

Kindergarten Module 6

Subtraction, Geometry, and the Ellipsis

Teacher Script

Introduction

- All bracketed text should not be read aloud and is for reference only.
- The questions have been numbered in this document to aid teachers and parents. However, the questions are not numbered the same way, if numbered at all, in the student documents.
- Throughout the script, it is assumed that the student is correct. The teacher may need to go off script if the student does not answer a question correctly.

Section 1: Subtraction Using the Five Frame

Section 1 Materials

- Five counting bears (Alternatives: other objects, Unifix cubes, base ten unit blocks, magnetic counters) in a bowl, container, or work tray
- Five frame available in the curriculum (Alternative: Tactile Five and Ten Frames from the American Printing House for the Blind [APH])
- Five pennies (Alternatives: APH Tactile Tokens, small pieces of Wikki Stix®, magnetic counters)
- Work tray, bowl, or container for pennies
- Optional: nonslip surface such as rubber shelf liner so that the five frame will not move as much (Alternatives: cookie sheet, magnetic board)
- Activity 1: in addition to the other materials used in Section 1,
 - Braillewriter
 - Braille paper
 - Your choice of small objects, tactile stickers, textured paper

Section 1 Teacher Notes

- Show the five frame to the student before using it.
- One texture on the Tactile Tokens can represent the objects the student starts with and then instead of removing the tokens, the student can flip the ones being taken away.
- You can use the shapes and line segments from the Picture Maker Wheatley Tactile Diagramming Kit to create the five frame.

- If preferred, you may begin with five small storage boxes and then transition to the five frame.
- Activity 1: There are additional instructions about how to make up the subtraction story in the Teacher Guide.

Section 1 Teacher Script

On your mark, get set, go! It's time for another adventure on a scooter! Let's begin with a subtraction story.

Reach into the bowl and count the bears. Yes, there are five counting bears. We will use them to act out a pretend story about pancakes. Do you remember what pretend means? That's right, scooter racer! Pretend means make-believe or imaginary.

Gracie and her aunt made 5 pancakes. So let's get out 5 counting bears and pretend that they are pancakes. Gracie ate 3 pancakes for breakfast. Let's put three of the bears back into the bowl.

How many pancakes are left? Let's count the pancakes together.

1 2

Yes, there are two pancakes left. Now let's try a subtraction story about bears.

Five bears sat on the grass in the zoo. So let's get out 5 bears and pretend that they are sitting on the grass. Two of the bears walked to the nearby cave to take a nap. Let's move 2 bears and place them back in the bowl.

How many bears are sitting on the grass now? Let's count the bears together.

1 2 3

There are 3 bears sitting on the grass now.

Sometimes we use a five frame instead of counting bears. Use your hands to explore the five frame.

[Do not read the next two short paragraphs if the student is using a five frame without a title.]

Let's find the title and read it together. Where will we find the title?

Yes, the title is at the top of the page. The title is Five Frame. Now use your hands to find the squares in a row. A row goes from the left to the right. Move your hands across the row of squares from left to right. Now count the squares. That is correct. There are five squares.

Let's go back to the bear story. There were 5 bears sitting on the grass. We can use pennies (or small pieces of Wikki Stix®) on the five frame to show the bears. Let's work together to place 5 bears on the five frame. We will only place 1 bear in each square, beginning with one on the far left and then moving to the right.

Then two of the bears walked away. Let's take away 2 bears from the five frame and place them in the work tray.

How many bears are sitting in the grass now? Excellent counting! There are 3 bears sitting on the grass now.

Let's try another one. Before we begin, remove the pennies (or small pieces of Wikki Stix®) from the five frame and place them back in the work tray.

Jose has 4 cookies. So how many pennies should we place on the five frame? That's right. We will place 4 pennies on the five frame. He shares one of his cookies with a friend. How many pennies should we take away from the five frame? That is correct. We should take 1 penny off of the five frame.

How many cookies does Jose have now? That's right! He has 3 cookies now!

Before we begin another one, remove the pennies from the five frame and place them back in the work tray.

There are 2 turtles swimming in the pond. How many pennies should you place on the five frame? That's right. You will place 2 pennies on the five frame. One turtle swam away. How many pennies should we take away from the five frame? That is correct. We need to take 1 penny off of the five frame.

How many turtles are swimming in the pond now? You got it! There is 1 turtle swimming in the pond.

Let's try one more. There were 5 children reading books in the library. How many pennies should you place on the five frame? That's right. You will place 5 pennies on the five frame. Three of the children walked away to search for another book. How many pennies should we take away from the five frame? That is correct. We need to take 3 pennies off of the five frame.

How many children are reading books now? That is right! There are 2 children reading books now.

Fun Fact 1

Some people who have difficulty walking use an electric mobility scooter instead of a wheelchair or walker.

Activity 1

Now it is time for you to make up your own subtraction story, and then we will work together to braille it. We will illustrate your story using a variety of small objects, tactile stickers, and paper with different textures.

Section 2: The Minus Sign

Section 2 Materials

- Student Braille Document: GK-M6-Student-Materials.brf
- Optional: grease marker or crayon
- Braillewriter
- Braille paper
- Activity 2
 - Braillewriter
 - Braille paper
 - Optional: GK-M6-Writing-Answers.brf

Section 2 Teacher Note

If you are using hard copy braille, the student can do the following instead of making their favorite scooter sound:

- Stomp a foot
- Underline or circle the minus sign.
- Place a small sticker on top of each minus sign.

Section 2 Teacher Script

For the second part of the adventure, let's learn about the minus sign. We use this symbol when we are subtracting numbers in math.

Find the first line of braille on page 1. It is at the top of the page. Softly glide your fingers across the line.

It says Module 6. Now move your hands down to the second line of braille on the page. There is just one symbol on the second line. It is on the left side of the page.



Do you remember that this symbol is called an opening Nemeth Code indicator? It tells us that we are going to read math or science. Dots 4-5-6 are in the first cell, and dots 1-4-6 are in the second cell.

Softly glide your fingers across the third line of braille. In the middle of the line, you will find a minus sign. There is a line of dots 2-5 before and after the minus sign.

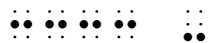
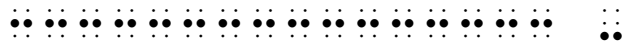


Great work, cyclist! The minus sign is made with the dots 3-6.

Practice 2.1

Now it is your turn to find the minus sign in each line of braille. Move your fingers lightly across the line of braille and say "scoot faster" when you find the minus sign!

[Five lines of dots 2-5 on page 1 with a minus sign inserted in each line.]



Practice 2.2

Turn to page 2 and let's find more minus signs. Make your favorite scooter sound when you find the minus sign in each line. Be careful to make sure it is a minus sign and not a number, plus sign, or a general omission symbol.

[Make sure the student is viewing the first five lines of braille on page 2.]

Let's learn how to write a minus sign in braille. A minus sign is made with the dots 3-6.

Practice 2.3

Place your fingers on the correct keys on your braillewriter. Then use your ring finger on your left and right hand to write the minus sign. Practice writing the minus sign several times.

Fun Fact 2

Some stores have electric mobility scooters that people can use while they are shopping.

Activity 2

You will need your braillewriter and braille paper for this activity. Listen and then braille what you hear. Space one time between the braille symbols.

Practice 2.4

15 general omission symbol 6 minus sign

Now move your fingers across the braille and check your work as I say the symbols again.

15 general omission symbol 6 minus sign

Press your line spacing key twice to move to the next line.

Practice 2.5

plus sign 3 4 minus sign general omission symbol

Now move your fingers across the braille and check your work as I say the symbols again.

plus sign 3 4 minus sign general omission symbol

Press your line spacing key twice to move to the next line.

Practice 2.6

minus sign 2 general omission symbol plus sign

Now move your fingers across the braille and check your work as I say the symbols again.

minus sign 2 general omission symbol plus sign

That was great work, Nemeth superstar!

Section 3: The Equals Sign Review

Section 3 Materials

- Student Braille Document: GK-M6-Student-Materials.brf
- Optional: grease marker or crayon
- Braillewriter
- Braille paper
- Activity 3 Materials
 - Braillewriter
 - Braille paper
 - Optional: GK-M6-Writing-Answers.brf

Section 3 Teacher Notes

- If you are using hard copy braille, the student can do the following instead of making their favorite scooter sound:
 - Stomp a foot
 - Underline or circle the equals sign with a grease marker or crayon
 - Place a small sticker on top of each equals sign
- Activity 3
 - Repeat saying the problem as many times as needed.
 - Remind the student to move their fingers across the braille and check their work if needed.

Section 3 Teacher Script

For the third part of the adventure, let's quickly review the equals sign. We use this symbol when we add and subtract numbers in math.

Softly glide your fingers across the line of braille in the middle of page 2. In the middle of the line, you will find an equals sign. There is a line of dots 2-5 before and after the equals sign.

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Great work! The equals sign is a two-cell symbol. We use dots 4-6 in the first cell and dots 1-3 in the second cell.

Practice 3.1

Now it is your turn to find the equals sign in each line of braille. Move your fingers lightly across each line of braille and make your favorite scooter sound when you find the equals sign!

[Five lines of dots 2-5 at the bottom of page 2 with an equals sign inserted in each line.]

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Let's also review how to write an equals sign in braille. It will take us two braille cells to write an equals sign. In the first braille cell, we need the dots 4-6. In the second cell, we need the dots 1-3.

Practice 3.2

Place your fingers on the correct keys on your braillewriter and then practice writing the equals sign one time.

Super work!

Practice 3.3

Move to the next line and practice writing the equals sign one more time. When you finish writing the equals sign, move your fingers across the braille and check your work!

Fun Fact 3

There are different types of wheelchairs. Manual wheelchairs are propelled by the person in the chair. They can also be pushed by someone walking behind the chair. Other wheelchairs are battery powered and controlled by the person in the chair with a joystick or other accessible controller.

Activity 3

You will need your braillewriter and braille paper for this activity.

Practice 3.4

Listen and then braille what you hear. All of the problems will be numbered, beginning with 1.

1. minus sign
2. equals sign
3. general omission symbol
4. 1, 3, 5, 7
5. plus sign
6. 2, 4, 6, 8
7. minus sign
8. general omission symbol
9. 17, 18, 19
10. plus sign

Section 4 Reading Subtraction Equations

Section 4 Materials

- Student Braille Document: GK-M6-Student-Materials.brf
- Five frame available in the curriculum (Alternative: APH Tactile Five and Ten Frames)
- Five pennies (Alternatives: APH Tactile Tokens, small pieces of Wikki Stix®)
- Optional: cookie sheet or nonslip surface such as rubber shelf liner so the five frame will not move as much
- Activity 4
 - Timer
 - Flashcards with subtraction equations listed in the teacher guide

Section 4 Teacher Notes

- A numeric indicator is not used when a number follows a sign of operation without a space.
- Encourage the student to verbalize the process they use to determine what the general omission symbol is standing for. Provide assistance as needed.

Section 4 Teacher Script

It's time for the fourth part of the adventure! Turn to page 3 and find the first line of braille at the top of the page. It contains an equation with a minus sign. Let's read it together.

[2 minus 1 equals what number]

It begins with the numeric indicator followed by dots 2-3. What number is this? That's right. It's the number 2. Afterwards, there is a minus sign. Which dots make the minus sign? You got it! Dots 3-6 make the minus sign. Notice that there is not a numeric indicator after the minus sign. Also notice that there is not a space before or after the minus sign.

After the minus sign, there is a single dot 2. What number is made with the dot 2? Yes, the number is 1.

So far our equation reads 2-1. What follows the number 1? Yes, there is a space followed by an equals sign.

What follows the equals sign? That's right. The equals sign is followed by a space and then a general omission symbol. Dots 1-2-3-4-5-6 make a general omission symbol.

What number is the general omission symbol standing for in the equation? Let's use our five frame and pennies to find out.

That's right! Two minus one equals one.

Move your hands down to the second line of braille on page 3 and try reading another equation. What does it begin with?

[Make sure the student is viewing the second line of braille on page 3 which is 5 minus 2 equals what number.]

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You got it! It begins with the number 5. What follows the number 5? Yes, there is a minus sign, followed by a 2. What dots make the minus sign? Yes, dots 3-6 make the minus sign. Did you remember that there is not a space before and after the minus sign?

Try reading the rest of the equation. You got it, Nemeth superstar! There is a space and then an equals sign. Afterwards, there is another space, followed by the general omission symbol.

What number is the general omission symbol standing for? Let's use our five frame and pennies to find out.

That's right! Five minus two equals three. Let's try reading another equation together.

[Make sure the student is viewing the third line of braille on page 3.]

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Yes, we would read the equation as 4 minus 0 equals what number. Let's use our five frame and pennies to find out what the general omission symbol is standing for.

How should we begin? Yes, we should place 4 pennies on the five frame. How many pennies should we remove from the five frame for the number 0?

That is correct. We should not remove any pennies from the five frame because 0 means no objects.

So 4 minus 0 equals what number? Way to go! 4 minus 0 equals 4.

Practice 4.1

Now move your hands to the fourth line of braille. Read the equations and tell me what number the general omission symbol stands for each time. Good luck, scooter racer!

[Make sure the student is viewing the set of seven subtraction problems at the bottom of page 3.]

$$4 - 0 = \quad$$

$$4 - 0 = \quad$$

$$4 - 0 = \quad$$

$$4 - 0 = \quad$$

$$4 - 0 = \quad$$

$$4 - 0 = \quad$$

$$4 - 0 = \quad$$

Fun Fact 4

Wheelchairs can be used to travel at school, shop in the community, go on day trips, and visit with friends and family.

Activity 4

Use flashcards to practice reading equations that have a minus sign. Afterwards, tell me what number the general omission symbol stands for. Once you can read all of the equations correctly, go back and time how quickly you can read the equations! Do you think you can read the equations even quicker? If so, try one more time!

Section 5: Writing Subtraction Equations

Section 5 Materials

- Braillewriter
- Braille paper
- Optional: GK-M6-Writing-Answers.brf
- Activity 5: same materials used in Section 5

Section 5 Teacher Notes

- Repeat saying the equations as many times as needed throughout the section. Also remind the student to move their fingers across the braille and check their work if needed.
- Activity 5: If needed, remind the student how to number the equations, including the dot configuration for the punctuation indicator.

Section 5 Teacher Script

Way to go, math superstar! For the fifth part of the adventure, let's learn how to write equations with a minus sign in braille. Place your fingers on the correct keys on your braillewriter.

Begin by writing $3-1 = ?$

What should we braille first? Yes, we will begin by brailleing the number 3, followed by the minus sign.

How do we write a minus sign in braille? Yes, a minus sign is made with the dots 3-6. Remember that there will not be a space before or after the minus sign.

Next we will write the number 1. We will not need another numeric indicator. So we would press only the dot 2 after the minus sign to write the number 1.

We will need a space after the number 1 so we will press the space bar one time. How do we write the equals sign in braille? Yes, the equals sign begins with the dots 4-6, followed by the dots 1-3.

We will need another space after the equals sign. Then we will need to braille the general omission symbol. Dots 1-2-3-4-5-6 are used to write the general omission symbol.

Super work, Nemeth superstar!

Practice 5.1

Move to the next line by pressing the line spacing key twice. Practice writing $3-1 = ?$ several times. You will need to press your line spacing key twice to move to the next line before brailleing the equation each time.

Let's practice brailleing another equation.

$$5-4 = ?$$

What should we braille first? Yes, we will begin by brailleing the number 5, followed by the minus sign. How do we write a minus sign in braille? Yes, a minus sign is made with the dots 3-6. Will we need a space before or after the minus sign? That's right. We will not need a space.

Next we will write the number 4. We do not need another numeric indicator because the number is coming after the minus sign. So we would press dots 2-5-6 after the minus sign to write the number 4.

What should we braille next? Yes, we need a space and then an equals sign. How do we write the equals sign in braille? Yes, the equals sign begins with the dots 4-6, followed by the dots 1-3.

Will we need another space after the equals sign? Yes, we will need a space before and after an equals sign in braille. Then we will end the equation with a general omission symbol. What dots are used to write a general omission symbol? Yes, dots 1-2-3-4-5-6 are used to write the general omission symbol in braille.

Practice 5.2

Move to the next line by pressing the line spacing key twice. Practice writing $5-4 = ?$ several times. You will need to press your line spacing key twice to move to the next line before brailleing the equation each time.

Fun Fact 5

Some people who use an electronic mobility scooter also use a wheelchair.

Activity 5

You will need your braillewriter and braille paper for this activity.

Practice 5.3

Listen and then braille the following equations: 2 minus 0 equals what number, 5 minus 3 equals what number, 4 minus 1 equals what number, and 3 minus 2 equals what number.

$$2-0 = ?$$

$$5-3 = ?$$

$$4-1 = ?$$

$$3-2 = ?$$

Practice 5.4

Let's try a few more. This time number the equations.

Write number 1: 3 minus 1 equals what number, number 2: 4 minus 2 equals what number, number 3: 5 minus 3 equals what number, number 4: 3 minus 0 equals what number, and number 5: 2 minus 1 equals what number.

1. $3-1 = ?$

2. $4-2 = ?$

3. $5-3 = ?$

4. $3-0 = ?$

5. $2-1 = ?$

Now go back to the equations that you wrote and tell me what number the general omission symbol is standing for each time.

Fun Fact 6

It is not known when the first chair with wheels was invented and used by individuals with disabilities. It was likely more than 1,000 years ago.

Section 6 Two-Dimensional Shapes

Section 6 Materials

- Work tray with a two-section divider
- Two-dimensional circles, triangles, rectangles, and squares which can be found in the following kits:
 - APH MathBuilders, Unit 1: Matching, Sorting, and Patterning Kit
 - APH MathBuilders, Unit 6: Geometry Kit
 - APH Focus in Math Kit
 - Feel 'n Peel Sheets: Carousel of Textures has a variety of non-adhesive backed textured paper that can be used to create shapes
- Activity 6: at least 3 objects around the room in the shape of each of the following: circles, rectangles, triangles, squares

Section 6 Teacher Notes

- Before beginning this section, you may want to listen to a song about shapes or read a book about shapes. The National Braille Press and Seedlings sell "DK Braille: Shapes" which includes tactile pictures of shapes.
- Give the student a manipulative of each shape as you introduce the associated term.
- When working with the rectangles, use hand-under-hand technique to show the student what is meant by opposite sides if needed.
- When sorting rectangles and non-rectangles, do not include squares with the objects since a square is a special kind of rectangle.
- Activity 6: You could also use pentagons, hexagons, and octagons.

Section 6 Teacher Script

For the sixth part of our adventure, let's learn about shapes.

This is a circle. Take a minute and explore the circle with your hands. What did you notice about the circle? Yes, it is a perfectly round shape. There are no straight sides or corners on a circle.

Now sort the objects found in the work tray into two groups – circles and non-circles.

Very nice! Now place the objects back in the work tray.

This is a triangle. Take a minute and explore the triangle with your hands. What did you notice about the triangle? Yes, a triangle has 3 sides and 3 corners. Another word for corners is vertices.

1 2 3

Yes, a triangle has 3 sides.

Now sort the objects found in the work tray into two groups – triangles and non-triangles.

Very nice! Now place the objects back in the work tray.

Fun Fact 7

Approximately 2.7 million people of all ages use a wheelchair in the United States.

This is a rectangle. Take a minute and explore the rectangle with your hands. What did you notice about this rectangle? Yes, it has 4 sides and 4 corners. All 4 corners are the same size. Let's count the sides of the rectangle.

1 2 3 4

Yes, a rectangle has 4 sides.

The opposite sides on a rectangle are equal in length. What does equal mean? That's right! Equal in length means that the opposite sides have the same length.

Now sort the objects found in the work tray into two groups – rectangles and non-rectangles.

Very nice! Now place the objects back in the work tray.

This is a square. A square is a special kind of rectangle. Yes, it has 4 sides and 4 corners. All 4 corners are the same size. Let's count the number of sides together.

1 2 3 4

Take a minute and explore the square with your hands. What did you notice?

Yes, all 4 sides of a square are the same length. That is what makes it a special kind of rectangle!

Now sort the objects found in the work tray into two groups – squares and non-squares.

Very nice! Now place the objects back in the work tray.

Place all of the shapes into a work tray. Then pick up one shape at a time and tell me if it is a square, rectangle, triangle, or circle.

Activity 6

Let's go on a shape hunt. First, find 3 objects that are in the shape of a circle. Second, find 3 objects that are in the shape of a rectangle. Third, find 3 objects that are in the shape of a triangle. Fourth, find 3 objects that are in the shape of a square.

Fun Fact 8

Franklin D. Roosevelt, president of the United States from 1933-1945, was paralyzed and used a wheelchair.

Section 7: Reading the Ellipsis

Section 7 Materials

- Student Braille Document: GK-M6-Student-Materials.brf
- Optional: braille hundreds chart
- Activity 7
 - Braillewriter
 - Braille paper
 - Braille hundreds chart
 - Optional: GK-M6-Writing-Answers.brf

Section 7 Teacher Note

If needed, provide the student with a copy of the braille hundreds chart when solving for missing numbers.

Section 7 Teacher Script

For the seventh part of the adventure, let's learn about the ellipsis. We sometimes use the ellipsis to stand for a missing number or numbers in a pattern in math.

Turn to page 4 and softly glide your fingers across the first line of braille. In the middle of the line, you will find an ellipsis. There is a line of dots 2-5 before and after the ellipsis.

Did you notice that the ellipsis is a three-cell symbol? In the Nemeth Code, an ellipsis is a dot 3, followed by another dot 3, followed by a third dot 3. In math, there is usually a space before and after the ellipsis.

Practice 7.1

Now it is your turn to find the ellipsis in each line of braille, beginning with the second line of braille on the page. Move your fingers lightly across each line of braille and make your favorite scooter sound when you find the ellipsis!

[Four lines of dots 2-5 in the middle of page 4 with an ellipsis inserted in each line.]

Figure 1 shows a sequence of 10 diagrams illustrating the evolution of a 2D lattice of points. The lattice is 5x5. The points are represented by dots. The sequence shows the points moving from their initial positions to new positions, with some points being added or removed. The sequence is labeled 1 through 10.

Now move your hands down to the next line of braille. You will find a series of numbers that ends with an ellipsis. It is standing for the next numbers in the pattern. Let's read the line of braille together.

It begins with the numeric indicator followed by dot 2. What number is this? That's right. It's the number 1. What comes after the number 1? Yes, there is a mathematical comma next. Which dot makes the mathematical comma? You got it! Dot 6 makes the mathematical comma.

Next there is a space. After the space, there is another number. What number is this? That's correct. It's the number 2. What follows the number? You got it! It is another mathematical comma.

What comes next in the line? Yes, a space followed by the number 3 comes next. What follows the number 3? You got it! It is another mathematical comma, followed by a space.

What comes next? Yes, it is an ellipsis. Which dots make an ellipsis? Yes, dot 3, dot 3, dot 3 make an ellipsis. Sometimes we just say dot, dot, dot when we come to an ellipsis.

Do you see the pattern? Yes, these are just the numbers we use when we are counting. The ellipsis is asking us for the next counting numbers in the pattern. What is the next counting number after 3?

That's right! The next counting number would be 4. Then 5, then 6, and so on.

On the next line of braille, you will find another list of numbers and an ellipsis. Read the numbers and try to figure out what number would come next in the missing list of numbers.

(a) (b) (c) (d)

Super work! The first missing number is 8. What would be next? The second missing number is 9, and the third missing number is 10. We could continue counting forward as far as we want.

Read the numbers on the last line of braille and find the ellipsis. Then tell me the next three numbers in the list.

That's right! The next three numbers are 12, 13, and 14.

Fun Fact 9

In the late 1800s wheelchairs were made of wood and cane. Today the frames of wheelchairs are made mostly of steel, aluminum, and titanium. The seat is made with different types of materials, including leather, plastic, and upholstery.

Activity 7

You will need your braillewriter and braille paper for this activity.

Fun Fact 10

Folding steel wheelchairs were invented in the early 1900s. Wheelchairs that fold can be taken place to place and fit in the trunk of most cars.

Section 8: Writing the Ellipsis

Section 8 Materials

- Braillewriter
- Braille paper
- Activity 8: same materials used in Section 8 (Optional: GK-M6-Writing-Answers.brf)

Section 8 Teacher Notes

- Remind the student to move their fingers across the braille and check their work if needed.
- Activity 8
 - Repeat saying the problem as many times as needed.
 - Remind the student to move their fingers across the braille and check their work if needed.

Section 8 Teacher Script

Let's learn how to write an ellipsis in braille. It will take us three braille cells to write an ellipsis. In the first braille cell, we need a dot 3. In the second braille cell, we need another dot 3. In the third braille cell, we will need another dot 3.

Practice 8.1

Place your fingers on the correct keys of your braillewriter. How many times will you need to press the dot 3 key? Yes, that's right. You will need to press the dot 3 key three times.

Now use your ring finger on your left hand to write the ellipsis. When you finish, move your fingers across the braille and check your work!

Practice 8.2

Then press the line spacing key twice and practice writing the ellipsis again.

Great work, Nemeth superstar!

Practice 8.3

Move to the next line and practice writing the ellipsis one more time.

Fun Fact 11

Most public buses have a wheelchair accessible ramp.

Activity 8

You will need the your braillewriter and braille paper for this activity.

Practice 8.4

Listen and then braille what you hear. All of the problems will be numbered, beginning with 1.

1. ellipsis
2. 1, 2, 3, ...
3. 7, 8, 9, ...
4. 15, 16, ...
5. equals sign
6. minus sign

Practice 8.5

Let's try some more.

7. 12, 13, ...
8. plus sign
9. 8, 9, 10, ...

Fun Fact 12

Dr. Stephen Hawking was a famous physicist that used a wheelchair.

Practice 9.1

Move your hands down to the third line of braille. Then read the equations below and tell me what number the general omission symbol stands for each time. Remember to read each equation carefully because some will have a plus sign and some of them will have a minus sign. Good luck, Nemeth superstar!

[Make sure the student is viewing the six remaining lines of braille on page 6.]

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Practice 9.2

Let's try some more on page 7. This time record your answers using your braillewriter and braille paper. Space one time between your answers.

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Activity 9

Use flashcards to practice reading equations. Some of them will have a plus sign, and some of them will have a minus sign. Afterwards, tell me what number the general omission symbol stands for. Once you can read all of the equations correctly, go back and time how quickly you can read the equations! Do you think you can read the equations even quicker? If so, try one more time!

Section 10 Subtraction Word Problems

Section 10 Materials

- Ten frame available in uncontracted and contracted braille within the curriculum (Alternative: APH Tactile Five and Ten Frames)
- Ten pennies in a bowl, container, or work tray (Alternatives: APH Tactile Tokens, small pieces of Wikki Stix®, magnetic counters)
- Braillewriter
- Braille paper
- Optional: GK-M6-Writing-Answers.brf, nonslip surface such as rubber shelf liner so the five frame will not move as much (Alternatives: cookie sheet, magnetic board)

Section 10 Teacher Notes

- Allow the student time to explore the ten frame before using it.
- One texture on the Tactile Tokens can represent the objects the student starts with and then instead of removing the tokens, the student can flip the ones being taken away.
- You can use the shapes and line segments from the Picture Maker Wheatley Tactile Diagramming Kit to create the ten frame.
- Encourage the student to verbalize the process they use for placing the pennies on the ten frame and to solve the problem. Provide assistance as needed.

Section 10 Teacher Script

For the tenth part of the adventure, let's use a ten frame to help us solve subtraction word problems. Use your hands to explore the ten frame.

[Do not read the next two short paragraphs if the student is using a ten frame without a title.]

Do you remember where the title is located? Let's read it together.

That's right! The title is at the top of the page. The title is Ten Frame.

Now use your hands to locate the top row. Then move your hands across the top row of squares from left to right. Afterwards count the squares in the top row. That is correct. There are five squares.

Next find the bottom row. Then move your hands across the bottom row from left to right. You got it! Afterwards count the squares in the bottom row. That is correct. There are five squares.

When we use the ten frame, fill the top row up first, before moving to the bottom row.

Begin by placing 8 pennies on the ten frame. Good job! You remembered to place pennies on the top row first, beginning on the far left.

Remove the pennies from the ten frame and place them in a bowl. Now place 7 pennies on the ten frame.

Remove the pennies from the ten frame and place them in a bowl. Now as I call a number, place that many pennies on the ten frame. Don't forget to remove the pennies between numbers!

6

8

3

9

7

10

Nice work, math superstar!

Fun Fact 13

The first wheelchair was patented in 1869 in the United States.

Now let's work together to solve word problems with our ten frame and pennies.

Javier's mother made 10 tacos. Javier and his family ate 5 of the tacos for supper. How many tacos are left?

We can use pennies (or small pieces of Wikki Stix®) on the ten frame to show the tacos. How many tacos did Javier's mother make?

Yes, that's right! She made 10 tacos. So we will need to place 10 pennies on the ten frame.

Let's work together to place 10 pennies on the ten frame. We will only place 1 penny in each square, beginning with one on the far left on the top row and then moving to the right. Then we will move to the bottom row, beginning with one on the far left.

Then the family ate 5 of the tacos. Let's take away 5 pennies from the ten frame and place them in the work tray.

How many tacos are left now? Excellent counting! There are 5 tacos.

Before we read another word problem, remove the pennies from the ten frame and place them back in the work tray.

A teacher has 8 pencils. She loaned 4 of the pencils to students. How many pencils does she have now?

How many pennies should you place on the ten frame? That's right. You will place 8 pennies on the ten frame. The teacher loaned 4 of her pencils to students. How many pennies should we take away from the ten frame? That is correct. We need to take 4 pennies off of the ten frame.

How many pencils does the teacher have now? You got it! She has 4 pencils.

Practice 10.1

We can write an equation about the story problem.

How many pennies did you place on the ten frame originally? That's right! You placed 8 pennies on the ten frame since the teacher had 8 pencils. So what should you braille first? Yes, you will begin by brailing the number 8.

Let me know when you are finished. What happened next? Yes, you took away 4 pennies from the ten frame since the teacher loaned 4 of her pencils to students. So should you braille a minus sign or a plus sign next?

That's right, you will braille a minus sign and then the number 4 since you took away 4 pennies from the ten frame.

How do you write a minus sign in braille? Yes, a minus sign is made with the dots 3-6. Remember that there will not be a space before or after the minus sign.

You will not need another numeric indicator after the minus sign. So you will press only the dots 2-5-6 after the minus sign to write the number 4.

Then you will need a space and an equals sign, so press the space bar one time. How do you write the equals sign in braille? Yes, the equals sign begins with the dots 4-6, followed by the dots 1-3.

You will need another space after the equals sign. Then you will need to braille the answer. How many pencils did she have left? That's right! She had 4, so you will write the number 4. Don't forget to write a numeric indicator since the 4 is after an equals sign.

Super work, Nemeth superstar!

Practice 10.2

Go to the next line and write the equation once more!

Let's try another one. Before we read another word problem, remove the pennies from the ten frame and place them back in the work tray.

The farmer has 9 chickens. She gave 2 of the chickens to her neighbor. How many chickens does she have now?

How many pennies should you place on the ten frame? That's right. You will place 9 pennies on the ten frame. The farmer gave 2 of the chickens to her neighbor. How many pennies should we take away from the ten frame? That is correct. We need to take 2 pennies off of the ten frame.

How many chickens does the farmer have now? You got it! She has 7 chickens.

Practice 10.3

Let's write an equation about this story problem.

How many pennies did you place on the ten frame originally? That's right! You placed 9 pennies on the ten frame since the farmer had 9 chickens. So what should you braille first? Yes, you will begin by brailing the number 9.

Let me know when you are finished. What happened next? Yes, you took away 2 pennies from the ten frame since the farmer gave 2 of her chickens to her neighbor. So should you braille a minus sign or a plus sign next? That's right, you will braille a minus sign and then the number 2 since you took away 2 pennies from the ten frame.

How do you write a minus sign in braille? Yes, a minus sign is made with the dots 3-6. Remember that there will not be a space before or after the minus sign.

You will not need another numeric indicator when you write 2. So you will press only the dots 2-3 after the minus sign to write the number 2.

You will need a space after the number 2 so you will press the space bar one time. How do you write the equals sign in braille? Yes, the equals sign begins with the dots 4-6, followed by the dots 1-3.

You will need another space after the equals sign. Then you will need to braille the answer. How many chickens did she have left? That's right! She had 7, so you will write the number 7. Don't forget to write a numeric indicator since the 7 is after an equals sign.

Practice 10.4

Go to the next line and write the equation once more!

Now remove the pennies from the ten frame and place them back in the work tray.

Now it is your turn to solve five word problems using the ten frame and pennies by yourself.

Use your braillewriter to write your answers. Don't forget to number the problems and use your line spacing key twice between each problem!

If you want to challenge yourself, write the equation instead of just your answer! I know you can do it!

Practice 10.5

1. Demetri found 9 seashells on the beach. He shared 3 of the shells with his sister. How many seashells does he have now?

Practice 10.6

2. There are 7 bananas in the fruit bowl. Shelly ate 1 banana. How many bananas are left in the fruit bowl?

Practice 10.7

3. Jimmy and his friend are selling boxes of popcorn. They began with 10 boxes of popcorn. Then they sold 8 of the boxes. How many boxes of popcorn do they have left?

Practice 10.8

4. Hallie picked 9 flowers from the garden. She gave 6 of the flowers to her grandmother. How many flowers does she have left?

Practice 10.9

5. There were 6 butterflies sitting on a tree branch. Two of the butterflies flew away. How many butterflies are sitting on the branch now?

Section 11: Review

Section 11 Materials

Activity 10

- Braillewriter
- Braille paper
- Maze available in both uncontracted and contracted braille within the curriculum
- Optional: nonslip surface such as rubber shelf liner to place the maze on, Wikki Stix®, GK-M6-Writing-Answers.brf

Section 11 Teacher Notes

Activity 10

Show the maze to the student before using it.

Section 11 Teacher Script

Activity 10

You will need your braillewriter and braille paper for this activity.

Tell me what you know about a maze. You got it! A maze is a series of paths or tunnels. Today we are going to complete a simple maze puzzle with subtraction and addition problems.

Practice 11.1

Begin by using your hands to explore the maze. What did you notice about the maze?

Yes, the maze includes subtraction and addition problems in boxes. The box on the top left side has the word "start" in it, and the box on the bottom right side has the word "finish" in it.

Did you notice that the maze does not have a title? Not all charts and games will have a title.

Now trace the path of the maze with your hands. You will begin with the box that has the word "start" in it.

You are now ready to work your way through the addition and subtraction problems to complete the maze. You will record your answers using your braillewriter and braille paper. Space one time between your answers.

If it would be helpful, you can place a small piece of Wikki Stix® in the box that you are working on to help you keep your place more easily! When you move to the next subtraction problem, move the piece of Wikki Stix® to the next box.

Good luck, Nemeth superstar!