

# **First Grade Module 3**

## **Addition to 20 and Drawing Shapes**

### **Teacher Guide**

#### **Prerequisite Skills**

- Ability to tactually identify the numbers 1-20
- Ability to tactually identify the plus sign and separation line
- Ability to write the numbers 1-20
- Ability to write the plus sign and separation line
- Ability to read and write the numbering of math problems from 1-10, including the punctuation indicator and period
- Ability to represent addition within 10
- Tactually identify a circle, rectangle, square, and triangle

#### **Symbols and Concepts**

- Problems and equations in a vertical format
- Fluently add and subtract within 10
- Use multiple strategies to add within 20
- Relate counting to addition
- Add within 20 with problems in a vertical format
- Tactually identify shapes, including a half-circle and trapezoid
- Verbally describe attributes of shapes, including a half-circle and trapezoid
- Use tactile drawing tools to create shapes

#### **Objectives**

The student will be able to:

- Read unnumbered and numbered problems involving addition in a vertical format that include numbers 0-20, plus sign, and a separation line
- Fluently add within 10, including with equations in a vertical format
- Add within 20, including with equations in a vertical format
- Write the answer to an addition problem in a vertical format
- Use the braillewriter to write problems and equations involving addition within 20 in a vertical format
- Tactually identify circle, triangle, rectangle, square, half-circle, and trapezoid regardless of size and orientation

- Verbally describe attributes of shapes, including a half-circle and trapezoid
- Use tactile drawing tools to create the following shapes: square, rectangle, circle, triangle, half-circle, and trapezoid

## Other ECC Skills Addressed

**Note:** ECC stands for Expanded Core Curriculum.

- Listening skills
- Concept development
- Following directions
- Organization
- Tactual discrimination
- Left-to-right tracking
- Top-to-bottom tracking
- Spatial alignment
- Hand positioning
- Light touch (as opposed to scrubbing)
- Scan and interpret tactile graphics used in math
- Recreation and leisure

## Required Materials

- Braillewriter
- Braille paper
- Index cards
- Braille documents available within the curriculum
  - Student braille document
  - Flashcards
  - Shape chart
- Work and/or sorting trays
- Timer
- Magnets with two each of the Nemeth numbers 0-12 without the numeric indicator, plus sign, and separation line that is 5 cells long
- Cookie sheet or magnetic board
- Supplies such as textured paper, cardboard, and/or foam board to make the 2-dimensional shapes
- inTACT Sketchpad or the DRAFTSMAN: Tactile Drawing Board
- Sketchpad stylus
- Stencils
- Bag or small box

## Optional Materials

- Nonslip surface such as rubber shelf liner
- Unifix cubes, Digi-Blocks, or base ten unit blocks
- Teddy bear manipulatives
- Wikki Stix®
- Braille documents available within the curriculum
  - Writing answers braille document
  - Five frame and ten frame (or Tactile Five and Ten Frames from the American Printing House for the Blind [APH])
- Small storage boxes
- Math Window Braille Basic Math Kit in Nemeth
- Velcro dots and 1-inch embossed graph paper from APH

## Teaching Tips

- Before opening any BRF files in Duxbury,
  - Go into the Global menu.
  - Select "**Formatted Braille Importer.**"
  - Select the box for "**Read formatted braille without interpretation**" at the top of the window. This will ensure that nothing is changed when opening the BRF files.
- All braille files in the curriculum are formatted with a 32-cell width by default.
- This module should be completed across multiple sessions.
- It is highly recommended that this module be completed with hard copy braille and a braillewriter instead of a refreshable braille display.
- If a student reads the symbols or equation incorrectly, tell the student the correct way to read the symbol or equation.
- Sorting trays often define the workspace. If you do not have sorting trays, you can use cafeteria type trays, cookie sheets, small cake pans, and/or small storage boxes.
- Using small storage boxes with labels can make it easier for a child to independently locate stored items.
- It may also help to place the number cards and hard copy braille on a nonslip surface such as rubber shelf liner so they will not move as the student is reading.
- If needed, remind the student to move their fingers across the braille and check their work during writing activities.
- It may be helpful to point out that braille page numbers are placed at the right margin on the last line.

- It is very important to use the correct finger on each key when learning new Nemeth symbols. This will help the student continue to be accurate in their writing.
- General education classroom manipulative kits for first grade often include two-dimensional shapes in different sizes.
- Encourage the student to verbalize the process they use when solving problems and identifying shapes tactually.
- When teaching the child how to tactually discriminate 2-dimensional shapes, use a variety of sizes for the shapes. The child will also need to explore shapes in different orientations.
- It is recommended that shapes be drawn by using a continuous, clockwise motion.
- The student may draw the shapes free-hand or by using stencils.
- Shapes can be created in a variety of ways, including with Wikki Stix® or textured paper.
- Shapes can also be made with toothpicks and marshmallows if desired.
- We maintain a list of [commercially available materials](#) that can be used to supplement instruction.

## Activities

### Activity 1

- In this activity, students will use flashcards to practice reading addition problems in vertical alignment and determining the sum.
- You can either create flashcards with the problems below using index cards or emboss the flashcards on pages 1-2 of the braille document entitled "G1-M3-Flashcards.brf". Answers are provided in parentheses to assist you in placing the answers on the back of the flashcards.

[16 plus 3 equals 19, 6 plus 2 equals 8, and 10 plus 1 equals 11]

$$\begin{array}{r} 16 \\ +3 \\ \hline \end{array} \quad \begin{array}{r} 6 \\ +2 \\ \hline \end{array} \quad \begin{array}{r} 10 \\ +1 \\ \hline \end{array}$$

( 19 )    ( 8 )    ( 11 )

[11 plus 0 equals 11, 18 plus 1 equals 19, and 7 plus 4 equals 11]

$$\begin{array}{r} 11 \\ +0 \\ \hline \end{array} \quad \begin{array}{r} 18 \\ +1 \\ \hline \end{array} \quad \begin{array}{r} 7 \\ +4 \\ \hline \end{array}$$

( 11 )    ( 19 )    ( 11 )

[14 plus 3 equals 17, 15 plus 4 equals 19, and 8 plus 1 equals 9]

$$\begin{array}{r} 14 \\ +3 \\ \hline (17) \end{array} \quad \begin{array}{r} 15 \\ +4 \\ \hline (19) \end{array} \quad \begin{array}{r} 8 \\ +1 \\ \hline (9) \end{array}$$

[9 plus 0 equals 9, 12 plus 5 equals 17, and 2 plus 9 equals 11]

$$\begin{array}{r} 9 \\ +0 \\ \hline (9) \end{array} \quad \begin{array}{r} 12 \\ +5 \\ \hline (17) \end{array} \quad \begin{array}{r} 2 \\ +9 \\ \hline (11) \end{array}$$

[13 plus 2 equals 15, 6 plus 3 equals 9, and 18 plus 0 equals 18]

$$\begin{array}{r} 13 \\ +2 \\ \hline (15) \end{array} \quad \begin{array}{r} 6 \\ +3 \\ \hline (9) \end{array} \quad \begin{array}{r} 18 \\ +0 \\ \hline (18) \end{array}$$

[10 plus 4 equals 14, 7 plus 2 equals 9, and 19 plus 1 equals 20]

$$\begin{array}{r} 10 \\ +4 \\ \hline (14) \end{array} \quad \begin{array}{r} 7 \\ +2 \\ \hline (9) \end{array} \quad \begin{array}{r} 19 \\ +1 \\ \hline (20) \end{array}$$

- Cut out the upper right corner of each flashcard for easy identification of orientation. If you would like for the student to be able to use the flashcards independently, place the answers on the back of each flashcard using the Feel 'n Peel Stickers: Nemeth Braille-Print Numbers from APH.
- Begin by shuffling the flashcards, and then have the student select a card. After the child reads each problem in vertical alignment and tells you the answer, have them use a sorting tray to separate which cards they have read and which cards they have not read.

## Activity 2

- Create flashcards with the problems below using index cards or emboss the flashcards on pages 3-4 of the braille document entitled "G1-M3-Flashcards.brf". Answers are provided in parentheses to assist you in placing the answers on the back of the flashcards.

[3 plus 3 equals 6, 1 plus 1 equals 2, and 6 plus 6 equals 12]

$$\begin{array}{r} 3 \\ +3 \\ \hline (6) \end{array} \quad \begin{array}{r} 1 \\ +1 \\ \hline (2) \end{array} \quad \begin{array}{r} 6 \\ +6 \\ \hline (12) \end{array}$$

[8 plus 8 equals 16, 10 plus 10 equals 20, and 7 plus 7 equals 14]

$$\begin{array}{r} 8 \\ +8 \\ \hline (16) \end{array} \quad \begin{array}{r} 10 \\ +10 \\ \hline (20) \end{array} \quad \begin{array}{r} 7 \\ +7 \\ \hline (14) \end{array}$$

[2 plus 2 equals 4, 5 plus 5 equals 10, and 9 plus 9 equals 18]

$$\begin{array}{r} 2 \\ +2 \\ \hline (4) \end{array} \quad \begin{array}{r} 5 \\ +5 \\ \hline (10) \end{array} \quad \begin{array}{r} 9 \\ +9 \\ \hline (18) \end{array}$$

[4 plus 4 equals 8, 2 plus 2 equals 4, and 0 plus 0 equals 0]

$$\begin{array}{r} 4 \\ +4 \\ \hline (8) \end{array} \quad \begin{array}{r} 2 \\ +2 \\ \hline (4) \end{array} \quad \begin{array}{r} 0 \\ +0 \\ \hline (0) \end{array}$$

[10 plus 10 equals 20, 6 plus 6 equals 12, and 7 plus 7 equals 14]

$$\begin{array}{r} 10 \\ +10 \\ \hline (20) \end{array} \quad \begin{array}{r} 6 \\ +6 \\ \hline (12) \end{array} \quad \begin{array}{r} 7 \\ +7 \\ \hline (14) \end{array}$$

[3 plus 3 equals 6, 5 plus 5 equals 10, and 9 plus 9 equals 18]

$$\begin{array}{r} 3 \\ +3 \\ \hline (6) \end{array} \quad \begin{array}{r} 5 \\ +5 \\ \hline (10) \end{array} \quad \begin{array}{r} 9 \\ +9 \\ \hline (18) \end{array}$$

[1 plus 1 equals 2, 4 plus 4 equals 8, and 3 plus 3 equals 6]

$$\begin{array}{r} 1 \\ +1 \\ \hline (2) \end{array} \quad \begin{array}{r} 4 \\ +4 \\ \hline (8) \end{array} \quad \begin{array}{r} 3 \\ +3 \\ \hline (6) \end{array}$$

### Activity 3

- The student will listen carefully and then write vertically aligned addition problems that they hear. It is highly recommended that this activity be completed using a braillewriter and braille paper since spatially aligned problems require more than one line in braille.
- Remind the student to check their work. An answer key has been provided for this activity in the braille document entitled "G1-M3-Writing-Answers.brf".

## Activity 4

All information is provided in the teacher script.

## Activity 5

- Students will scan tactile graphics of shapes that have been created with either the inTACT Sketchpad or DRAFTSMAN: Tactile Drawing Board.
- Before beginning this activity, draw a triangle, square, circle, and a rectangle. You may use stencils or draw free-hand. It is recommended that shapes be drawn by using a continuous, clockwise motion. You will get more tactual feedback if you close your eyes when you draw the shapes using a stencil. In addition, the shapes should be of different sizes and orientations. You may also use a ball-point pen instead of a stylus. For example, you may draw a large circle, small square, large right triangle, and medium rectangle on an inTACT Sketchpad or you may draw a medium isosceles triangle, small rectangle, large square, and small circle on a Draftsman.



- If preferred, the shapes can be created with Wikki Stix®, graphic art tape, or textured paper. Another option is to create the shapes with craft sticks and hot glue.
- The activity will begin by telling the student to use both hands and scan the drawing film from left to right. Then ask the student to tell you about the shapes, moving from left to right. If needed, use hand-under-hand technique to model scanning the drawing film from left to right.
- Students will learn to use tactile drawing tools, including the inTACT Sketchpad or the DRAFTSMAN, to create shapes. If students are not familiar with the tool, provide an opportunity for the student to explore the tool and learn how to place drawing film in and out of the tool before beginning the activity.

- If there is a drawing film with tactile drawings already in the tool as you begin the activity, have the student remove the film from the Sketchpad (or the DRAFTSMAN) and place a new sheet of tactile drawing film in the Sketchpad (or the DRAFTSMAN). Then tell the student that they will be using the stylus and a stencil to draw four shapes on the tactile drawing film. Also let the student know that the stylus is sometimes called a drawing tool.
- If needed, provide information about how to hold the stylus and/or use hand-under-hand technique to draw the first shape together. It is recommended that shapes be drawn by using a continuous, clockwise motion. The student may use a ball-point pen instead of a stylus. The student may even enjoy drawing the shapes free-hand. Once the student has finished drawing the shapes, encourage the student to check their work. End the activity by having the student tell you about their shapes.

## **Activity 6**

All information is provided in the teacher script.

## **Activity 7**

- The student will use a shape chart to sort shapes into the following categories: half-circles, circles, rectangles, and triangles. In addition to the 2-dimensional shapes, the student will need a work tray and shape chart.
- Begin by giving the student 5-7 half-circles, circles, rectangles, and triangles that are made of textured paper and adhesive backing. Another option is using shapes made of textured paper and double-sided tape. The shapes should be of various sizes and orientations.
- Once the new shapes have been placed in the work tray, give the two-page shape chart (available in contracted and uncontracted braille within the curriculum) to the student.
- Introduce the student to the shape chart and explain that the chart will provide a means for the student to organize their work as they explore the relationships among shapes.
- Encourage your student to use their hands to explore the shape chart. Afterwards, ask the student to find the title and read it together. Then point out that there is a line going down the middle of the page. Have the student find the column headings at the top, and then help them read the headings. The column on the left is labeled circles, and the column on the right is labeled half-circles.



- Now move to the second page. Let the student know that there is not a title at the top of the second page, but there is a line going down the middle of the page again. Have the student find the column headings toward the top of the page and read them together. The column on the left is labeled triangles, and the column on the right is labeled rectangles.
- A four-compartment sorting tray may be used instead of the shape chart. The compartments should be labeled circles, half-circles, triangles, and rectangles. The sorting tray may assist students in keeping their shapes in the correct columns.
- Have the student select a shape from the work tray and ask "Is it a circle, half-circle, triangle, or rectangle and how do you know?" There are several possible correct responses to the question depending on the shape that is selected. If needed, assist the student in identifying and describing the shape.
- Once the student has correctly shared how they identified the shape, have them remove the backing and place the shape in the correct column. For example, the student should put a circle in the column with a heading of circles. If needed, model placing the shape in the correct column using hand-under-hand technique.
- Then have the student select another shape and repeat the process until all of the shapes are placed in the correct column on the shape chart.

## **Activity 8**

All information is provided in the teacher script.

## **Activity 9**

- The child will go on a shape hunt in this activity. Ensure that there are objects in the shapes of a half-circle, rectangle, trapezoid, and square in the room where you will be completing the shape hunt.
- Then give the student the following directions:
  - First, find 3 objects that are in the shape of a half-circle.
  - Second, find 3 objects that are in the shape of a rectangle.
  - Third, find 3 objects that are in the shape of a trapezoid.
  - Fourth, find 3 objects that are in the shape of a square.

## **Activity 10**

All information is provided in the teacher script.

## Activity 11

Activity 11 is similar to Activity 3. However, students will write the problems as well as the answer to each problem.

## Activity 12

- The student will create a picture or a shape by using shapes in the activity. You will need an assortment of same-sized squares, circles, rectangles, half-circles, triangles, and trapezoids that are made of craft foam or textured paper.
- Use the shapes to create a picture and/or different shapes. For example, two half-circles can be used to create a circle or two triangles can be used to create a diamond. Then count and braille how many of each shape that you used to create the picture and/or different shape.

## Fun Facts

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