

# **First Grade Posttest Answer Key**

## **Introduction**

- This posttest should be completed with hard copy braille and a braillewriter instead of a refreshable braille display.
- All bracketed text should not be read aloud and is for reference only.
- The questions and answers 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.
- It is highly recommended that this check-up be completed across two or more sessions.

## **Part 1**

### **Part 1 Materials**

- Counting to 120 Chart available in braille within the curriculum (Although the double-spaced chart is recommended for most first graders, a single-spaced alternative chart is also available in the curriculum.)
- Student Braille Document: G1-Posttest-Student.brf
- Braillewriter
- Braille paper
- Base ten units, rods, and flats in different containers, baskets, or bowls (Alternative: Digi-Blocks which is a different type of base ten blocks that nest)
- Place Value Chart 2 available in contracted and uncontracted braille within the curriculum (Alternative: three-compartment sorting tray with the right compartment labeled "ones", middle compartment labeled "tens", and left compartment labeled "hundreds" in braille.)
- G1-Posttest-Data-Table.docx

### **Part 1 Teacher Note**

As the student completes Questions 1.19-1.21, carefully observe if the student presses the space key with the thumb to leave a space between symbols and record this information on the data table.

## Part 1 Teacher Script

### Question 1.1

Count aloud to 120, beginning with 1.

Answer 1.1

The braille version of this answer has been split across 18 lines to accommodate for 32 cell braille displays.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

### Question 1.2

Using a Counting to 120 Chart, skip count by 10s to 120, beginning with 10.

Answer 1.2

10 20 30 40 50 60 70 80 90 100 110 120

### Question 1.3

Find the following numbers on this same braille chart.

45 101 94 118 2 78

73 108 80 120 66 37

114 100 54 109 29 106

117 46 102 113 75 91 62

**Answer 1.3**

The student should point to the following numbers on the Counting to 120 Chart:

45 101 94 118 2 78

73 108 80 120 66 37

114 100 54 109 29 106

117 46 102 113 75 91 62

**Question 1.4**

Use your braille chart and count to 120 beginning with the following numbers:

41 106 80 103 78 97 119 13

**Answer 1.4**

Numbers from 41-120

41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

Numbers from 106-120

						106	107	108	109	110
111	112	113	114	115	116	117	118	119	120	

Numbers from 80-120

										80
81	82	83	84	85	86	87	88	89	90	
91	92	93	94	95	96	97	98	99	100	
101	102	103	104	105	106	107	108	109	110	
111	112	113	114	115	116	117	118	119	120	

Numbers from 103-120

						103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120				

Numbers from 78-120

														78	79	80
81	82	83	84	85	86	87	88	89	90							
91	92	93	94	95	96	97	98	99	100							
101	102	103	104	105	106	107	108	109	110							
111	112	113	114	115	116	117	118	119	120							

Numbers from 97-120

																97	98	99	100
101	102	103	104	105	106	107	108	109	110										
111	112	113	114	115	116	117	118	119	120										

Numbers from 119-120

119 120

Numbers from 13-120

		13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

### Question 1.5

Use your braille chart and skip count by 10 through the last row in the chart, beginning with the following numbers:

16 79 49 32 5 87 64

Answer 1.5

16 26 36 46 56 66 76 86 96 106 116

79 89 99 109 119

49 59 69 79 89 99 109 119

32 42 52 62 72 82 92 102 112

5 15 25 35 45 55 65 75 85 95 105 115

87 97 107 117

64 74 84 94 104 114

**Question 1.6**

Listen as I read each math problem, and then use your Counting to 120 chart to answer the question.

What number is ten less than 120?

Answer 1.6

110

**Question 1.7**

What number is ten more than 88?

Answer 1.7

98

**Question 1.8**

What number is ten less than 49?

Answer 1.8

39

**Question 1.9**

What number is ten more than 37?

Answer 1.9

47

**Question 1.10**

What number is ten less than 66?

Answer 1.10

56

### Question 1.11

What number is ten less than 102?

Answer 1.11

92

### Question 1.12

What number is ten more than 97?

Answer 1.12

107

### Question 1.13

What number is ten more than 52?

Answer 1.13

62

This activity will help us find out how well you have learned to read the braille numbers 0 to 120.

### Question 1.14

Read the numbers from 1-50 on page 1. There will be 4 numbers on each line.

Answer 1.14

29 4 40 37

12 28 38 43

39 31 16 23

9 17 46 48

35 7 22 10

### Question 1.15

Read the numbers from 51-100, beginning at the top of page 2. There will be 4 numbers on each line.

Answer 1.15

73 86 100 94

50 95 72 68

82 54 75 69

59 80 66 92

97 61 79 88

### Question 1.16

Read the numbers from 101-120 at the bottom of page 2. There will be 5 numbers on each line this time.



The image displays a 4x5 grid of 20 Braille characters. Each character is formed by a 2x3 grid of dots (1-6) with varying combinations of dots filled in black. The characters represent the numbers 1 through 0 in Braille.

Answer 1.16

105 116 118 106 113

109 114 102 120 103

117 110 108 101 115

111 119 104 107 112

### Question 1.17

Read the numbers in expanded form at the top of page 3.

Answer 1.17

10+5

 $40+8$  $30+7$ 

20+2

50+0

### Question 1.18

Let's try some more.

[Make sure that the student is viewing the last five problems on page 3.]

⠠⠠⠠⠠⠠⠠

⠠⠠⠠⠠⠠⠠

⠠⠠⠠⠠⠠⠠

⠠⠠⠠⠠⠠⠠

⠠⠠⠠⠠⠠⠠

Answer 1.18

50+3

70+9

60+4

90+1

80+8

This activity will help us find out how well you have learned to write the numbers 1-120 and build them by using base ten blocks (or Digi-Blocks) and a Place Value Chart.

### Question 1.19

Now write the numbers in standard form that you hear and space one time between the numbers. Then build the number by using base ten blocks (or Digi-Blocks) and your Place Value Chart.

Don't forget to put your blocks back into the work tray each time before beginning to build a different number.

63

47

15

87

29

51

Answer 1.19

The student should write:

63 47 15 87 29 51

The student should then build:

- 63 with 6 rods (tens blocks) and 3 unit blocks
- 47 with 4 rods (tens blocks) and 7 unit blocks
- 15 with 1 rod (tens block) and 5 unit blocks
- 87 with 8 rods (tens blocks) and 7 unit blocks
- 29 with 2 rods (tens blocks) and 9 unit blocks
- 51 with 5 rods (tens blocks) and 1 unit block

### Question 1.20

Use the line spacing key twice to move to the next line before trying some more!

2

79

90

103

116

Answer 1.20

The student should write:

2 79 90 103 116

⠠⠨ ⠠⠑⠠⠗ ⠠⠑⠠⠐ ⠠⠠⠐⠠⠐ ⠠⠠⠠⠠⠠ ⠠⠠⠠⠠⠠⠠

The student should then build:

- 2 with 0 rods (tens blocks) and 2 unit blocks
- 79 with 7 rods (tens blocks) and 9 unit blocks
- 90 with 9 rods (tens blocks) and 0 unit blocks
- 103 with 1 flat, 0 rods (tens blocks) and 3 unit blocks
- 116 with 1 flat, 1 rod (tens block) and 6 unit blocks

**Question 1.21**

Use the line spacing key twice to move to the next line before writing and building a few more numbers!

120

108

119

38

96

Answer 1.21

The student should write:

120 108 119 38 96

⠠⠠⠠⠠⠠ ⠠⠠⠠⠠⠠ ⠠⠠⠠⠠⠠⠠ ⠠⠠⠠⠠ ⠠⠠⠠⠠⠠

The student should then build:

- 120 with 1 flat, 2 rods (tens blocks) and 0 unit blocks
- 108 with 1 flat, 0 rods (tens block) and 8 unit blocks
- 119 with 1 flat, 1 rod (tens block) and 9 unit blocks
- 38 with 3 rods (tens blocks) and 8 unit blocks
- 96 with 9 rods (tens blocks) and 6 unit blocks

## **Part 2**

### **Part 2 Materials**

- Student Braille Document: G1-Posttest-Student.brf
- Five and ten frames available in braille within the curriculum (Alternatives: Tactile Five and Ten Frames from American Printing House for the Blind [APH], line segments from the APH Picture Maker Wheatley Tactile Diagramming Kit placed in the shape of a five or ten frame)
- Ten pennies (Alternatives: APH Tactile Tokens, small pieces of Wikki Stix®, magnetic counters, shapes from the APH Picture Maker Wheatley Tactile Diagramming Kit) in a bowl or work tray
- G1-Posttest-Data-Table.docx
- Optional: nonslip surface such as rubber shelf liner for the five and ten frame (Alternatives: cookie sheet, magnetic board)

### **Part 2 Teacher Note**

The Tactile Tokens from APH fit perfectly into the five and ten frames and the two textures can represent the two addends.

### **Part 2 Teacher Script**

You will need your five frame, pennies, and work tray for the first three problems.

#### **Question 2.1**

Begin by placing 3 pennies on the five frame. How many more pennies are needed to make 5?

Answer 2.1

2

### Question 2.2

Remove the pennies from the five frame and place them back in the work tray. Now place 4 pennies on the five frame. How many more pennies are needed to make 5?

Answer 2.2

1

### Question 2.3

Use your five frame and show me 3 different ways to make 5.

Answer 2.3

There are several possible correct responses, including  $0+5$ ;  $1+4$ ;  $2+3$ ;  $3+2$ ;  $4+1$ ; and  $5+0$ .

For the next problem, you will need your ten frame, pennies, and work tray.

### Question 2.4

Use your ten frame and show me 4 different ways to make 10.

Answer 2.4

There are several possible correct responses, including  $0+10$ ;  $1+9$ ;  $2+8$ ;  $3+7$ ;  $4+6$ ;  $5+5$ ;  $6+4$ ;  $7+3$ ;  $8+2$ ;  $9+1$ ; and  $10+0$ .

### Question 2.5

Read the following equations in braille at the top of page 4.

$2 + 3 = 5$

$4 + 6 = 10$

$7 + 3 = 10$

14 equals 14

2 plus 3 equals what number

Answer 2.5

Number 1: 14 equals 14

Number 2: 2 plus 3 equals what number

Number 3: 19 minus 5 equals what number

Number 4: 10 plus 10 equals what number

Number 5: what number plus 8 equals 11

## Question 2.6

Let's try some more.

[Make sure the student is viewing the last 5 problems on page 4.]

7 plus blank equals 13

6 plus 6 equals blank

8 minus 7 equals blank

12 minus blank equals 4

blank plus 4 equals 9

Answer 2.6

Number 6: 7 plus blank equals 13

Number 7: 6 plus 6 equals blank

Number 8: 8 minus 7 equals blank

Number 9: 12 minus blank equals 4

Number 10: blank plus 4 equals 9

### Question 2.7

Now read the equations at the top of page 5 and then tell me what number the long dash stands for each time.

Figure 1 shows four 3x3 dot patterns. Pattern (a) has 10 dots: top row (1,1), (1,2), (1,3), (2,1), (2,2), (2,3), (3,1), (3,2), (3,3) with (2,2) missing. Pattern (b) has 11 dots: top row (1,1), (1,2), (1,3), (2,1), (2,2), (2,3), (3,1), (3,2), (3,3) with (2,2) and (3,2) missing. Pattern (c) has 8 dots: top row (1,1), (1,2), (1,3), (2,1), (2,2), (2,3), (3,1), (3,2) with (3,3) missing. Pattern (d) has 14 dots: top row (1,1), (1,2), (1,3), (2,1), (2,2), (2,3), (3,1), (3,2), (3,3) with (2,2) and (3,2) missing.

Figure 1 shows a 3x3 grid of 3x3 dot patterns. Each pattern is a 3x3 grid of dots, some filled (black) and some empty (white). The patterns represent different states of a 3x3 grid.

### Answer 2.7

Number 1: 9 minus 6 equals blank.  
The long dash stands for 3.

Number 2: 10 minus 8 equals blank.  
The long dash stands for 2.

Number 3: 8 minus 5 equals blank.  
The long dash stands for 3.

Number 4: 7 minus 3 equals blank.  
The long dash stands for 4.

Number 5: 5 minus 2 equals blank.  
The long dash stands for 3.

Number 6: 10 minus 1 equals blank.  
The long dash stands for 9.

### Question 2.8

Let's try some more, beginning in the middle of page 5.



$7 + 2 = 9$   
 $6 + 0 = 6$   
 $4 + 4 = 8$   
 $9 + 1 = 10$   
 $3 + 4 = 7$   
 $1 + 8 = 9$

### Answer 2.8

Number 7: 7 plus 2 equals blank.  
The long dash stands for 9.

Number 8: 6 plus 0 equals blank.  
The long dash stands for 6.

Number 9: 4 plus 4 equals blank.  
The long dash stands for 8.

Number 10: 9 plus 1 equals blank.  
The long dash stands for 10.

Number 11: 3 plus 4 equals blank.  
The long dash stands for 7.

Number 12: 1 plus 8 equals blank.  
The long dash stands for 9.

### Question 2.9

Let's try some more, beginning at the top of page 6. Once again read the equations below and tell me what number the long dash stands for each time.

$7 + 2 = 9$   
 $6 + 0 = 6$   
 $4 + 4 = 8$

The image displays a 5x4 grid of 20 dot patterns. Each pattern is a 4x4 grid of dots, where some dots are filled (black) and others are empty (white). The patterns are arranged in four rows of four and a final row of four. The patterns represent various combinations of filled and empty dots in the 4x4 grid.

Answer 2.9

Number 1: 12 minus 6 equals blank.  
The long dash stands for 6.

Number 2: 9 plus 8 equals blank.  
The long dash stands for 17.

Number 3: 8 plus 8 equals blank.  
The long dash stands for 16.

Number 4: 15 minus 2 equals blank.  
The long dash stands for 13.

Number 5: 14 minus 5 equals blank.  
The long dash stands for 9.

Number 6: 17 minus 4 equals blank.  
The long dash stands for 13.

Number 7: 3 plus 4 equals blank.  
The long dash stands for 7.

Number 8: 20 minus 3 equals blank.  
The long dash stands for 17.

Number 9: 7 plus 7 equals blank.  
The long dash stands for 14.

Number 10: 9 plus 9 equals blank.  
The long dash stands for 18.

## **Part 3**

### **Part 3 Materials**

- Braillewriter
- Braille paper
- Work tray
- 12 different sized, 2-dimensional shapes (2 circles, 2 triangles, 2 rectangles, 2 half-circles, 2 trapezoids, and 2 squares) which can be found in the following kits from APH:
  - MathBuilders, Unit 1: Matching, Sorting, and Patterning Kit
  - Fractional Parts of Wholes: Circles
  - 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
- Tactile drawing film and
- inTACT Sketchpad or a DRAFTSMAN: Tactile Drawing Board (Alternatives: Wikki Stix® or graphic art tape on braille paper)
- G1-Posttest-Data-Table.docx

### **Part 3 Teacher Notes**

- As the student completes Question 3.2, carefully observe if the student moves to the next line in braille by pushing the line spacing key twice and record this information on the data table.
- For Question 3.5, the orientation of the shapes should vary.
- If the student calls a square a rectangle, tell them that they are correct, but it is a special kind of rectangle. What is its special name?
- If students seem to struggle in providing a description, you can offer a 2-dimensional shape.
- For Question 3.12, the following shapes should be drawn in random order from left to right: 1) circle; 2) half-circle; 3) rectangle; 4) square; 5) trapezoid; and 6) triangle on the inTACT Sketchpad or a DRAFTSMAN: Tactile Drawing Board. You may also use Wikki Stix® or graphic art tape on braille paper to create the shapes.

## Part 3 Teacher Script

### Question 3.1

Listen as I read a series of braille symbols. Then write the symbols in braille and space one time between them.

equals sign

plus sign

general omission symbol

Nemeth long dash

minus sign

### Answer 3.1

equals sign   plus sign   general omission symbol   Nemeth long dash  
 minus sign

### Question 3.2

Write the following numbers in expanded form and use the line spacing key twice to move to the next line.

72

99

41

65

30

58

### Answer 3.2

70 plus 2

90 plus 9

40 plus 1

60 plus 5

30 plus 0

50 plus 8

### Question 3.3

Continue to listen and then braille what you hear. You may need another piece of paper. Remember that all of the problems will be horizontally aligned and numbered. Use the line spacing key to move to the next line each time.

Let me know if you need for me to repeat what you should braille. Let's get started!

The problems are: number 1: 0 plus 5 equals what number, number 2: 3 plus 2 equals 5, number 3: 5 minus 4 equals what number, and number 4: 5 plus 5 equals 10.

1.  $0+5 = ?$
2.  $3+2 = 5$
3.  $5-4 = ?$
4.  $5+5 = 10$

### Answer 3.3

The student should write the following problems horizontally:

Number 1: 0 plus 5 equals what number

Number 2: 3 plus 2 equals 5

Number 3: 5 minus 4 equals what number

Number 4: 5 plus 5 equals 10

### Question 3.4

Let's try some more. This time the problems will contain a long dash.

Write the following problems: number 5: blank minus 1 equals 4, number 6: 1 plus blank equals 6, number 7: 8 minus blank equals 3, number 8: 10 plus 0 equals blank, number 9: blank minus 8 equals 1, number 10: blank plus 5 equals 7, number 11: 10 minus blank equals 2, and number 12: blank minus 3 equals 4.

5. \_\_\_\_\_  $-1 = 4$

6.  $1 + \underline{\hspace{2cm}} = 6$

$$7. 8 - \underline{\quad} = 3$$

8.  $10+0 =$

9. \_\_\_\_\_  $- 8 = 1$

10.  $+5 = 7$

11.  $10^{-\quad} = 2$

12.  $-3 = 4$

### Answer 3.4

The student should write the following problems horizontally:

Number 5: blank minus 1 equals 4

Number 6: 1 plus blank equals 6

Number 7: 8 minus blank equals 3

Number 8: 10 plus 0 equals blank

Number 9: blank minus 8 equals 1

Number 10: blank plus 5 equals 7

Number 11: 10 minus blank equals 2

Number 12: blank minus 3 equals 4

### Question 3.5

I have placed 12 shapes into a work tray. Pick up one shape at a time and tell me if it is a square, rectangle, triangle, half-circle, circle, or trapezoid.

Answer 3.5

The student should correctly identify each shape.

### **Question 3.6**

Now place the shapes back in the work tray and tell me about each shape, as I give you the name.

circle

Answer 3.6

It is a perfectly round shape. There are no straight sides or corners on a circle.

### **Question 3.7**

triangle

Answer 3.7

A triangle has 3 sides and 3 corners or vertices.

### **Question 3.8**

rectangle

Answer 3.8

A rectangle has 4 sides and 4 corners. All 4 corners are the same size. The opposite sides of a rectangle are equal in length.

### **Question 3.9**

half-circle

Answer 3.9

If I cut a circle into two equal parts, then I will have two half-circles. Sometimes half-circles are called semi-circles. Each half-circle has a straight edge and two half-circles of the same size can be put together to make a circle.

### **Question 3.10**

square



Answer 3.10

A square is a special kind of rectangle. It has 4 sides and 4 corners. All 4 corners are the same size. All 4 sides of a square are the same length.

**Question 3.11**

trapezoid

Answer 3.11

A trapezoid has 4 sides and 4 corners, but not all of the sides are equal in length. Exactly two of the sides of the trapezoid are parallel. The parallel sides are always the same distance from each other and will never touch. The parallel sides are called bases, and the nonparallel sides are called legs.

**Question 3.12**

I have used the inTACT Sketchpad (or the DRAFTSMAN: Tactile Drawing Board) to draw several shapes. Use both hands and scan the drawing film from left to right. Then tell me the name of each shape, moving from left to right!

Answer 3.12

The student should correctly identify each shape.

**Question 3.13**

How is a half-circle like a circle?

Answer 3.13

If I cut a circle into two equal parts, then I will have two half-circles. Each half-circle has a straight edge and two half-circles of the same size can be put together to make a circle. A circle is completely round, and a half-circle is partially round.

**Question 3.14**

How is a trapezoid different from a rectangle?

Answer 3.14

A rectangle has four right angles and a trapezoid does not. In addition, opposite sides of a rectangle are parallel and equal in length. In a trapezoid, one pair of the opposite sides are not parallel.

**Question 3.15**

How is a triangle different from a circle?

Answer 3.15

A triangle has three sides and three corners, and a circle has no sides and no corners. A circle is completely round.

**Question 3.16**

How is a trapezoid like a rectangle?

Answer 3.16

They both have four sides and four corners. They each have at least two sides that are parallel.

**Question 3.17**

Now place a new sheet of tactile drawing film in the Sketchpad (or the DRAFTSMAN) and draw each shape as I give you the name.

rectangle

Answer 3.17

The student should draw a rectangle.

**Question 3.18**

square

Answer 3.18

The student should draw a square.

**Question 3.19**

trapezoid

Answer 3.19

The student should draw a trapezoid.

**Question 3.20**

circle

Answer 3.20

The student should draw a circle.

**Question 3.21**

half-circle

Answer 3.21

The student should draw a half-circle.

**Question 3.22**

triangle

Answer 3.22

The student should draw a triangle.

**Part 4**

**Part 4 Materials**

- Student Braille Document: G1-Posttest-Student.brf
- Braillewriter
- Braille paper
- G1-Posttest-Data-Table.docx

**Part 4 Teacher Note**

- Starting with Question 4.13, this part of the posttest should be completed with hard copy braille.
- Once you finish reading the problems in Questions 4.13 and 4.14, keep the pages because we will use them again in Section 5.

## Part 4 Teacher Script

### Question 4.1

Begin at the top of page 7 by reading each problem and answer choices. Pay attention to the sign of operation and then figure out the answer to the problem. Afterwards, write the problem number and letter of the correct answer choice. Then press your line spacing key twice to move to the next line of braille before beginning the next problem.

6 + 6 = 12

a 6

b 7

c 5

d 9

Answer 4.1

1. 6 plus blank (or what number) equals 12

The answer choices are:

a 6

b 7

c 5

d 9

Written Response: 1. a

6 + 6 = 12

### Question 4.2

[Make sure the student is viewing the second problem on page 7.]

17 minus 5 equals blank (or what number)

The answer choices are:

a 14

b 12

c 13

d 11

Answer 4.2

2. 17 minus 5 equals blank (or what number)

The answer choices are:

a 14

b 12

c 13

d 11

Written Response: 2. b

17 minus 5 equals blank (or what number)

### Question 4.3

Turn to page 8 and continue reading each problem and then writing your answer.

17 minus 5 equals blank (or what number)

The answer choices are:

a 14

b 12

c 13

d 11

### Answer 4.3

3. Blank (or what number) minus 5 equals 5

The answer choices are:

- |   |    |
|---|----|
| a | 0  |
| b | 10 |
| c | 9  |
| d | 11 |

Written Response: 3. b

### Question 4.4

[Make sure the student is viewing the second problem on page 8.]

Figure 1 shows five 3x3 dot patterns labeled (a) through (e). Each pattern consists of a 3x3 grid of dots, with some dots missing. The patterns are as follows:

- (a) 8 dots: All dots except the center one.
- (b) 10 dots: All dots except the two center dots.
- (c) 7 dots: All dots except the two center dots and the two dots in the middle row.
- (d) 6 dots: All dots except the two center dots and the two dots in the middle row.
- (e) 9 dots: All dots except the two center dots.

#### Answer 4.4

4. Blank (or what number) plus 3 equals 7

The answer choices are:

- |   |   |
|---|---|
| a | 6 |
| b | 5 |
| c | 3 |
| d | 4 |

Written Response: 4. d

### Question 4.5

Turn to page 9 and continue reading each problem and then writing your answer.

Answer 4.5

5. 11 plus 3 equals blank (or what number)

The answer choices are:

a 13

b 12

c 14

d 15

Written Response: 5. c

## Question 4.6

[Make sure the student is viewing the second problem on page 9.]

6. 16 minus 2 equals blank (or what number)

a 15

b 12

c 14

d 10

Answer 4.6

6. 16 minus 2 equals blank (or what number)

The answer choices are:

a 15

b 12

c 14

d 10

Written Response: 6. c

6. 16 minus 2 equals blank (or what number)

## Question 4.7

Continue to read each problem and answer choices beginning at the top of page 10. Pay attention to the sign of operation and then figure out the answer to the problem. Afterwards, tell me which answer choice is correct. You will not write your answer for these problems.



8 minus blank (or what number) equals 2

The answer choices are:

a. 5

b. 6

c. 3

d. 4

Answer 4.7

7. 8 minus blank (or what number) equals 2

The answer choices are:

a. 5

b. 6

c. 3

d. 4

The correct answer choice is b.

### Question 4.8

[Make sure the student is viewing the second problem on page 10.]

8 minus blank (or what number) equals 2

The answer choices are:

a. 5

b. 6

c. 3

d. 4

Answer 4.8

8. Blank (or what number) plus 8 equals 12

The answer choices are:

- 6
- 3
- 4
- 5

The correct answer choice is c.

### Question 4.9

Turn to page 11 and continue reading each problem and then telling me the answer.

Answer 4.9

9. Blank (or what number) plus 17 equals 20

The answer choices are:

- a. 3
- b. 4
- c. 2
- d. 5

The correct answer choice is a.

### Question 4.10

[Make sure the student is viewing the second problem on page 11.]

10. 16 minus blank (or what number) equals 8

a. 7

b. 4

c. 6

d. 8

Answer 4.10

10. 16 minus blank (or what number) equals 8

The answer choices are:

a. 7

b. 4

c. 6

d. 8

The correct answer choice is d.

### Question 4.11

Turn to page 12 and continue reading each problem and then telling me the answer.

$$\begin{array}{r} 11 \\ - 3 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ - 3 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 11 \\ - 3 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 11 \\ - 3 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 11 \\ - 3 \\ \hline 12 \end{array}$$

Answer 4.11

11. Blank (or what number) minus 3 equals 12

The answer choices are:

- a. 14
- b. 10
- c. 15
- d. 13

The correct answer choice is c.

### Question 4.12

[Make sure the student is viewing the second problem on page 12.]

$$\begin{array}{r} 11 \\ - 3 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ - 3 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 11 \\ - 3 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 11 \\ - 3 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 11 \\ - 3 \\ \hline 12 \end{array}$$

Answer 4.12

12. 13 minus blank (or what number) equals 9

The answer choices are:

- a. 5
- b. 4
- c. 3
- d. 2

The correct answer choice is b.

**Question 4.13**

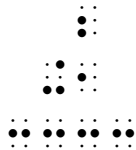
Read the vertically aligned problems involving addition and subtraction within 10 on page 13. Pay attention to each sign of operation and tell me the answer before moving to the next problem.

$$\begin{array}{r} 2 \\ + 3 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ - 8 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ + 4 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ - 6 \\ \hline \end{array}$$



Answer 4.13

7 minus 6 equals 1.

$$\begin{array}{r} 7 \\ -6 \\ \hline 1 \end{array}$$

10 minus 8 equals 2.

$$\begin{array}{r} 10 \\ -8 \\ \hline 2 \end{array}$$

4 plus 5 equals 9.

$$\begin{array}{r} 4 \\ +5 \\ \hline 9 \end{array}$$

8 minus 3 equals 5.

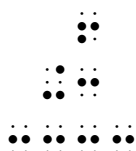
$$\begin{array}{r} 8 \\ -3 \\ \hline 5 \end{array}$$

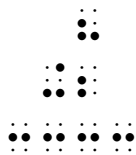
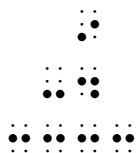
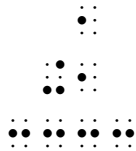
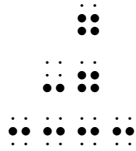
2 plus 1 equals 3.

$$\begin{array}{r} 2 \\ +1 \\ \hline 3 \end{array}$$

### Question 4.14

Turn to page 14 and continue reading each problem and then telling me the answer.





Answer 4.14

6 plus 3 equals 9.

$$\begin{array}{r} 6 \\ +3 \\ \hline 9 \end{array}$$

7 minus 7 equals 0.

$$\begin{array}{r} 7 \\ -7 \\ \hline 0 \end{array}$$

1 plus 1 equals 2.

$$\begin{array}{r} 1 \\ +1 \\ \hline 2 \end{array}$$

9 minus 4 equals 5.

$$\begin{array}{r} 9 \\ -4 \\ \hline 5 \end{array}$$

8 plus 2 equals 10.

$$\begin{array}{r} 8 \\ +2 \\ \hline 10 \end{array}$$

### Question 4.15

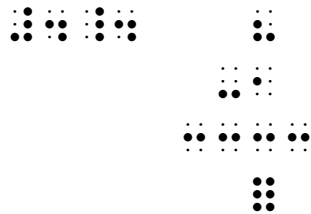
Now read each numbered problem involving addition or subtraction that contains a general omission symbol on page 15, and then tell me what number is missing.

$$\begin{array}{r} 9 \\ -4 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 8 \\ +2 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 9 \\ -4 \\ \hline 5 \end{array}$$





Answer 4.15

Number 1: 7 minus what number equals 1?

$$\begin{array}{r} 1. \quad 7 \\ \quad - ? \\ \hline \quad 1 \end{array}$$

The missing number is 6.

Number 2: 9 plus 3 equals what number?

$$\begin{array}{r} 2. \quad 9 \\ \quad + 3 \\ \hline \quad ? \end{array}$$

The missing number is 12.

Number 3: 10 minus what number equals 4?

$$\begin{array}{r} 3. \quad 10 \\ \quad - ? \\ \hline \quad 4 \end{array}$$

The missing number is 6.

Number 4: 8 minus 1 equals what number?

$$\begin{array}{r} 4. \quad 8 \\ \quad - 1 \\ \hline \quad ? \end{array}$$

The missing number is 7.

### Question 4.16

Now turn to page 16 and continue to read each numbered problem and then tell me the answer.

$$\begin{array}{r} 2 \\ + 3 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 2 \\ + 3 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 2 \\ + 3 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 2 \\ + 3 \\ \hline 5 \end{array}$$

Answer 4.16

Number 5: 2 plus what number equals 5?

$$\begin{array}{r} 5. \quad 2 \\ \quad + ? \\ \hline \quad 5 \end{array}$$

The missing number is 3.

Number 6: what number plus 3 equals 3?

$$\begin{array}{r} 6. \quad ? \\ + 3 \\ \hline 3 \end{array}$$

The missing number is 0.

Number 7: what number plus 4 equals 10?

$$\begin{array}{r} 7. \quad ? \\ + 4 \\ \hline 10 \end{array}$$

The missing number is 6.

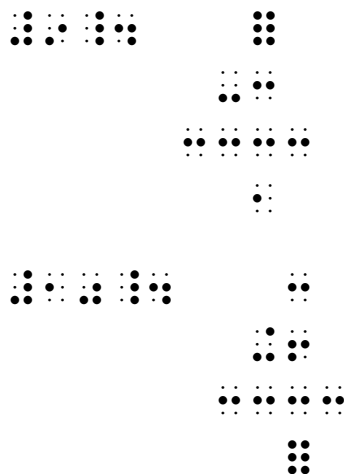
Number 8: 9 minus what number equals 7?

$$\begin{array}{r} 8. \quad 9 \\ - ? \\ \hline 7 \end{array}$$

The missing number is 2.

### Question 4.17

Now turn to page 17 for the last two problems.



Answer 4.17

Number 9: what number minus 3 equals 1?

$$\begin{array}{r} 9. \quad ? \\ -3 \\ \hline 1 \end{array}$$

The missing number is 4.

Number 10: 3 plus 6 equals what number?

$$\begin{array}{r} 10. \quad 3 \\ +6 \\ \hline ? \end{array}$$

The missing number is 9.

## Part 5

### Part 5 Materials

- Student's set of problems for Questions 4.13-4.14 (pages 13-14)
- Braillewriter
- Braille paper
- Tactile drawing film
- inTACT Sketchpad or a DRAFTSMAN: Tactile Drawing Board
- G1-Posttest-Data-Table.docx

### Part 5 Teacher Notes

- This part should be completed with hard copy braille and a braillewriter instead of a refreshable braille display.
- Before moving to Question 5.5, place a sheet of tactile drawing film into the Sketchpad (or DRAFTSMAN) and draw a rectangle. Then draw a vertical line that divides the rectangle into two equal parts.
- Before moving to Questions 5.6 and 5.7, place a new sheet of tactile drawing film into the Sketchpad (or DRAFTSMAN) and draw six circles of different sizes. Then divide two of the circles into two equal parts; two of the circles into two unequal parts; one of the circles into four equal parts; and one of the circles into four unequal parts. If preferred, you may use Wikki Stix® or graphic art tape on braille paper to create the shapes.

- Before moving to Questions 5.8 and 5.9, place a new sheet of tactile drawing film into the Sketchpad (or DRAFTSMAN) and draw six rectangles of different sizes and orientation. Then divide two of the rectangles into two equal parts; one of the rectangles into two unequal parts; two of the rectangles into four equal parts; and one of the rectangles into four unequal parts.

## Part 5 Teacher Script

### Question 5.1

Use your braillewriter to answer the problems on pages 13-14 in the student document. Begin by placing each page in your braillewriter. Finish by taking each page out of the braillewriter.

#### Answer 5.1

After inserting each page in the braillewriter, the student should braille the answer for each problem directly below the separation line.

Page 13: The student should write 1 below 7 minus 6 equals, 2 below 10 minus 8 equals, 9 below 4 plus 5 equals, 5 below 8 minus 3 equals, and 3 below 2 plus 1 equals.

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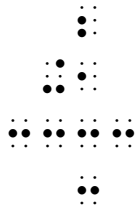
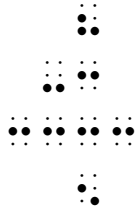
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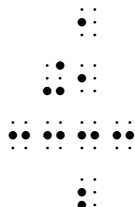
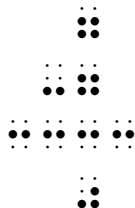
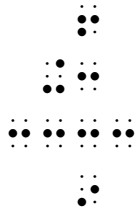
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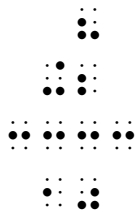
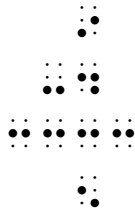
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    ⠠⠠
  
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Page 14: The student should write: 9 below 6 plus 3 equals, 0 below 7 minus 7 equals, 2 below 1 plus 1 equals, 5 below 9 minus 4 equals, and 10 below 8 plus 2 equals.





## Question 5.2

Listen and then braille what you hear. Remember that all of the problems will be vertically aligned. After you write each problem, press your line spacing key twice. Let me know if you need for me to repeat what you should braille.

Write the following spatial problems: 5 plus 3 equals, 2 plus 6 equals, 10 minus 0 equals, 9 minus 1 equals, 7 plus 3 equals, and 8 minus 4 equals.

$$\begin{array}{r} 5 \\ +3 \end{array}$$

$$\begin{array}{r} 2 \\ +6 \end{array}$$

$$\begin{array}{r} 10 \\ -0 \end{array}$$

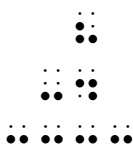
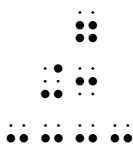
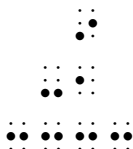
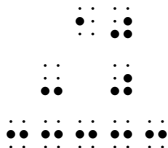
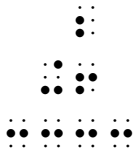
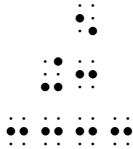
$$\begin{array}{r} 9 \\ -1 \end{array}$$

$$\begin{array}{r} 7 \\ +3 \end{array}$$

$$\begin{array}{r} 8 \\ -4 \end{array}$$

## Answer 5.2

The student should write the following problems spatially: 5 plus 3 equals, 2 plus 6 equals, 10 minus 0 equals, 9 minus 1 equals, 7 plus 3 equals, and 8 minus 4 equals.





### Question 5.3

Let's braille some more vertically aligned problems. This time the problems are numbered. After you write each problem, don't forget to press your line spacing key twice. Let me know if you need for me to repeat what you should braille.

The problems are: number 1: 5 plus 1 equals, number 2: 9 minus 2 equals, number 3: 6 plus 3 equals, number 4: 10 minus 4 equals, number 5: 7 minus 4 equals, and number 6: 5 plus 5 equals.

$$\begin{array}{r} 1. \quad 5 \\ \quad \underline{+1} \end{array}$$

$$\begin{array}{r} 2. \quad 9 \\ \quad \underline{-2} \end{array}$$

$$\begin{array}{r} 3. \quad 6 \\ \quad \underline{+3} \end{array}$$

$$\begin{array}{r} 4. \ 10 \\ \underline{-4} \end{array}$$

$$\begin{array}{r} 5. \quad 7 \\ \quad \underline{-4} \end{array}$$

$$\begin{array}{r} 6. \quad 5 \\ + 5 \\ \hline \end{array}$$

### Answer 5.3

The student should write the following problems spatially: number 1: 5 plus 1 equals, number 2: 9 minus 2 equals, number 3: 6 plus 3 equals, number 4: 10 minus 4 equals, number 5: 7 minus 4 equals, and number 6: 5 plus 5 equals.

$$\begin{array}{r} 3 \\ +4 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 3 \\ +4 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 3 \\ +4 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 3 \\ +4 \\ \hline 7 \end{array}$$

#### Question 5.4

Listen and then braille what you hear. Remember that all of the problems will be vertically aligned. After you write each problem, press your line spacing key twice. Let me know if you need for me to repeat what you should braille.

Now write the following problems: 3 plus 4 equals what number, what number plus 2 equals 7, 10 minus 6 equals what number, what number plus 0 equals 8, 5 minus what number equals 1, and 7 minus what number equals 4.

$$\begin{array}{r} 3 \\ +4 \\ \hline ? \end{array}$$

$$\begin{array}{r} ? \\ +2 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 10 \\ -6 \\ \hline ? \end{array}$$

$$\begin{array}{r} ? \\ +0 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 5 \\ -? \\ \hline 1 \end{array}$$

$$\begin{array}{r} 7 \\ -? \\ \hline 4 \end{array}$$

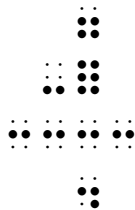
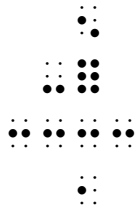
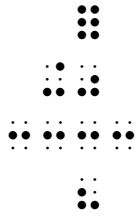
Answer 5.4

The student should write the following problems spatially: 3 plus 4 equals what number, what number plus 2 equals 7, 10 minus 6 equals what number, what number plus 0 equals 8, 5 minus what number equals 1, and 7 minus what number equals 4.

$$\begin{array}{c} \dots \\ \dots \\ \dots \dots \dots \\ \dots \dots \dots \dots \\ \dots \end{array}$$

$$\begin{array}{c} \dots \\ \dots \\ \dots \dots \dots \\ \dots \dots \dots \dots \\ \dots \end{array}$$

$$\begin{array}{c} \dots \dots \\ \dots \dots \dots \\ \dots \dots \dots \dots \\ \dots \dots \dots \dots \dots \\ \dots \end{array}$$



### Question 5.5

I have drawn a line and divided a rectangle into two parts. Are the parts equal or unequal? How do you know?

Answer 5.5

The parts are equal. They feel the same size, and if I cut out the rectangle and then cut along the vertical line, I would have two pieces that fit perfectly on top of each other. I could also fold the tactile film along the line, and the two pieces would fit perfectly on top of each other.

### Question 5.6

I have drawn six circles. Use both hands and scan the drawing film from left to right. Then tell me which circles have been divided into two equal parts.

Answer 5.6

The student should correctly identify the circles divided into two equal parts.

### **Question 5.7**

Now use your hands again and find the circle that has been divided into four equal parts.

Answer 5.7

The student should correctly identify the circle divided into four equal parts.

### **Question 5.8**

I have drawn six rectangles. Use both hands and scan the drawing film from left to right. Then tell me which rectangles have been divided into two equal parts.

Answer 5.8

The student should correctly identify the rectangle divided into two equal parts.

### **Question 5.9**

Now use your hands again and find the rectangles that have been divided into four equal parts.

Answer 5.9

The student should correctly identify the rectangles divided into four equal parts.

### **Question 5.10**

Place a sheet of tactile drawing film into the Sketchpad and draw a rectangle on the left side of the sheet. Then use a ruler and divide the rectangle into two equal parts.

Answer 5.10

The student should draw a rectangle and then divide the rectangle into two equal parts.

### **Question 5.11**

Begin by drawing a circle on the right side of the sheet. Then use a ruler and divide the circle into four equal parts.

Answer 5.11

The student should draw a circle and then divide the circle into four equal parts.

## Part 6

### Part 6 Materials

- Student Braille Document: G1-Posttest-Student.brf
- Braillewriter
- Braille paper
- G1-Posttest-Data-Table.docx

### Part 6 Teacher Note

This part of the posttest should be completed with hard copy braille.

### Part 6 Teacher Script

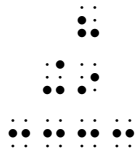
#### Question 6.1

Now read the vertically aligned problems involving addition within 20 on page 18. After reading each problem, use a strategy if needed, and tell me the answer.

$$\begin{array}{r} 12 \\ + 8 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \\ + 7 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ + 9 \\ \hline \end{array}$$



Answer 6.1

13 plus 4 equals 17.

$$\begin{array}{r} 13 \\ +4 \\ \hline 17 \end{array}$$

15 plus 1 equals 16.

$$\begin{array}{r} 15 \\ +1 \\ \hline 16 \end{array}$$

2 plus 3 equals 5.

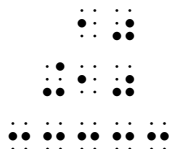
$$\begin{array}{r} 2 \\ +3 \\ \hline 5 \end{array}$$

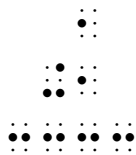
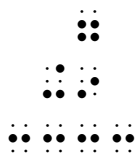
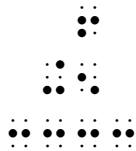
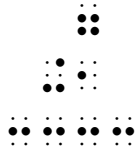
8 plus 9 equals 17.

$$\begin{array}{r} 8 \\ +9 \\ \hline 17 \end{array}$$

## Question 6.2

Turn to page 19 and continue reading the problems and telling me the answer.





Answer 6.2

10 plus 10 equals 20.

$$\begin{array}{r} 10 \\ +10 \\ \hline 20 \end{array}$$

7 plus 1 equals 8.

$$\begin{array}{r} 7 \\ +1 \\ \hline 8 \end{array}$$

6 plus 5 equals 11.

$$\begin{array}{r} 6 \\ +5 \\ \hline 11 \end{array}$$



7 plus 9 equals 16.

$$\begin{array}{r} 7 \\ +9 \\ \hline 16 \end{array}$$

1 plus 1 equals 2.

$$\begin{array}{r} 1 \\ +1 \\ \hline 2 \end{array}$$

### Question 6.3

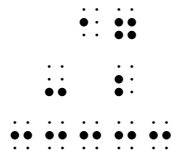
Now read the vertically aligned problems involving subtraction within 20 on page 20. After reading each problem, use a strategy if needed, and tell me the answer.

$$\begin{array}{r} 16 \\ - 9 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ - 5 \\ \hline \end{array}$$

$$\begin{array}{r} 18 \\ - 7 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \\ - 6 \\ \hline \end{array}$$



Answer 6.3

12 minus 4 equals 8.

$$\begin{array}{r} 12 \\ -4 \\ \hline 8 \end{array}$$

9 minus 5 equals 4.

$$\begin{array}{r} 9 \\ -5 \\ \hline 4 \end{array}$$

14 minus 10 equals 4.

$$\begin{array}{r} 14 \\ -10 \\ \hline 4 \end{array}$$

10 minus 5 equals 5.

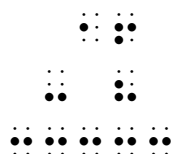
$$\begin{array}{r} 10 \\ -5 \\ \hline 5 \end{array}$$

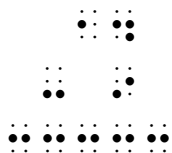
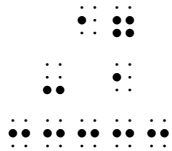
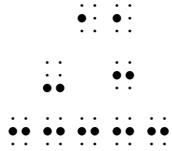
17 minus 2 equals 15.

$$\begin{array}{r} 17 \\ -2 \\ \hline 15 \end{array}$$

#### Question 6.4

Turn to page 21 and continue reading the problems and telling me the answer.





Answer 6.4

16 minus 8 equals 8.

$$\begin{array}{r} 16 \\ -8 \\ \hline 8 \end{array}$$

11 minus 3 equals 8.

$$\begin{array}{r} 11 \\ -3 \\ \hline 8 \end{array}$$

17 minus 1 equals 16.

$$\begin{array}{r} 17 \\ -1 \\ \hline 16 \end{array}$$

14 minus 9 equals 5.

$$\begin{array}{r} 14 \\ -9 \\ \hline 5 \end{array}$$

### Question 6.5

Read the following inequalities, beginning at the top of page 22.

$4 > 1$

Answer 6.5

4 is greater than 1.

### Question 6.6

$9 > 7$

### Answer 6.6

9 is greater than 7.

### Question 6.7

$2 < 5$

### Answer 6.7

2 is less than 5.

### Question 6.8

$$3 > 2$$

Answer 6.8

3 is greater than 2.

### Question 6.9

$5 < 6$

### Answer 6.9

5 is less than 6.

### Question 6.10

Continue reading the inequalities, beginning in the middle of page 22.

$84 > 61$

### Answer 6.10

84 is greater than 61.

### Question 6.11

$$96 > 87$$

Answer 6.11

96 is greater than 87.

### Question 6.12

$14 < 51$

Answer 6.12

14 is less than 51.

### Question 6.13

$$23 > 22$$

Answer 6.13

23 is greater than 22.

### Question 6.14

 $47 < 59$ 

Answer 6.14

47 is less than 59.

### Question 6.15

93 < 94

Answer 6.15

93 is less than 94.

### Question 6.16

Read the expressions, beginning at the top of page 23, and then write the missing signs of comparison. Don't forget to number your problems.

1. 3          6

Answer 6.16

Number 1: 3 blank 6

1. Less than

### Question 6.17

2. 7 \_\_\_\_\_ 8

Answer 6.17

Number 2: 7 blank 8

## 2. Less than

### Question 6.18

3. 5          4

Answer 6.18

Number 3: 5 blank 4

### 3. Greater than

### Question 6.19

4. 3      2

Answer 6.19

Number 4: 3 blank 2

#### 4. Greater than

### Question 6.20

5. 8 \_\_\_\_\_ 9

Figure 1 shows five 3x3 dot patterns labeled (a) through (e). Each pattern consists of black dots on a 3x3 grid. Pattern (a) has 10 dots, (b) has 8 dots, (c) has 12 dots, (d) has 14 dots, and (e) has 10 dots.

Answer 6.20

Number 5: 8 blank 9

## 5. Less than

### Question 6.21

6. 1        5

Answer 6.21

Number 6: 1 blank 5

## 6. Less than

### Question 6.22

Continue reading the expressions, beginning in the middle of page 23. Then write the missing sign of comparison. Don't forget to number your problems.

7.73 72

Answer 6.22

Number 7: 73 blank 72

## 7. Greater than



### Question 6.23

8. 14 \_\_\_\_\_ 29

Figure 1 shows four 3x3 grids of dots. Each grid contains a different arrangement of points, represented by solid black dots and open circles. The first grid has 5 solid dots and 4 open circles. The second grid has 4 solid dots and 5 open circles. The third grid has 3 solid dots and 6 open circles. The fourth grid has 2 solid dots and 7 open circles.

Answer 6.23

Number 8: 14 blank 29

8. Less than

### Question 6.24

9. 46          44

Answer 6.24

Number 9: 46 blank 44

## 9. Greater than

### Question 6.25

10. 91 \_\_\_\_\_ 81

Answer 6.25

Number 10: 91 blank 81

## 10. Greater than

Figure 1 shows five 3x3 dot patterns labeled (a) through (e). Each pattern consists of a 3x3 grid of dots, with some dots filled (black) and others empty (white).  
 (a) Filled dots at (1,1), (1,2), (2,1), (2,2), and (3,1).  
 (b) Filled dots at (1,1), (1,2), (2,1), (2,2), (2,3), and (3,1).  
 (c) Filled dots at (1,1), (1,2), (2,1), (2,2), (2,3), (3,1), and (3,2).  
 (d) Filled dots at (1,1), (1,2), (2,1), (2,2), (2,3), (3,1), (3,2), and (3,3).  
 (e) Filled dots at (1,1), (1,2), (2,1), (2,2), (2,3), (3,1), (3,2), (3,3), and (3,4).

### Question 6.26

11. 39 \_\_\_\_\_ 40

Answer 6.26

Number 11: 39 blank 40

11. Less than

### Question 6.27

12. 62 \_\_\_\_\_ 65

Answer 6.27

Number 12: 62 blank 65

12. Less than

## Part 7

## Part 7 Materials

- Braillewriter
- Braille paper
- G1-Posttest-Data-Table.docx

## Part 7 Teacher Script

Listen and then braille what you hear. Don't forget to number your problems. Let me know if you need for me to repeat what you should braille. I will repeat it as many times as you need.

### Question 7.1

1. greater than sign
2. less than sign

### Answer 7.1

The student should write:

1. greater than sign (dots 4-6, followed by dot 2)

2. less than sign (dot 5, followed by dots 1-3)

### Question 7.2

3. 3 blank 7
4. 8 blank 4

Answer 7.2

The student should write:

- 3.3
- 7

4. 8          4

Figure 1 shows four 3x3 dot patterns. Pattern (a) has 8 dots: (1,1), (1,2), (1,3), (2,1), (2,2), (2,3), (3,1), (3,2). Pattern (b) has 7 dots: (1,1), (1,2), (1,3), (2,1), (2,2), (3,1), (3,2). Pattern (c) has 10 dots: (1,1), (1,2), (1,3), (2,1), (2,2), (2,3), (3,1), (3,2), (3,3), (3,4). Pattern (d) has 9 dots: (1,1), (1,2), (1,3), (2,1), (2,2), (2,3), (3,1), (3,2), (3,3).

### Question 7.3

5. 15 blank 21
6. 89 blank 84

### Answer 7.3

The student should write:

5. 15 \_\_\_\_\_ 21

6. 89 \_\_\_\_\_ 84

### Question 7.4

7. 4 is less than 8.

8. 2 is greater than 1.

9. 9 is greater than 7.

10. 5 is less than 6.

### Answer 7.4

The student should write:

$$7.4 < 8$$

8.  $2 > 1$

$$9.9 > 7$$

10.  $5 < 6$

### Question 7.5

11. 61 is greater than 60.
12. 57 is less than 77.
13. 82 is less than 83.
14. 63 is greater than 59.

Answer 7.5

The student should write:

11.  $61 > 60$

12.  $57 < 77$

13.  $82 < 83$

14.  $63 > 59$