number line
- game board



MEDIATION CONNECTIONS

- Assess and strengthen identification of **coins and bills**, and knowledge of value, by asking students to build a specific amount of money in flexible ways.
 - Example: Build a total of \$.83 using more nickels than quarters. Build a total of \$6.54 in three different ways. Build a total of \$.97 with the fewest coins possible.
- Use the blank side of the **number line** and fill the two ends with zero and \$1.00. Have students fill in the halfway amount and add tick marks for nickels, dimes, or quarters. Place **coins** on each mark to aid in counting. Erase strategic points, and have the student fill in the missing quantities.
- Hand the student a quantity of **coins** and ask the student count them. Give instructions to add, remove, or exchange coins, and have the student give the new total. The student may need to trade coins to complete the request.
 - Example: How much money is in your pile? (\$.27) Add three dimes. (\$.57) Take away 5 cents. (\$.52) Add \$.25, but not a quarter. (\$.77) Remove ten cents by removing two coins. (\$.67)

MOTIV8TION MOMENT

MONEY

GAMES

MONEY WAR encourages students to recognize coins and their value, while providing practice with counting coins and determining which total is greater. Use the **equivalency board** and real **coins** to build fluency with coin recognition, counting, and inequalities. Place a quantity of coins in a bag. Roll a die. Both you and your student will draw out the number of coins shown on the die. Count the coins and use the **equivalency mat** with the $>$, $<$, $=$ symbols to create an inequality that matches the value of the coins. The player with the greatest total keeps the coins.

RACE TO \$1.00 provides practice with **coin** equivalency. Players take turns rolling a **die** and taking the number of pennies indicated by the roll. When a total of five pennies is reached, those must be exchanged for a nickel. When two nickels are reached, those are exchanged for a dime. Likewise, when two dimes and a nickel are reached, those are exchanged for a quarter. The first player to reach \$1.00 is the winner.

MONEY TRAIL encourages counting coins, mental math, and working memory. Place various combinations of **coins** on each space of the blank **game board**. 'Hikers' take turns rolling one **die** and move a marker the number of places indicated. The hiker collects the coins on each of the trail's 'rest stops'. The hiker with the greatest total wins.

COGNITIVE OUTCOMES

- Identify and differentiate between various denominations of coins and bills
- Develop fluency and flexibility with operations using money
- Strengthen conceptual understanding of value and patterns as they relate to money

MOTIV8TION MOMENT:

OPERATIONS & EQUATIONS

TOOLKIT COMPONENTS

- Equivalency Cards
- Ten Frames
- Input / Output Table
- Equivalency Mat
- Target Game
- Card Deck



MEDIATION CONNECTIONS

- Utilize the **input /output table** to strengthen operational understanding . Think of a rule or operation such as ‘add 7’ or ‘double, plus three’. Fill in several lines of the **input/output table** according to the chosen rule. Continue to fill in the rest of the table, leaving either the input or output line blank. Direct students to determine the rule and fill in the missing blanks. Encourage practice with equations by directing the student to write the rule as an equation. Encourage flexibility and equation-building with variables, if appropriate.
- Strengthen student understanding of addition and partners of ten by using **ten frames** and counters to model the addition of single-digit addends.
 - Example: Show $7+8=15$ by placing 7 counters in one frame and 8 in the other. Move counters to fill one **ten frame** with 5 remaining.
 - Emphasize visualization of partners to 10, doubles, etc.
- Develop fluency with fractional operations by building equations with **equivalency cards** that are not similar. (Ex: 25% of $1/2 = ___$) Have students swap out equivalent values to enable solving the equations. Encourage students to verbalize strategies and defend answers.

MOTIV8TION MOMENT

OPERATIONS & EQUATIONS

GAMES

GUESS MY RULE builds operational fluency. One player takes on the role of teacher and determines a 'rule' (such as add 5, or double then subtract 1). Players give the 'teacher' a number, and the teacher applies the rule and states the answer. Players continue to give numbers until a player who wants to guess the rule shouts out, "rule." The teacher then provides a number, and the player applies the rule. If the rule is applied correctly, that player becomes the new teacher and play continues. When most players have guessed the rule, discuss. Repeat with a new rule.

TARGET builds number fluency and develops computational strategy. Apply partners to 10 and choose target numbers that relate to new learning (prime/composite, multiples of, factors of...). See "Target Rules" for more detailed information on game play on your [NILD TARGET game board](#).

DICE IN DICE WAR creates a positive, competitive environment for building math fact fluency with various operation. Each player rolls the [dice in dice](#), noting the sum, difference, or product of both dice. The player with the largest (or smallest) total wins. Use tally marks to keep score. Get creative with variations to keep the game novel and interesting.

COGNITIVE OUTCOMES

- Strengthen flexibility with number operations
- Develop ability to model number operations
- Internalize relationships between operations
- Build computational fluency

MOTIV8TION MOMENT

FRACTIONS-DECIMALS-PERCENTS

TOOLKIT COMPONENTS

- Equivalency Cards
- Equivalency Mat
- Number Lines
- Fraction Bars
- Fraction Bars
- Dice
- Spinners



MEDIATION CONNECTIONS

- Develop understanding of quantity representations by comparing **equivalency cards** on the **equivalency mat** and then creating additional equal values. Include real-world connections to each quantity representation, such as:
 - fractions-recipes, probability, time
 - decimals-money, measurement, sports statistics
 - percents-grade averages, discounts, battery life, weather
- Experience probability predictions, outcomes, and data analysis using the **colored spinner** and a tally chart, outlining predicted probabilities, actual outcomes, and building visual representations of each.
 - Example: Predict the probability of each color being spun. Spin **colored spinner** 20 times. Tally each color result, and represent the outcome as a fraction. Use **fraction bars** to build and compare the predicted result with the actual result.
 - Mediation examples include, “How did your predicted outcomes compare to your actual outcomes?”; “What do you notice about the size of the spinner sections?”; “Name a result that is NOT possible for this spinner. Justify your thinking.”

MOTIV8TION MOMENT

FRACTIONS/DECIMALS/PERCENTS

GAMES

CLOSEST TO ONE builds a sense of magnitude and provides benchmarking practice with a mathematical compass of one. Using a **Motiv8 card deck** (1-16), student draws two cards to create a numerator/denominator. (e.g., $7/8$), and if needed, builds the fraction using **Motiv8 fraction bars**. Student converts to decimal and percent. The player closest to 1 whole wins the round.

TRIPLE MEMORY MATCH reinforces equivalence across multiple representations. Lay **equivalency cards** face down on a table. Players flip 3 cards per turn. Players keep the set if all three represent the same value. The player with the most cards wins!

DICE TO DECIMAL RACE Players roll **dice** to create decimals less than one that include tenths/hundredths. Each decimal must be stated correctly as a decimal and then built in **coins**. A running decimal sum is calculated and the first player to reach \$1.00 wins!

COGNITIVE OUTCOMES

- Understand part-whole relationships
- Recognize equivalence across fractions, decimals, and percents
- Apply proportional reasoning in real-world contexts

MOTIV8TION MOMENT

PATTERNS & PROGRESSIONS

TOOLKIT COMPONENTS

- Equivalency Cards
- Number Line
- Input/Output Table
- Game Board
- Dice in Dice
- Card Deck



MEDIATION CONNECTIONS

- Utilize **equivalency cards** to build understanding of value and ordinality. Select a variety of the **equivalency cards** to order fractions, decimals, percents, or a combination of all. Vary the prompt for least to greatest, greatest to least, or pairs of equivalent values
 - Example: Put the following in order from least to greatest: $\frac{1}{2}$, $\frac{1}{5}$, 25%, .75, etc.
- Strengthen conceptual understanding of patterns and progressions by filling in equally spaced tick marks on the **number line**. Fill in the value for tick marks with fractional parts (Example: $\frac{2}{3}$, $1\frac{1}{2}$, $\frac{3}{5}$), or with patterns other than one (Example: count up by 7, starting at 16). Erase several strategic values and have students fill these in. If Level 2 or above, have students use the values to create numerical progressions.
- Model numerical patterning by creating a count-by rule and directing students to fill in the **input/output table** using the rule. Students will recognize and verbalize patterns and predict how they continue.

MOTIV8TION MOMENT

PATTERNS & PROGRESSIONS

GAMES

- **ODD/EVEN NUMBER RACE** utilizes the **game board** to develop fluency with odd and even numbers. Each player takes one half of the **NILD number deck**, either blue or yellow. The players take turns drawing two cards and adding them together. If the total is even, the player moves his/her game piece two spaces. If the total is odd, the player moves forward three spaces. The first player to reach the end of the board wins.
- **101 & OUT** develops familiarity with place value and encourages strategic thinking. Players each roll a **die** at the same time and choose to take the number as a "one" (such as 5) or a "ten" (such as 50). Players keep a running total over 6 rounds to see who comes closest to 101 without going over.

COGNITIVE OUTCOMES

- Strengthen ability to recognize and extend number patterns
- Build confidence and fluency with numerical progressions

MOTIV8TION MOMENT

PROBLEM SOLVING

TOOLKIT COMPONENTS

- Probability Spinner
- Clock



MEDIATION CONNECTIONS

- Problem-solving is one of the most challenging domains for many therapists, and yet it is of the utmost importance. Our students need practice analyzing problems, choosing strategies to apply to the problems, and reflecting on the effectiveness of those strategies and their implementation. All of the tools in this toolkit are useful for providing students with opportunities to make moves between concrete, representational, and abstract (CRA) to solve problems with skill and understanding. Use your imagination and play with the tools offered.
- Utilize the probability **spinner** for problem-solving. Divide the **blank spinner** evenly and color in sections to create uneven odds. Have the student predict the probability for a particular outcome and test hypothesis by spinning. Use a tally chart to track results.
- Give a student three specific times. Direct the student to create a word problem in which those times are used, together with the solutions for the problem. Have the student defend his/her answer and demonstrate on the **clock**.
- Write equations and direct students to create word problems that fit the equations.
- Keep a running list of problem-solving strategies. Challenge students to create problems suitable for specific strategies.

MOTIV8TION MOMENT

PROBLEM-SOLVING

GAMES

TWO LIES AND A TRUTH develops problem analysis skills. Give the student a problem and three solutions with work shown. The student must determine which answer is true and which answers are incorrect. If the player can explain the reasoning, all cards are kept. If not, the opponent keeps the cards. Variation: Take turns creating problems and solutions. Students create problems for teachers, and teachers create problems for students. Swap cards with other therapy students to keep the fun going.

MATCH THAT STRATEGY builds awareness of problem-solving strategies and their appropriate use. Print several cards with word problems at the student's instructional level. Make cards with one learned problem-solving strategy on each. Students play concentration with problems and strategies. When an appropriate pair is matched, the student gets to keep the cards. Possible strategies include make a model, guess and check, use conversions, work backwards, use manipulatives, etc.

CHALLENGE OF THE WEEK builds confidence and perseverance with productive struggle. Provide a challenge of the week problem that is solvable but would require time and perseverance. Encourage students to take on the challenge alone, in pairs, or even with parental support. Recognize those who attempt these problems for their academic risk-taking and productive struggle!

COGNITIVE OUTCOMES

- Strengthen strategic math mindset
- Develop reasoning skills needed to estimate and determine reasonable
- Build fluency and flexibility in translating from words to numbers