

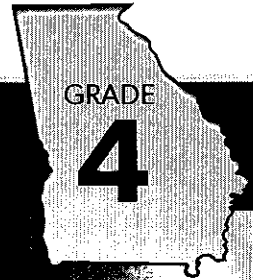
Teacher's Guide and Answer Keys

GEORGIA Coach



Revised GSE Edition

Mathematics



triumphlearning™

Coach

Georgia Coach®

Pretest: Practice Assessment 1

Item Correlation to Standards and Depth of Knowledge (DOK) Levels

Item Number	Standard(s)	DOK
Section 1		
1	MGSE.4.OA.4	2
2	MGSE.4.NBT.2	2
3	MGSE.4.NBT.6	3
4	MGSE.4.NF.2	3
5	MGSE.4.MD.1a	2
6	MGSE.4.G.1	2
7	MGSE.4.OA.2	2
8	MGSE.4.NBT.1	2
9	MGSE.4.NBT.5	2
10	MGSE.4.NF.3c	2
11	MGSE.4.MD.6	1
12	MGSE.4.OA.3	2
13	MGSE.4.NF.1	2
14	MGSE.4.NF.4b	2
15	MGSE.4.MD.2	2
16	MGSE.4.G.2	2
17	MGSE.4.OA.1	2
18	MGSE.4.NBT.3	3
19	MGSE.4.MD.3	2
20	MGSE.4.NF.4c	2
21	MGSE.4.G.3	2
22	MGSE.4.NBT.6	2
23	MGSE.4.OA.5	3
24	MGSE.4.NF.6	2
25	MGSE.4.MD.1c	2
26	MGSE.4.G.1	1
27	MGSE.4.MD.8	3
28	MGSE.4.OA.5	3
29	MGSE.4.MD.4	2
30	MGSE.4.NF.2	3

Item Number	Standard(s)	DOK
Section 2		
31	MGSE.4.NBT.4	1
32	MGSE.4.OA.2	3
33	MGSE.4.NF.3b	2
34	MGSE.4.OA.3	3
35	MGSE.4.NBT.2	2
36	MGSE.4.NBT.5	3
37	MGSE.4.MD.2	2
38	MGSE.4.NF.5	2
39	MGSE.4.OA.4	3
40	MGSE.4.NBT.6	1
41	MGSE.4.NF.4a	2
42	MGSE.4.MD.5a	2
43	MGSE.4.G.3	2
44	MGSE.4.NF.5	2
45	MGSE.4.NF.2	3
46	MGSE.4.MD.3	3
47	MGSE.4.OA.3	2
48	MGSE.4.NBT.4	2
49	MGSE.4.G.2	2
50	MGSE.4.NF.7	2
51	MGSE.4.NBT.2	2
52	MGSE.4.OA.2	2
53	MGSE.4.NF.3d	3
54	MGSE.4.G.2	3
55	MGSE.4.NBT.5	3
56	MGSE.4.NF.4c	3
57	MGSE.4.OA.3	2
58	MGSE.4.MD.1b	2
59	MGSE.4.NF.1	2
60	MGSE.4.OA.4	2
61	MGSE.4.NF.2	2
62	MGSE.4.MD.7	2
63	MGSE.4.NF.3a	3

Answer Key**Section 1**

1. C
2. A
3. B
4. D
5. D
6. B
7. A
8. D
9. B
10. A
11. A
12. A
13. C
14. C
15. D
16. B
17. A
18. B
19. A
20. A
21. D
22. C
23. A
24. C
25. D
26. C
27. A
28. Part A: B, D
Part B: C
See Item-Specific Scoring Guidelines and Rubrics.
29. See Item-Specific Scoring Guidelines and Rubrics.
30. See Item-Specific Scoring Guidelines and Rubrics.

Section 2

31. A
32. A
33. B
34. A
35. C
36. B
37. C
38. D
39. D
40. A
41. B
42. B
43. B
44. See Item-Specific Scoring Guidelines and Rubrics.
45. C
46. A
47. A
48. C
49. D
50. C
51. C
52. A
53. D
54. C
55. B
56. A
57. A
58. C
59. A
60. B
61. B
62. A
63. A

Item-Specific Scoring Guidelines and Rubrics

Item 28

Scoring Rubric

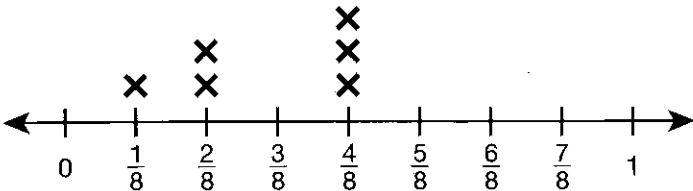
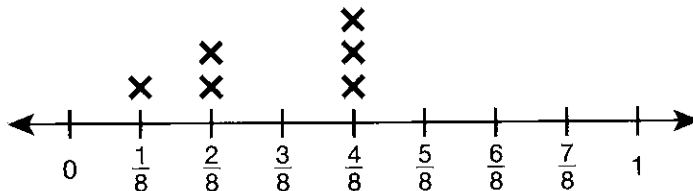
Points	Description
2	<p>The response achieves the following:</p> <ul style="list-style-type: none"> A score of 2 demonstrates a complete understanding of generating a number pattern using a rule, and identifying a non-explicit feature of that pattern. Student determines that the correct answers for Part A are choices B and D. AND Student determines that the correct answer for Part B is choice C.
1	<p>The response achieves the following:</p> <ul style="list-style-type: none"> A score of 1 demonstrates a partial understanding of generating a number pattern using a rule, and identifying a non-explicit feature of that pattern. Student determines that the correct answers for Part A are choices B and D. OR Student determines that the correct answer for Part B is choice C.
0	<p>The response achieves the following:</p> <ul style="list-style-type: none"> A score of 0 demonstrates limited to no understanding of generating a number pattern using a rule.

Item 29

Scoring Rubric

Points	Description
2	<p>The response achieves the following:</p> <ul style="list-style-type: none"> A score of 2 demonstrates a complete understanding of generating a line plot from data and using the data to solve a problem.
1	<p>The response achieves the following:</p> <ul style="list-style-type: none"> A score of 1 demonstrates a partial understanding of generating a line plot from data and using the data to solve a problem. Give 1 point if the student's line plot is correct OR if the student's calculation is correct.
0	<p>The response achieves the following:</p> <ul style="list-style-type: none"> A score of 0 demonstrates limited to no understanding of generating a line plot from data and using the data to solve a problem.

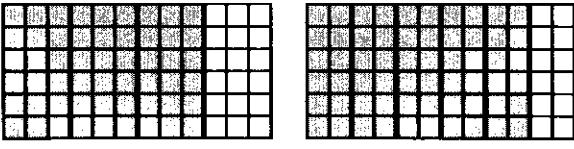
Exemplar Response:

Points Awarded	Response
2	<p style="text-align: center;">Dog Walking</p>  <p style="text-align: center;">Distances (miles)</p> <p>AND</p> $\frac{1}{2} = \frac{4}{8}, \frac{1}{4} = \frac{2}{8}$ <p>I rewrote some fractions so all the fractions would have the same denominator.</p> $\frac{1}{8} + \frac{2}{8} + \frac{2}{8} + \frac{4}{8} + \frac{4}{8} + \frac{4}{8} = \frac{17}{8} = 2\frac{1}{8}$ <p>I added the numerators to find the sum. Then I rewrote the sum as a mixed number.</p> <p>Aiden walked $2\frac{1}{8}$ miles.</p>
1	<p style="text-align: center;">Dog Walking</p>  <p style="text-align: center;">Distances (miles)</p> <p>OR</p> $\frac{1}{2} = \frac{4}{8}, \frac{1}{4} = \frac{2}{8}$ <p>I rewrote some fractions so all the fractions would have the same denominator.</p> $\frac{1}{8} + \frac{2}{8} + \frac{2}{8} + \frac{4}{8} + \frac{4}{8} + \frac{4}{8} = \frac{17}{8} = 2\frac{1}{8}$ <p>I added the numerators to find the sum. Then I rewrote the sum as a mixed number.</p> <p>Aiden walked $2\frac{1}{8}$ miles.</p>
0	Response is irrelevant, inappropriate, or not provided.

Item 30**Scoring Rubric**

Points	Description
4	The response achieves the following: <ul style="list-style-type: none">• A score of 4 demonstrates that the student completely understands comparing fractions by reasoning about size; recording comparisons using $>$, $<$, or $=$; and comparing fractions by comparing them to a benchmark fraction.
3	The response achieves the following: <ul style="list-style-type: none">• A score of 3 demonstrates that the student mostly understands comparing fractions by reasoning about size; recording comparisons using $>$, $<$, or $=$; and comparing fractions by comparing them to a benchmark fraction.
2	The response achieves the following: <ul style="list-style-type: none">• A score of 2 demonstrates that the student somewhat understands comparing fractions by reasoning about size; recording comparisons using $>$, $<$, or $=$; and comparing fractions by comparing them to a benchmark fraction.
1	The response achieves the following: <ul style="list-style-type: none">• A score of 1 demonstrates that the student has a limited understanding of comparing fractions by reasoning about size; recording comparisons using $>$, $<$, or $=$; and comparing fractions by comparing them to a benchmark fraction.
0	The response achieves the following: <ul style="list-style-type: none">• A score of 0 demonstrates that the student has no understanding of the concept of comparing fractions by reasoning about size; recording comparisons using $>$, $<$, or $=$; and comparing fractions by comparing them to a benchmark fraction.

Exemplar Response:

Points Awarded	Response
4	<p>Part A: </p> <p>AND</p> <p>Part B: $\frac{3}{4} < \frac{5}{6}$ OR $\frac{5}{6} > \frac{3}{4}$</p> <p>AND</p> <p>Part C: The wholes are the same size, so I could compare the parts of the models that I shaded. I can see that the shaded part for $\frac{5}{6}$ has a greater area than the shaded part for $\frac{3}{4}$.</p> <p>AND</p> <p>Part D: Since both fractions are greater than $\frac{1}{2}$, you cannot use this benchmark fraction to compare $\frac{3}{4}$ and $\frac{5}{6}$.</p>
3	Any combination of three correct parts
2	Any combination of two correct parts
1	Any one correct part
0	Response is irrelevant, inappropriate, or incomplete.

Item 44

Scoring Rubric

Points	Description
2	The response achieves the following: <ul style="list-style-type: none"> A score of 2 demonstrates a complete understanding of rewriting a fraction with denominator 10 as a fraction with denominator 100 in order to add it to a fraction with denominator 100.
1	The response achieves the following: <ul style="list-style-type: none"> A score of 2 demonstrates a partial understanding of rewriting a fraction with denominator 10 as a fraction with denominator 100 in order to add it to a fraction with denominator 100.
0	The response achieves the following: <ul style="list-style-type: none"> A score of 0 demonstrates limited to no understanding of rewriting a fraction with denominator 10 as a fraction with denominator 100 in order to add it to a fraction with denominator 100.

Exemplar Response:

Points Awarded	Response
2	$\frac{82}{100}$ <p>AND</p> $\frac{8}{10} = \frac{8 \times 10}{10 \times 10} = \frac{80}{100}$ <p>I rewrote $\frac{8}{10}$ as $\frac{80}{100}$ by multiplying the numerator and denominator by 10.</p> $\frac{80}{100} + \frac{2}{100} = \frac{82}{100}$ <p>Since the fractions have the same denominator, I could add the numerators.</p> <p>OR other valid explanation</p>
1	$\frac{82}{100}$ <p>OR</p> $\frac{8}{10} = \frac{8 \times 10}{10 \times 10} = \frac{80}{100}$ <p>I rewrote $\frac{8}{10}$ as $\frac{80}{100}$ by multiplying the numerator and denominator by 10.</p> $\frac{80}{100} + \frac{2}{100} = \frac{82}{100}$ <p>Since the fractions have the same denominator, I could add the numerators.</p> <p>OR other valid explanation</p>
0	Response is irrelevant, inappropriate, or not provided.

Student Scoring Record

Student Name _____ Date _____

Item Number(s)	Points Possible	Points Scored
Section 1		
1-27	27	
28-29	4	
30	4	
Section 1 Total		
Section 2		
31-43	13	
44	2	
45-63	19	
Section 2 Total		

Section 1 Total	
Section 2 Total	
ASSESSMENT TOTAL	

Answer Keys

Domain 1

Lesson 1

Coached Example

What is the value of the 2? **200,000**

What is the value of the 3? **30,000**

What is the value of the 9? **9,000**

What is the value of the 8? **800**

What is the value of the 0? **0**

What is the value of the 7? **7**

The expanded form of 239,807 is **$200,000 + 30,000 + 9,000 + 800 + 7$** .

There are **239** thousands.

Write the value in words. **two hundred thirty-nine thousand**

There are **807**.

Write the value in words. **eight hundred seven**

The number name of 239,807 is **two hundred thirty-nine thousand, eight hundred seven**.

Lesson Practice Part 1

1. D
2. A
3. C
4. C
5. D
6. B
7. B
8. A
9. A. $10,000 + 5,000 + 800 + 30 + 8$
B. 100 times; Explanation may vary. Possible explanation: A digit in one place represents 10 times what it represents in the place to its right. The 8 in the ones place is 2 places to the right of the 8 in the hundreds place. So, the 8 in the hundreds place is 100 times greater.

Lesson Practice Part 2

1. C
2. B
3. A
4. C
5. B
6. D
7. C

8. D

9. A. 432,200

B. $400,000 + 30,000 + 2,000 + 200$

C. thousands

Lesson 2

Coached Example

693,041 \leq 693,582

Are the digits in the hundred thousands place the same? **yes**

Are the digits in the ten thousands place the same? **yes**

Are the digits in the thousands place the same? **yes**

Are the digits in the hundreds place the same? **no**

0 hundreds is **less** than 5 hundreds.

So, 693,041 is **less** than 693,582.

Which symbol should you use? $<$

693,041 \leq 693,582

Lesson Practice Part 1

1. B
2. B
3. C
4. C
5. D
6. B
7. A
8. A. 2009; Explanation may vary. Possible explanation: I started comparing the greatest place, which is the ten thousands place. All of the numbers have 1 in the ten thousands place. I looked at the thousands place. 12,107 and 12,044 both have 2 in the thousands place. I compared the digits in the hundreds place, and found that 12,107 is greater than 12,044.
B. 2007; Explanation may vary. Possible explanation: From Part A, I looked at the numbers 11,296 and 11,474. Both numbers have 1 in the ten thousands and the thousands places. I compared the digits in the hundreds place. 2 hundreds is less than 4 hundreds, so 11,296 is the least number.

Lesson Practice Part 2

1. A
2. D
3. B
4. C

5. B
6. D
7. D
8. A. $52,420 > 52,378$ and $52,378 < 52,420$
 B. $53,179 < 53,819$ and $53,819 > 53,179$
 C. North Carolina

Lesson 3

Coached Example,
 Find 7 groups of 3 biscuits.

$$7 \times 3 = \square$$

Find the 7s column.

Find the 3s row.

The number **21** is in the box.

So, $7 \times 3 = 21$.

Kate gives her dog **21** biscuits in 7 days.

Lesson Practice Part 1

1. A
2. C
3. D
4. C
5. B
6. D
7. D
8. A
9. A. $12 \times 4 = \square$
 B. 48 students can sit on the bus. Explanations may vary. Possible explanation: I used repeated addition to find 12×4 . I added 12 four times:
 $12 + 12 + 12 + 12 = 48$. So $12 \times 4 = 48$.

Lesson Practice Part 2

1. D
2. C
3. A
4. C
5. D
6. B
7. B
8. C
9. A. 18
 B. Possible explanation: I multiplied $8 \times 3 = 24$ and then subtracted $24 - 6 = 18$.

Lesson 4

Coached Example

A student ticket costs \$34.

A class of **26** students went to the park.

Find $34 \times 26 = \square$.

Write the problem in vertical form.

$$\begin{array}{r} 34 \\ \times 26 \\ \hline 204 \\ + 680 \\ \hline 884 \end{array}$$

Multiply 34 by the **ones** digit of 26.

6 ones \times 34. Regroup.

What is the first partial product? **204**

Multiply 34 by the **tens** digit of 26.

2 tens \times 34. Regroup.

What is the second partial product? **680**

Add the two partial products.

$$204 + 680 = 884$$

The tickets for the students cost **\$884** in all.

Lesson Practice Part 1

1. A
2. B
3. C
4. C
5. C
6. D
7. A
8. C
9. A. 798 apple pies; I multiplied 57×14 . First I multiplied 57 by 4 ones to get 228. Then I multiplied 57 by 1 ten to get 570. Then I added the partial products: $228 + 570 = 798$.
 B. 532 cherry pies; I multiplied 38×14 . First I multiplied 38 by 4 ones to get 152. Then I multiplied 38 by 1 ten to get 380. Then I added the partial products: $152 + 380 = 532$.

Lesson Practice Part 2

1. C
2. D
3. A
4. D
5. C
6. B

7. A. 2,304; Possible work: $64 \times 36 = 64 \times 6 + 64 \times 30 = 384 + 1,920 = 2,304$
 B. \$18,432; Possible work: $2,304 \times \$8 = \$18,432$

Lesson 5

Coached Example

Use the **commutative** property of multiplication to change the order of the factors.

$$5 \times 2 \times 14 = \square$$

Use the **associative** property of multiplication to group the factors.

$$(5 \times 2) \times 14 = \square$$

Multiply inside the parentheses.

$$(10) \times 14 = \square$$

Multiply that factor and the other factor.

$$10 \times 14 = 140$$

So, $5 \times 14 \times 2 = 140$

Joey bought **140** jellybeans in all.

Lesson Practice Part 1

1. C
2. C
3. B
4. B
5. A
6. C
7. D
8. D
9. A. Possible answer: $12 \times 5 \times 6 = \square$
 B. Possible answer: $(12 \times 5) \times 6 = \square$
 C. 360 passengers

Lesson Practice Part 2

1. B
2. A
3. D
4. A
5. C
6. C
7. A
8. B
9. A. Possible answer: $5 \times 20 \times 13$
 B. Possible answer: $(5 \times 20) \times 13$
 C. 1,300; Possible work: $(5 \times 20) \times 13 = 100 \times 13 = 1,300$

Lesson 6

Coached Example

There are **32** classrooms.

There are **24** students in each class.

$$32 \times 24 = n$$

Express 24 in expanded form.

$$24 = 20 + 4$$

Rewrite the sentence with 24 in expanded form.

$$32 \times 24 = 32 \times (20 + 4)$$

Distribute 32 to each addend.

$$32 \times (20 + 4) = (32 \times 20) + (32 \times 4)$$

Find each product.

$$(32 \times 20) + (32 \times 4) = n$$

$$640 + 128 = n$$

Add the products.

$$640 + 128 = 768$$

There are **768** students in all at the school.

Lesson Practice Part 1

1. B
2. B
3. A
4. D
5. C
6. C
7. D
8. B
9. A. $32 \times 64 = \square$
 B. 2,048; Student work may vary. Possible work:
 $32 \times 64 = 32 \times (60 + 4) = (32 \times 60) + (32 \times 4) = 1,920 + 128 = 2,048$

Lesson Practice Part 2

1. C
2. A
3. B
4. A
5. C
6. D
7. A
8. D
9. A. 1,288; Possible work: $46 \times 28 = (40 \times 28) + (6 \times 28) = 1,120 + 168 = 1,288$
 B. 512; Possible work: $32 \times 16 = (32 \times 10) + (32 \times 6) = 320 + 192 = 512$

Lesson 7

Coached Example

There are **35** desks in **5** equal rows.

$$35 \div 5 = d$$

$$7 \times 5 = 35$$

Since $7 \times 5 = 35$, then $35 \div 5 = 7$.

There are **7** desks in each row.

Lesson Practice Part 1

- A
- D
- B
- C
- B
- D
- C
- D
- A. 2 ; $16 \div 8 = 2$
B. 5 ; $40 \div 8 = 5$
C. 7 people; 2 adults + 5 students = 7

Lesson Practice Part 2

- A
- B
- A
- D
- B
- D
- C
- B
- A. 12 ; Possible work: $36 \div 3 = 12$
B. 20 ; Possible work: $36 - 4 = 32$ and $32 - 12 = 20$

Lesson 8

Coached Example

There are **8,240** seats in all.

There are **8** equal sections.

$$8,240 \div 8 = s$$

Divide each place from left to right.

$$\begin{array}{r} 1\ 030 \\ 8 \overline{)8,240} \\ \underline{-8} \\ 0\ 24 \\ \underline{-24} \\ 00 \\ \underline{-0} \\ 0 \end{array}$$

So, $8,240 \div 8 = 1,030$.

There are **1,030** seats in each section.

Lesson Practice Part 1

- B
- A
- D
- A
- C
- A
- B
- B
- A. $\$1,128$; $\$729 + \$354 + \$45 = \$1,128$
B. $\$376$; $\$1,128 \div 3 = \376

Lesson Practice Part 2

- A
- C
- C
- B
- D
- D
- A
- B
- B
- A
- A. 28 ; Possible work: $264 \div 4 = 66$, $114 \div 3 = 38$, and $66 - 38 = 28$
B. 54 ; Possible work: $(264 + 114) \div (4 + 3) = 378 \div 7 = 54$

Lesson 9

Coached Example

Nita has **250** inches of ribbon. Each piece she will cut is **9** inches long.

Let p represent the number of 9-inch pieces she will cut.

$$250 \div 9 = p$$

$$\begin{array}{r} 27 \text{ R}7 \\ 9 \overline{)250} \\ \underline{-18} \\ 70 \\ \underline{-63} \\ 7 \end{array}$$

Check the quotient.

$$(9 \times 27) + 7 = p$$

$$243 + 7 = 250$$

Does that match the dividend? **yes**

Is your answer correct? **yes**

The answer, **27 R7**, means Nita can cut **27** 9-inch pieces with **7** inches left over.

Nita can cut **27** 9-inch pieces.

The length of the ribbon left over is **7** inches.

Lesson Practice Part 1

1. B
2. C
3. C
4. A
5. D
6. C
7. A
8. B
9. A. Let p represent the number of pizzas.
 $275 \div 8 = p$
- B. 35 pizzas; I divided 275 by 8 to get 34 with 3 left over. The remainder 3 means that 3 people will need a slice of pizza. So I added 1 to the quotient to get 35 pizzas. $34 + 1 = 35$.

$$\begin{array}{r} 34 \text{ R}3 \\ 8 \overline{)275} \\ \underline{-24} \\ 35 \\ \underline{-32} \\ 3 \end{array}$$

Lesson Practice Part 2

1. B
2. D
3. B
4. C
5. D
6. C
7. D

8. A. $53 \text{ R}1$; $478 \div 9 = 53 \text{ R}1$
- B. Possible explanation: I ignored the remainder. There was \$1 extra and it is not possible to buy a fraction of a play ticket.

Lesson 10

Coached Example

He typed **8,200** words in a report.

He can type **100** words a minute.

Let m represent the number of **minutes** it took to type the report.

$$8,200 \div 100 = m$$

The divisor is **100**, so take away **2** zeros from the dividend.

$$8,200 \div 100 = 82$$

It took Mr. Cassidy **82** minutes to type his report.

Lesson Practice Part 1

1. B
2. B
3. C
4. C
5. D
6. B
7. C
8. C
9. A. \$800; Explanations may vary. Possible explanation: I multiplied 4 by \$200 because that is the cost for the suite. I used mental math by multiplying $4 \times 2 = 8$ and added 2 zeros to get \$800.
- B. 7 nights; Explanations may vary. Possible explanation: I divided \$700 by \$100 because that is the cost for the standard room. Then I used mental math to divide $\$700 \div \100 . The divisor is 100, so I took away 2 zeros from the dividend.

Lesson Practice Part 2

1. A
2. B
3. C
4. C
5. A
6. B
7. D
8. B

9. A. 28,000
 B. 64; Possible explanation: I divided 64 hundreds by 1 hundred to get 64.

Domain 1: Cumulative Assessment for Lessons 1–10

1. C MGSE4.NBT.1, MGSE4.NBT.2
2. B MGSE4.NBT.1
3. D MGSE4.OA.1, MGSE4.OA.2, MGSE4.OA.3
4. C MGSE4.NBT.5, MGSE4.OA.3
5. B MGSE4.NBT.5
6. C MGSE4.NBT.5, MGSE4.OA.3
7. D MGSE4.OA.2, MGSE4.OA.3
8. A MGSE4.NBT.6, MGSE4.OA.3
9. 19 MGSE4.NBT.5, MGSE4.NBT.6
10. A. Let c represent the quotient. $394 \div 4 = c$
 B. $394 \div 4 = 98$ R2. Possible explanation: There will be 98 cards in each album. Willie will give 2 cards to his brother. The quotient shows the number of cards in each album. The remainder shows the number of cards Willie will give to his brother. MGSE4.NBT.6, MGSE4.OA.3

Domain 2

Lesson 11

Coached Example

$4 \times 1 = 4$

$4 \times 2 = 8$

$4 \times 3 = 12$

$4 \times 4 = 16$

$4 \times 5 = 20$

$4 \times 6 = 24$

$4 \times 7 = 28$

The number 25 is between the products **24** and **28**.

25 **is not** a multiple of 4.

Paige **cannot** get exactly 25 quarters by exchanging dollar bills.

Lesson Practice Part 1

1. A
2. C
3. D
4. C
5. B
6. B
7. D
8. A

9. 53
10. A. 29 and 47; Explanation may vary. Possible explanation: They are prime numbers because each number has only 1 factor pair, 1 and itself.
 B. 14, 32, 55, and 64. Explanation may vary. Possible explanation: All of these numbers have more than one factor pair. The factor pairs of 14 are {1, 14}, {2, 7}. The factor pairs of 32 are {1, 32}, {2, 16}, {4, 8}. The factor pairs of 55 are {1, 55}, {5, 11}. The factor pairs of 64 are {1, 64}, {2, 32}, {4, 16}, {8, 8}.

Lesson Practice Part 2

1. A
2. B
3. B
4. D
5. C
6. A
7. C
8. B
9. D
10. B
11. C
12. A
13. A. 42, 44, 45, 46, 48, 49
 B. 48
 C. 1 and 48, 2 and 24, 3 and 16, 4 and 12, 6 and 8

Lesson 12

Coached Example

The club had **12,468** members last year.

The club has **8,271** more members this year.

$12,468 + 8,271 = m$

$$\begin{array}{r} 12,468 \\ + 8,271 \\ \hline 20,739 \end{array}$$

The sum is **20,739**.

There are **20,739** members in the club this year.

Lesson Practice Part 1

1. D
2. B
3. C
4. D
5. C
6. A
7. B

8. D
 9. A. More aluminum cans and glass bottles combined; $9,659 + 3,273 = 12,932$ and $12,932 > 12,847$
 B. 25,779; $12,932 + 12,847 = 25,779$

Lesson Practice Part 2

1. D
 2. C
 3. B
 4. C
 5. A
 6. D
 7. C
 8. A
 9. A. 36,184; Possible work:
 $15,759 + 20,425 = 36,184$
 B. 43,441; Possible work:
 $36,184 + 7,257 = 43,441$

Lesson 13

Coached Example

Add to find the total amount Lynn spent on the television and the video camera.

Then **subtract** the sum from the amount Lynn had in her checking account.

Add from right to left.

$$\begin{array}{r} \$1,150 \\ + \quad 665 \\ \hline \$1,815 \end{array}$$

Subtract to find how much Lynn has left in her checking account.

$$\begin{array}{r} \$2,812 \\ - \quad 1,815 \\ \hline \$ \quad 997 \end{array}$$

Use addition to check the subtraction.

$$\begin{array}{r} \$ \quad 997 \\ + \quad 1,815 \\ \hline \$2,812 \end{array}$$

Lynn has **\$997** left in her checking account.

Lesson Practice Part 1

1. A
 2. D
 3. A
 4. B
 5. A
 6. B

7. C
 8. D
 9. A. \$4,715; $\$8,440 - \$3,725 = \$4,715$
 B. \$15,193; Answers may vary. Possible answer:
 First I added the amount for video games and the amount for board games. The total is $\$3,725 + \$8,440 = \$12,165$. Then I subtracted that amount from the amount of the game consoles. $\$27,358 - \$12,165 = \$15,193$.

Lesson Practice Part 2

1. B
 2. B
 3. C
 4. A
 5. A
 6. C
 7. C
 8. B
 9. A. 6,422; Possible work: $10,752 - 4,330 = 6,422$
 B. 15,582; Possible work: $30,664 - (10,752 + 4,330) = 30,664 - 15,082 = 15,582$

Lesson 14

Coached Example

The place to be rounded to is **ten thousands**.

The digit in this place is **2**.

The digit to the right of the rounding place is **9**.

This digit is **greater** than 5.

Since the digit to the right is greater than 5, round **up**.

Change all the digits to the right of the rounding place to **0**.

129,354 rounds to **130,000**.

To the nearest ten thousand, the game Web site received about **130,000** hits that day.

Lesson Practice Part 1

1. C
 2. B
 3. D
 4. A
 5. B
 6. A
 7. C
 8. C

9. A. Cookies: 300; brownies: 300; muffins: 200
 B. Cookies and brownies; from Part A, I rounded each number to the nearest hundred, and the numbers for both cookies and brownies rounded to 300. The number of muffins rounded to 200.

Lesson Practice Part 2

1. D
2. B
3. C
4. C
5. A
6. B
7. A
8. A
9. D
10. A. 66,500
 B. 70,000
 C. Ann is incorrect. Possible explanation: The digit to the right of the place that is being rounded is 4, so 66,456 is rounded down to 66,000 to the nearest thousand.

Lesson 15

Coached Example

The number 74,868 rounds to **75,000**.

The number 79,967 rounds to **80,000**.

Subtract the rounded numbers.

$$80,000 - 75,000 = 5,000$$

About **5,000** more people visited the theme park this month than last month.

Lesson Practice Part 1

1. C
2. B
3. C
4. B
5. D
6. C
7. A
8. D
9. A. \$1,575; $\$378 + \$925 + \$272 = \$1,575$
 B. Answers may vary. Possible answer: Yes, the answer is reasonable. I rounded each number to the nearest 100, and then added the rounded numbers. $\$400 + \$900 + \$300 = \$1,600$. Then I compared \$1,600 to \$1,575. They are close, so my answer is reasonable.

Lesson Practice Part 2

1. B
2. B
3. C
4. A
5. C
6. D
7. A
8. C
9. A. Yes. Possible explanation: I can round to the nearest thousand to see that $7,000 + 15,000 + 13,000 = 35,000$.
 B. Possible answer: 8,000; possible work: $15,000 - 7,000 = 8,000$

Lesson 16

Coached Example

Find $7 \times 275 = \square$.

Round 275 to the nearest 100.

275 rounds to **300**.

Multiply the rounded numbers.

$$7 \times 300 = 2,100$$

The answer should be about **2,100**.

Find the exact answer.

$$\begin{array}{r} 53 \\ 275 \\ \times 7 \\ \hline 1,925 \end{array}$$

Is the exact answer close to the estimated answer? **yes**

Is the answer reasonable? **yes**

The factory shipped **1,925** shirts in all.

Lesson Practice Part 1

1. C
2. A
3. C
4. D
5. B
6. D
7. B
8. C
9. A. $197; 788 \div 4 = 197$
 B. Answers may vary. Possible answer: Yes, the answer is reasonable. I found 800 to be close to 788 and a compatible number to 4. I divided $800 \div 4 = 200$. 197 is close to 200, so my answer is reasonable.

Lesson Practice Part 2

1. B
2. C
3. A
4. D
5. C
6. B
7. A
8. C
9. B
10. A. Possible answer: 400
 B. Possible explanation: I estimated the quotient of $365 \div 7$ as $350 \div 7 = 50$. Then I multiplied $50 \times 8 = 400$.

Lesson 17

Coached Example

The pattern has **6** terms.

The pattern starts with **55**.

The rule is **subtract 9**.

Subtract **9** from 55.

$55 - 9 = 46$ ← second term

$46 - 9 = 37$ ← third term

$37 - 9 = 28$ ← fourth term

$28 - 9 = 19$ ← fifth term

$19 - 9 = 10$ ← sixth term

The six terms in the number pattern are **55, 46, 37, 28, 19, and 10**.

Lesson Practice Part 1

1. C
2. B
3. B
4. C
5. C
6. D
7. A
8. B
9. A. 115, 128, 141, 154, 167, 180
 B. 115, 111, 107, 103, 99, 95

Lesson Practice Part 2

1. A
2. C
3. B
4. D
5. C
6. A

7. C
8. C
9. B
10. D
11. A. multiply by 5
 B. 3,750 and 18,750
 C. 4, 20, 100, 500, 2,500

Domain 2: Cumulative Assessment for Lessons 11–17

1. D MGSE4.OA.4
2. B MGSE4.NBT.4, MGSE4.OA.3
3. D MGSE4.OA.4
4. A MGSE4.NBT.3
5. D MGSE4.NBT.3
6. C MGSE4.OA.3
7. D MGSE4.OA.3
8. B MGSE4.OA.3
9. 13, 22, 31, 40, 49 MGSE4.OA.5
10. A. 11,615
 B. 1,716 MGSE4.NBT.4, MGSE4.OA.3

Domain 3

Lesson 18

Coached Example

What is the denominator of $\frac{3}{6}$? **6**

What is the denominator of the equivalent fraction? **12**

By what number can you multiply 6 to get 12? **2**

To find the equivalent fraction, multiply the numerator and denominator by **2**.

$$\frac{3 \times 2}{6 \times 2} = \frac{6}{12}$$

$\frac{6}{12}$ is a fraction with 12 as a denominator that is equivalent to $\frac{3}{6}$.

Lesson Practice Part 1

1. B
2. D
3. B
4. D
5. B
6. C
7. A
8. A
9. A. $\frac{5}{10}$
 B. Answers may vary. Possible answer: $\frac{1}{2}$ and $\frac{10}{20}$

Lesson Practice Part 2

- C
- C
- D
- B
- A
- D
- A
- B
- A
- A. $\frac{6}{8}$
B. $\frac{3}{4}, \frac{9}{12} \div \frac{3}{3} = \frac{3}{4}$ and $\frac{6}{8} \div \frac{2}{2} = \frac{3}{4}$

Lesson 19

Coached Example

Each figure is divided into **8** parts.The denominator of the improper fraction is **8**.There are **11** shaded parts.The improper fraction is $\frac{11}{8}$.How many figures are completely shaded? **1**The whole number part of the mixed number is **1**.The second figure has **8** parts in all and **3** shaded parts.The fraction part of the mixed number is $\frac{3}{8}$.The mixed number is $1\frac{3}{8}$.The model represents $\frac{11}{8}$ or $1\frac{3}{8}$.

Lesson Practice Part 1

- B
- D
- B
- B
- C
- D
- A. $\frac{31}{8}$
B. $3\frac{7}{8}$

Lesson Practice Part 2

- A
- C
- B
- C
- D
- B
- D
- A. $\frac{26}{10}$
B. $2\frac{3}{5}$

Lesson 20

Coached Example

Find $\frac{4}{5}$ on a number line.**Check students' answers. Number line should be labeled in fifths with a point on $\frac{4}{5}$.** $\frac{4}{5}$ is closest to the benchmark **1**.Find $\frac{1}{6}$ on a number line.**Check students' answers. Number line should be labeled in sixths with a point on $\frac{1}{6}$.** $\frac{1}{6}$ is closest to the benchmark **0**.Since $\frac{4}{5}$ is closest to the benchmark **1**, and $\frac{1}{6}$ is closest to the benchmark **0**, $\frac{4}{5}$ is **greater** than $\frac{1}{6}$.

$$\frac{4}{5} > \frac{1}{6}$$

Lesson Practice Part 1

- A
- A
- D
- B
- D
- B
- C
- A
- A. Sugar; answers may vary. Possible answer: Since $\frac{1}{4}$ and $\frac{1}{3}$ have the same numerator, I compared the denominators. The fraction with the smaller denominator is the greater fraction, so $\frac{1}{3}$ is greater than $\frac{1}{4}$.
B. Flour; answers may vary. Possible answer: I used a common denominator of 15 for $\frac{2}{5}$ and $\frac{1}{3}$.
 $\frac{2}{5} = \frac{6}{15}$ and $\frac{1}{3} = \frac{5}{15}$, and $\frac{6}{15} > \frac{5}{15}$, so $\frac{2}{5} > \frac{1}{3}$.

Lesson Practice Part 2

- A
- B
- D
- D
- A
- A
- C
- A. Adam; Possible work: $\frac{2}{5} \times \frac{4}{4} = \frac{8}{20}$, $\frac{1}{4} \times \frac{5}{5} = \frac{5}{20}$, $\frac{8}{20} > \frac{5}{20}$
B. Adam; Possible work: $\frac{3}{10} \times \frac{2}{2} = \frac{6}{20}$, $\frac{8}{20} > \frac{6}{20}$
C. Eli; Possible work: $\frac{1}{4} \times \frac{5}{5} = \frac{5}{20}$, $\frac{6}{20} > \frac{5}{20}$

Lesson 21

Coached Example

Sam walked $\frac{1}{12}$ mile to Toni's house.

Then Sam walked $\frac{4}{12}$ mile to school.

$$\frac{1}{12} + \frac{4}{12} = m$$

Yes, both fractions have a denominator of 12.

Add the numerators.

$$1 + 4 = 5$$

The denominator stays the same.

$$\frac{1}{12} + \frac{4}{12} = \frac{5}{12}$$

Sam walked $\frac{5}{12}$ mile in all.

Lesson Practice Part 1

1. C

2. D

3. C

4. B

5. C

6. C

7. A

8. B

9. A. $\frac{7}{10}$ tank; $\frac{4}{10} + \frac{3}{10} = \frac{7}{10}$

B. $\frac{3}{4}$; Possible work: $\frac{1}{8} + \frac{5}{8} = \frac{6}{8}$; $\frac{6}{8} \div \frac{2}{2} = \frac{3}{4}$

Lesson Practice Part 2

1. A

2. C

3. B

4. D

5. C

6. D

7. B

8. D

9. B

10. A

11. A. $\frac{6}{10}$ or $\frac{3}{5}$

B. $\frac{5}{10}$ or $\frac{1}{2}$

C. $\frac{9}{10}$

Lesson 22

Coached Example

The words "how much more" tell you to **subtract**.

Alexandra wants to jog $\frac{7}{10}$ mile.

She ties her shoelaces after

$\frac{3}{10}$ mile.

$$\frac{7}{10} - \frac{3}{10} = m$$

Yes, both fractions have a denominator of 10.

Subtract the numerators.

$$7 - 3 = 4$$

The denominator stays the same.

$$\frac{7}{10} - \frac{3}{10} = \frac{4}{10}$$

Simplify the fraction.

$$\frac{4}{10} = \frac{4 \div 2}{10 \div 2} = \frac{2}{5}$$

Alexandra has $\frac{2}{5}$ mile more to jog to finish her run.

Lesson Practice Part 1

1. B

2. C

3. B

4. B

5. A

6. B

7. A

8. B

9. A. $\frac{5}{10}$ or $\frac{1}{2}$ pound; $\frac{8}{10} - \frac{3}{10} = \frac{5}{10} = \frac{5 \div 5}{10 \div 5} = \frac{1}{2}$

B. $\frac{5}{10}$ or $\frac{1}{2}$ pound; $\frac{7}{10} - \frac{2}{10} = \frac{5}{10} = \frac{5 \div 5}{10 \div 5} = \frac{1}{2}$

Lesson Practice Part 2

1. A

2. A

3. C

4. D

5. B

6. C

7. B

8. C

9. A. $\frac{3}{8}$

B. $\frac{2}{8}$ or $\frac{1}{4}$; Possible work: $1 - \left(\frac{4}{8} + \frac{1}{8} + \frac{1}{8}\right) =$

$$\frac{8}{8} - \frac{6}{8} = \frac{2}{8} = \frac{1}{4}$$

C. $\frac{1}{8}$; $\frac{2}{8} - \frac{1}{8} = \frac{1}{8}$

Lesson 23

Coached Example

The board is $4\frac{1}{4}$ feet long.

He will cut a $2\frac{3}{4}$ -feet piece.

$$4\frac{1}{4} - 2\frac{3}{4} = b$$

$$4 = \frac{4}{4} + \frac{4}{4} + \frac{4}{4} + \frac{4}{4}$$

$$4\frac{1}{4} = \frac{4}{4} + \frac{4}{4} + \frac{4}{4} + \frac{4}{4} + \frac{1}{4} = \frac{17}{4}$$

$$\text{So, } 4\frac{1}{4} = \frac{17}{4}$$

$$2 = \frac{4}{4} + \frac{4}{4}$$

$$2\frac{3}{4} = \frac{4}{4} + \frac{4}{4} + \frac{3}{4} = \frac{11}{4}$$

$$\text{So, } 2\frac{3}{4} = \frac{11}{4}$$

Subtract the improper fractions.

$$\frac{17}{4} - \frac{11}{4} = \frac{6}{4}$$

Change the improper fraction to mixed number.

$$6 \div 4 = 1 \text{ R}2$$

The mixed number is $1\frac{2}{4}$.

Simplify the fraction part of the mixed number.

$$\frac{2}{4} = \frac{2 \div 2}{4 \div 2} = \frac{1}{2}$$

Mr. Lee has $1\frac{1}{2}$ feet of the board left.

Lesson Practice Part 1

1. C
2. C
3. D
4. A
5. C
6. B
7. C
8. B
9. A. $4\frac{2}{4}$ or $4\frac{1}{2}$; $2\frac{1}{4} + 2\frac{1}{4} = 4\frac{2}{4}$
 B. $1\frac{3}{4}$ pounds; Answers may vary. Possible answer:
 $6\frac{1}{4} - 4\frac{2}{4} = \frac{25}{4} - \frac{18}{4} = \frac{7}{4} = 1\frac{3}{4}$ pounds

Lesson Practice Part 2

1. D
2. A
3. C
4. C
5. B
6. D
7. A

8. A. $4\frac{1}{5}$; Possible work: $2\frac{2}{5} + 1\frac{4}{5} = 3\frac{6}{5} = 4\frac{1}{5}$

B. $1\frac{2}{5}$; Possible work: $5\frac{3}{5} - 4\frac{1}{5} = 1\frac{2}{5}$

Lesson 24

Coached Example

Write the multiplication as repeated addition.

$$4 \times \frac{3}{5} = \frac{3}{5} + \frac{3}{5} + \frac{3}{5} + \frac{3}{5}$$

Are the denominators the same? **yes**

Add the numerators.

$$3 + 3 + 3 + 3 = 12$$

Write the sum over the denominator. $\frac{12}{5}$

Change the sum to a mixed number.

$$\frac{12}{5} = 2\frac{2}{5}$$

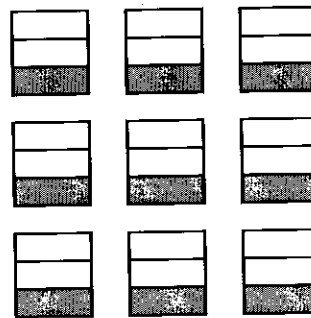
Make a model of the problem to check your answer.

Check students' models. Models could show 4 groups of $\frac{3}{5}$ or $\frac{12}{5}$ in all.

$$4 \times \frac{3}{5} = 2\frac{2}{5}$$

Lesson Practice Part 1

1. D
2. B
3. A
4. D
5. B
6. C
7. B
8. D
9. A. Models may vary. Possible model:



B. $\frac{9}{3}$ or 3 baskets; $9 \times \frac{1}{3} = \frac{9}{1} \times \frac{1}{3} = \frac{9 \times 1}{1 \times 3} = \frac{9}{3}$ or 3

Lesson Practice Part 2

1. D
2. C
3. B
4. A
5. A
6. D
7. C
8. D
9. B
10. A. $\frac{15}{4}$ or $3\frac{3}{4}$; Possible work: $5 \times \frac{3}{4} = \frac{15}{4} = 3\frac{3}{4}$

B. $\frac{9}{4}$ or $2\frac{1}{4}$; Possible work: $3 \times \frac{3}{4} = \frac{9}{4} = 2\frac{1}{4}$

Lesson 25

Coached Example

There are **2** whole grids shaded.

The other grid has **6** out of **100** parts shaded.

So, **0.06** of the other grid is shaded.

Write the decimal in a place-value chart.

Ones	Tenths	Hundredths
2	.	0
		6

The whole number part is **two**.

The decimal point is **and**.

The decimal part is **six**.

The least place value is **hundredths**.

The models show the decimal **2.06**.

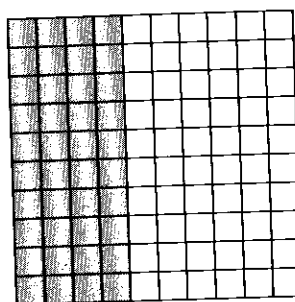
The word name is **two and six hundredths**.

Lesson Practice Part 1

1. D
2. C
3. B
4. B
5. B
6. A
7. B
8. C
9. A. 3.65
- B. 3 ones, 6 tenths, 5 hundredths or 3 ones, 65 hundredths
- C. three and sixty-five hundredths

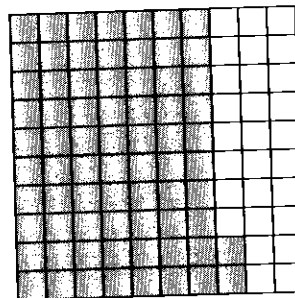
Lesson Practice Part 2

1. D
2. A
3. A
4. B
5. C
6. B
7. B
8. A. Possible grid:



A

- B. Possible grid:



B

Lesson 26

Coached Example

$0.56 = 56$ hundredths = **5** tenths **6** hundredths

5 tenths = $\frac{5}{10}$

6 hundredths = $\frac{6}{100}$

So, 56 hundredths = $\frac{5}{10} + \frac{6}{100}$

$\frac{5}{10} = \frac{5 \times 10}{10 \times 10} = \frac{50}{100}$

$0.56 = 56$ hundredths = $\frac{56}{100}$

$\frac{56}{100} = \frac{50}{100} + \frac{6}{100}$

The fraction $\frac{56}{100}$ is equal 0.56.

$\frac{56}{100} = \frac{50}{100} + \frac{6}{100}$

$\frac{56}{100} = \frac{5}{10} + \frac{6}{100}$

Lesson Practice Part 1

1. B
2. C
3. C
4. B
5. D
6. A
7. A
8. B
9. A. 0.25, and $\frac{25}{100} = \frac{1}{4}$
 B. $0.25 = \frac{2}{10} + \frac{5}{100}$

Lesson Practice Part 2

1. C
2. A
3. D
4. C
5. B
6. D
7. A
8. B
9. A. $\frac{3}{100} + \frac{20}{100}$
 B. $\frac{23}{100}$
 C. 0.23

Lesson 27

Coached Example

Ones	Tenths	Hundredths
0	4	0
0	5	2
0	4	8

Compare the digits in the greatest place, the **ones**.

0 ones = 0 ones = 0 ones

All of the digits in the greatest place are **equal**.

Compare the digits in the next greatest place, the **tenths**.

5 tenths > 4 tenths, so **0.52** is the greatest decimal.

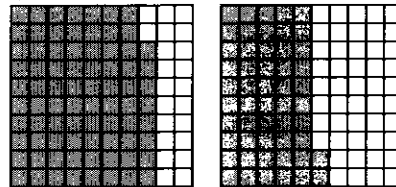
Compare the digits in the next greatest place, the **hundredths**.

0 hundredths < 8 hundredths, so **0.40** is the least decimal.

From least to greatest, the order of the decimals is **0.40, 0.48, 0.52**.

Lesson Practice Part 1

1. A
2. D
3. D
4. A
5. C
6. A
7. C
8. D
9. A.



B. roast beef

Lesson Practice Part 2

1. A
2. D
3. B
4. D
5. B
6. C
7. C
8. D
9. A. 2011
 B. 2012

Domain 3: Cumulative Assessment for Lessons 18–27

1. C MGSE4.NF.1
2. C MGSE4.NF.3a, MGSE4.NF.3b, MGSE4.NF.3d
3. B MGSE4.NF.3a, MGSE4.NF.3d
4. D MGSE4.NF.4a, MGSE4.NF.4b, MGSE4.NF.4c
5. D MGSE4.NF.2
6. B MGSE4.NF.6
7. C MGSE4.NF.5, MGSE4.NF.6
8. D MGSE4.NF.7
9. $5\frac{2}{6}$ or $5\frac{1}{3}$ MGSE4.NF.3b, MGSE4.NF.3c
10. A. $2\frac{2}{4}$ pints; $3\frac{1}{4} - \frac{3}{4} = \frac{13}{4} - \frac{3}{4} = \frac{10}{4} = 2\frac{2}{4}$
 B. $2\frac{1}{2}$ MGSE4.NF.3a, MGSE4.NF.3b, MGSE4.NF.3c, MGSE4.NF.3d

Domain 4

Lesson 28

Coached Example

Find the total amount Marvin spent.

Then subtract that amount from **\$20.00**.

Marvin bought 2 books that cost **\$6.00** each.

So, 2 books cost **\$12.00**.

Add the cost of 2 books to the cost of the bookmark.

$$\mathbf{\$12.00 + \$1.50 = \$13.50}$$

Marvin spent **\$13.50** in all.

Subtract the total amount from the amount Marvin has.

$$\mathbf{\$20.00 - \$13.50 = \$6.50}$$

Show your work.

$$\begin{array}{r} ^9 \\ 110\cancel{10} \\ \$ 20.\cancel{0}0 \\ - \$ 13.50 \\ \hline \$ 6.50 \end{array}$$

Marvin has **\$6.50** left.

Lesson Practice Part 1

- C
- A
- D
- B
- A
- D
- A
- A. \$4.70; Answers may vary. Possible answer:
 $\$2.50 + \$1.20 + \$0.50 + \$0.50 = \$4.70$
 B. \$0.30; $\$5.00 - \$4.70 = \$0.30$

Lesson Practice Part 2

- D
- A
- B
- B
- A
- C
- C
- A. \$8.50; Possible work: $2 \times (2.75 + 0.75) + 1.50 = 2 \times 3.5 + 1.5 = 7 + 1.5 = 8.5 = \8.50
 B. No, you would be \$0.25 short. The cost of the two slices is \$5.50, so $\$5.50 + \$1.50 + \$3.25 = \10.25 , which is \$0.25 more than \$10.

Lesson 29

Coached Example

1 minute = **60** seconds

Which is the larger unit? **minutes**

Which is the smaller unit? **seconds**

When you change from a larger unit to a smaller unit, which operation do you use? **multiplication**

Show your work.

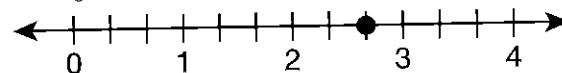
$$\mathbf{5 \times 60 = 300}$$

There are **300** seconds in 5 minutes.

The music video is **300** seconds long.

Lesson Practice Part 1

- A
- C
- B
- C
- A
- D
- B
- C
- A. $2\frac{2}{3}$



Hours

B. 160; Possible work: $\frac{1}{3} \times 60 = 20$,
 $20 \times 8 = 160$

Lesson Practice Part 2

- A
- C
- D
- B
- C
- C
- B
- D
- A. 1 hour 35 minutes
 B. 4 hours 50 minutes; Possible explanation:
 I broke up the times of the first leg: 9:35 to 10:00 is 25 minutes, 10:00 to 12:10 is 2 hours 10 minutes. The first leg had an elapsed time of 2 hours 35 minutes. I did the same for the second leg: 1:45 to 2:00 is 15 minutes, 2:00 to 4:00 is 2 hours, so the second leg is 2 hours 15 minutes. I added the elapsed times to get 4 hours 50 minutes.

Lesson 30

Coached Example

Which is the smaller unit, pounds or ounces? **ounces**1 pound = **16** ounces

Multiply to change 3 pounds to ounces.

 $3 \times 16 = 48$ ouncesPeanuts: 3 pounds or **48** ounces**48** ounces $\textcircled{>}$ 45 ouncesDeanna has more **peanuts** than **raisins**.

Lesson Practice Part 1

1. D
2. B
3. C
4. D
5. B
6. A
7. C
8. B
9. A. 26 pounds; Answers may vary. Possible answer:
 $8\frac{1}{2} + 8\frac{1}{2} = 17$ pounds.
 $4\frac{1}{2} + 4\frac{1}{2} = 9$ pounds. $17 + 9 = 26$ pounds
 B. 144 ounces; 9 pounds \times 16 ounces =
 144 ounces

Lesson Practice Part 2

1. D
2. C
3. A
4. D
5. C
6. A
7. A
8. C
9. B
10. A. The team with 6 students will have the larger students. Possible explanation: There are fewer people to divide among the 600 pounds.
 B. 25 pounds; Possible work: $600 \div 8 = 75$,
 $600 \div 10 = 100$, $100 - 75 = 25$

Lesson 31

Coached Example

The bottle has a capacity of **2** liters.The bucket has a capacity that is **4** times more than the bottle.Which operation should you use to find the capacity of the bucket? **multiplication**Find $2 \times 4 = b$

Multiply.

 $2 \times 4 = 8$ liters

Change the capacity of the bucket in liters to milliliters.

1 liter = **1,000** milliliters

Multiply to change from liters to milliliters.

 $8 \times 1,000 = 8,000$ millilitersThe capacity of the bucket is **8,000** milliliters.

Lesson Practice Part 1

1. D
2. A
3. B
4. B
5. D
6. A
7. C
8. D
9. A. 3,000 milliliters; $3 \times 1,000 = 3,000$ milliliters
 B. 2 liters; $850 + 900 + 250 = 2,000$ mL; Since
 $1,000$ mL = 1 L, then $2,000$ mL = 2 L

Lesson Practice Part 2

1. C
2. B
3. A
4. D
5. B
6. C
7. A
8. D
9. B
10. A. 6
 B. 12
 C. Travis drinks less than 7 gallons per week.
 Possible explanation: Travis would need to drink 1 gallon per day to drink 7 gallons per week. Because 1 gallon = 4 quarts, and Travis is drinking 3 quarts per day, he is drinking less than a gallon of water per day.

Lesson 32

She lives **3** kilometers from the mall.

To change from kilometers to meters, should you use multiplication or division? **multiplication**

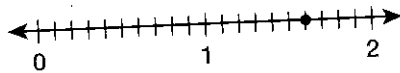
1 kilometer = **1,000** meters

$3 \times 1,000$ meters = **3,000** meters

So 3 kilometers = **3,000** meters.

She lives **1.6** kilometers from the school.

Find 1.6 on the number line. Draw a point.



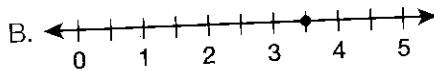
Kilometers

Nicole lives **3,000** meters from the mall. The point on the number line above shows the distance, in kilometers, Nicole lives from school.

Lesson Practice Part 1

1. C
2. B
3. A
4. D
5. C
6. A
7. D
8. B
9. A. 42 inches; I first changed $2\frac{1}{2}$ feet to inches.

I found 2 feet by multiplying $2 \times 12 = 24$ inches. Since 1 foot = 12 inches, I know that $\frac{1}{2}$ foot = 6 inches. $24 + 6 = 30$ inches. So $2\frac{1}{2}$ feet = 30 inches. Then I added $30 + 12 = 42$ inches to find the total length.



Feet

I know that 12 inches = 1 foot, so I added $1 + 2\frac{1}{2}$ feet = $3\frac{1}{2}$ feet.

Lesson Practice Part 2

1. B
2. B
3. D
4. A
5. D
6. C
7. C
8. B

9. B

10. A

11. A. 60

B. 720

C. 240

Lesson 33

Coached Example

$P = (2 \times \text{length}) + (2 \times \text{width})$

Use the variable l to represent the **length**.

$60 = (2 \times l) + (2 \times 10)$

Solve for the length.

$60 = (2 \times l) + (2 \times 10)$

$60 = (2 \times l) + 20$

$60 - 20 = 2 \times l + 20 - 20$

$40 = 2 \times l$

$40 \div 2 = 2 \div 2 \times l$

$20 = 1 \times l$

$20 = l$

Check your answer by substituting **20** inches for the length in the formula.

$P = (2 \times 20) + (2 \times 10)$

$P = 40 + 20$

$P = 60$

The length of the rectangle is **20** inches.

Lesson Practice Part 1

1. B
2. C
3. C
4. A
5. D
6. B
7. C
8. C

9. A. 400 cm; $P = 4 \times s = 4 \times 100 = 400$ cm

B. 10 km; $P = (2 \times l) + (2 \times w)$

$46 = (2 \times 13) + (2 \times w)$

$46 = 26 + 2 \times w$

$46 - 26 = 26 - 26 + 2 \times w$

$20 = 2 \times w$

$20 \div 2 = 2 \div 2 \times w$

$10 = w$

Lesson Practice Part 2

1. D
2. B
3. A
4. D
5. C
6. B
7. A
8. B
9. A
10. A. 7
B. 8 yards by 6 yards, 9 yards by 5 yards, 10 yards by 4 yards

Lesson 34

Coached Example

To find the area of the rectangle, multiply the **length** by the **width**.

Write the area formula. Use l for length and w for width.

$$A = l \times w$$

Substitute the values into the formula.

$$A = 80 \times 45$$

Multiply.

$$A = 3,600$$

The units are **square feet**.

The playground has an area of **3,600 square feet**.

Lesson Practice Part 1

1. A
2. D
3. C
4. B
5. A
6. C
7. A
8. C
9. A. $700 = 20 \times w$
B. 35 feet; $700 = 20 \times w$
 $700 \div 20 = 20 \div 20 \times w$
 $35 = w$

Lesson Practice Part 2

1. D
2. A
3. D
4. C
5. C

6. B
7. A
8. D
9. B
10. A. 20 feet; 20 feet; 400 square feet
B. 80 feet; 1 foot; 80 square feet

Lesson 35

Coached Example

Put the center mark of the protractor on the **vertex** of the angle.

Line up one ray of the angle with the 0° mark on one of the scales.

The ray crosses the scale at 80° .

It crosses the other scale at 100° .

Check your answer.

Angle T appears **less** than 90° , so the measure is 80° , not 100° .

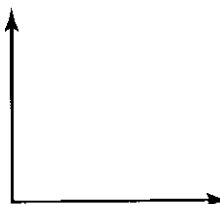
The measure of $\angle T$ is 80° .

Lesson Practice Part 1

1. D
2. A
3. C
4. B
5. B
6. D
7. A
8. A. 70°
B. Check students' drawings. Students should draw an angle with a measure of 115° .

Lesson Practice Part 2

1. C
2. A
3. A
4. B
5. B
6. D
7. A
8. A. 150°
B. $\frac{150}{360}$
C.



Lesson 36

Coached Example

Count the number of Xs above the time of $\frac{1}{4}$ hour on the number line.

There are **2** Xs above that time.

So, **2** students spent $\frac{1}{4}$ hour reading last night.

To find how much time in all those students spent reading, which operation should you use? **addition**

$$\frac{1}{4} + \frac{1}{4} = \frac{2}{4}$$

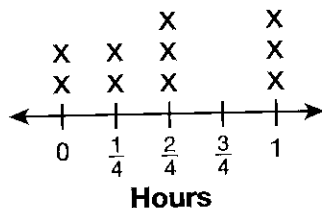
So, **2** students spent $\frac{1}{4}$ hour reading last night.

In all, those students spent $\frac{2}{4}$ or $\frac{1}{2}$ hour reading.

Lesson Practice Part 1

1. C
2. B
3. C
4. B
5. A
6. D
7. C
8. B
9. A.

Time Spent Watching TV Special

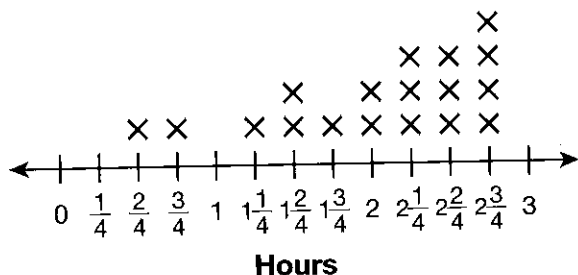


B. 6

Lesson Practice Part 2

1. A
2. C
3. D
4. A. Possible line plot:

Science Fair



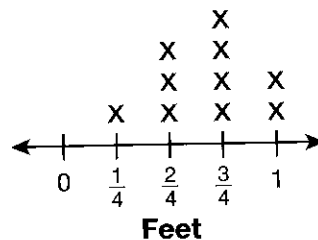
B. 6

C. $2\frac{1}{4}$ hours; $2\frac{3}{4} - \frac{2}{4} = 2\frac{1}{4}$

Domain 4: Cumulative Assessment for Lessons 28–36

1. C MGSE4.MD.2
2. D MGSE4.MD.1, MGSE4.MD.2
3. A MGSE4.MD.3
4. B MGSE4.MD.1, MGSE4.MD.2
5. C MGSE4.MD.1
6. C MGSE4.MD.3
7. B MGSE4.MD.1, MGSE4.MD.2
8. A MGSE4.MD.7
9. 115° MGSE4.MD.6
10. A.

Candle Heights



B. $\frac{3}{4}$ foot MGSE4.MD.4

Domain 5

Lesson 37

Coached Example

Does $\angle A$ appear to be exactly 90° ? **no**

Is $\angle A$ a right angle? **no**

Does $\angle A$ appear to be less than 90° ? **no**

Is $\angle A$ an acute angle? **no**

Does $\angle A$ appear to be greater than 90° ? **yes**

Is $\angle A$ an obtuse angle? **yes**

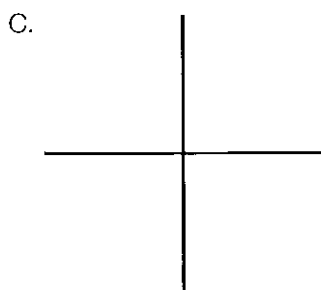
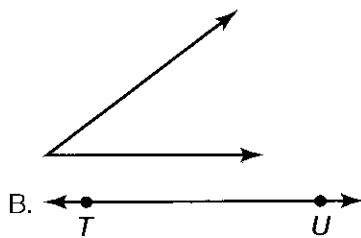
Angle A is an **obtuse** angle.

Lesson Practice Part 1

1. A
2. B
3. A
4. C
5. C
6. D
7. B
8. A. Answers may vary. Possible answers: 3:00 or 9:00.
B. Check students' drawings. Answers will vary. Possible answer: acute angle – 3:20; obtuse angle – 2:40.

Lesson Practice Part 2

1. A
2. D
3. B
4. A
5. C
6. D
7. D
8. C
9. A. Possible angle:



Lesson 38

Coached Example

Does the shape have straight sides? **yes**

Is the shape a polygon? **yes**

How many straight sides does the shape have? **4**

How many angles does the shape have? **4**

Is the shape a quadrilateral? **yes**

Does the shape have any right angles? **no**

Is the shape a rectangle? **no**

What types of angles does the shape have? **2 acute angles and 2 obtuse angles**

Does the shape have parallel sides? **yes**

How many pairs of parallel sides does the shape have? **1**

Which quadrilateral has only 1 pair of parallel sides?
trapezoid

The name of this two-dimensional shape is **trapezoid**.

Lesson Practice Part 1

1. B
2. A
3. C
4. B
5. B
6. C
7. D
8. B
9. A. The shape has 1 right angle, 2 acute angles, and 1 obtuse angle.
B. Answers may vary. Possible answer: The shape has 1 pair of perpendicular sides. Angle B shows that the two sides intersect at a right angle. The shape does not have any parallel sides. None of the sides are the same distance apart.
C. quadrilateral

Lesson Practice Part 2

1. D
2. A
3. B
4. C
5. C
6. A
7. D
8. A
9. B
10. A. Quadrilateral A is a rhombus. Quadrilateral B is a rectangle.
B. Possible answer: Both are parallelograms because they have 2 pairs of opposite sides parallel.
C. Possible answer: The rhombus has 4 equal sides, but does not have any right angles. The rectangle has 4 right angles, but not all sides are equal.

Lesson 39

Coached Example

Look at the letter E.

It has **1** line of symmetry.

Does the letter E have line symmetry? **yes**

Look at the letter S.

It has **0** lines of symmetry.

Does the letter S have line symmetry? **no**

Look at the letter H.

It has **2** lines of symmetry.

Does the letter H have line symmetry? **yes**

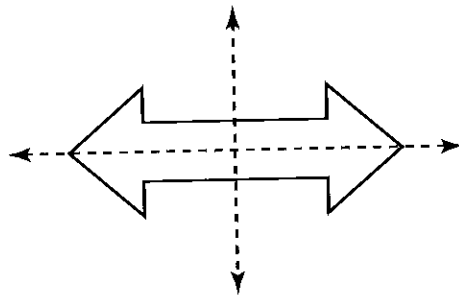
The letters **E** and **H** have line symmetry.

Lesson Practice Part 1

1. D
2. A
3. B
4. B
5. C
6. C
7. B
8. A. Check students' drawings for a horizontal line of symmetry.
B. Yes, the figure has line symmetry. The line of symmetry divides the figure into two matching parts. So the figure has line symmetry.

Lesson Practice Part 2

1. D
2. B
3. A
4. D
5. C
6. A
7. B
8. A
9. A. 2
B.



Domain 5: Cumulative Assessment for Lessons 37–39

1. A MGSE4.G.1
2. C MGSE4.G.1
3. A MGSE4.G.1
4. D MGSE4.G.1
5. A MGSE4.G.2
6. B MGSE4.G.1
7. B MGSE4.G.2
8. D MGSE4.G.3
9. 1 MGSE4.G.3
10. A. 2
B. Check students' drawings. Drawings should show both a horizontal and a vertical line of symmetry. MGSE4.G.3

Posttest: Practice Assessment 2

Item Correlation to Standards and Depth of Knowledge (DOK) Levels

Item Number	Standard(s)	DOK
Section 1		
1	MGSE.4.OA.4	2
2	MGSE.4.NBT.2	2
3	MGSE.4.NBT.6	3
4	MGSE.4.NF.2	3
5	MGSE.4.MD.1a	2
6	MGSE.4.G.1	2
7	MGSE.4.OA.2	2
8	MGSE.4.NBT.1	2
9	MGSE.4.NBT.5	2
10	MGSE.4.NF.3c	2
11	MGSE.4.MD.6	1
12	MGSE.4.OA.3	2
13	MGSE.4.NF.1	2
14	MGSE.4.NF.4b	2
15	MGSE.4.MD.2	2
16	MGSE.4.G.2	1
17	MGSE.4.OA.1	2
18	MGSE.4.NBT.3	3
19	MGSE.4.MD.3	2
20	MGSE.4.NF.4c	2
21	MGSE.4.G.3	2
22	MGSE.4.NBT.6	2
23	MGSE.4.OA.5	3
24	MGSE.4.NF.6	2
25	MGSE.4.MD.1c	2
26	MGSE.4.G.1	2
27	MGSE.4.MD.8	3
28	MGSE.4.OA.5	3
29	MGSE.4.MD.4	2
30	MGSE.4.NF.2	3

Item Number	Standard(s)	DOK
Section 2		
31	MGSE.4.NBT.4	1
32	MGSE.4.OA.2	3
33	MGSE.4.NF.3b	2
34	MGSE.4.OA.3	3
35	MGSE.4.NBT.2	2
36	MGSE.4.NBT.5	3
37	MGSE.4.MD.2	2
38	MGSE.4.NF.5	2
39	MGSE.4.OA.4	2
40	MGSE.4.NBT.6	1
41	MGSE.4.NF.4a	2
42	MGSE.4.MD.5a	2
43	MGSE.4.G.3	2
44	MGSE.4.NBT.6	1
45	MGSE.4.NF.2	3
46	MGSE.4.MD.3	2
47	MGSE.4.OA.3	2
48	MGSE.4.NBT.4	2
49	MGSE.4.G.2	2
50	MGSE.4.NF.7	2
51	MGSE.4.NBT.2	2
52	MGSE.4.OA.2	2
53	MGSE.4.NF.3d	2
54	MGSE.4.G.2	3
55	MGSE.4.NBT.5	3
56	MGSE.4.NF.4c	2
57	MGSE.4.OA.3	2
58	MGSE.4.MD.1b	2
59	MGSE.4.NF.1	2
60	MGSE.4.NF.5	2
61	MGSE.4.NF.2	2
62	MGSE.4.MD.7	2
63	MGSE.4.NF.3a	3

Answer Key**Section 1**

1. D
2. A
3. C
4. B
5. A
6. B
7. B
8. A
9. D
10. B
11. B
12. D
13. B
14. C
15. B
16. A
17. D
18. A
19. D
20. B
21. B
22. D
23. B
24. C
25. C
26. D
27. A
28. Part A: B
Part B: A
See Item-Specific Scoring Guidelines and Rubrics.
29. See Item-Specific Scoring Guidelines and Rubrics.
30. See Item-Specific Scoring Guidelines and Rubrics.

Section 2

31. B
32. D
33. B
34. C
35. A
36. D
37. C
38. D
39. A
40. B
41. B
42. C
43. D
44. D
45. D
46. A
47. A
48. B
49. C
50. C
51. C
52. A
53. D
54. B
55. D
56. A
57. B
58. C
59. B
60. See Item-Specific Scoring Guidelines and Rubrics.
61. A
62. D
63. B

Item-Specific Scoring Guidelines and Rubrics

Item 28

Scoring Rubric

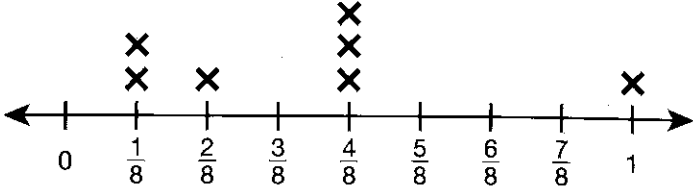
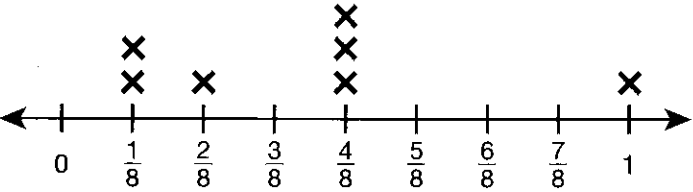
Points	Description
2	<p>The response achieves the following:</p> <ul style="list-style-type: none"> A score of 2 demonstrates a complete understanding of generating a number pattern using a rule, and identifying a non-explicit feature of that pattern. Student determines that the correct answer for Part A is choice B AND Student determines that the correct answer for Part B is choice A.
1	<p>The response achieves the following:</p> <ul style="list-style-type: none"> A score of 1 demonstrates a partial understanding of generating a number pattern using a rule, and identifying a non-explicit feature of that pattern. Student determines that the correct answer for Part A is choice B OR Student determines that the correct answer for Part B is choice A.
0	<p>The response achieves the following:</p> <ul style="list-style-type: none"> A score of 0 demonstrates limited to no understanding of generating a number pattern using a rule.

Item 29

Scoring Rubric

Points	Description
2	<p>The response achieves the following:</p> <ul style="list-style-type: none"> A score of 2 demonstrates a complete understanding of generating a line plot from data and using the data to solve a problem.
1	<p>The response achieves the following:</p> <ul style="list-style-type: none"> A score of 1 demonstrates a partial understanding of generating a line plot from data and using the data to solve a problem. Give 1 point if the student's line plot is correct OR if the student's calculation is correct.
0	<p>The response achieves the following:</p> <ul style="list-style-type: none"> A score of 0 demonstrates limited to no understanding of generating a line plot from data and using the data to solve a problem.

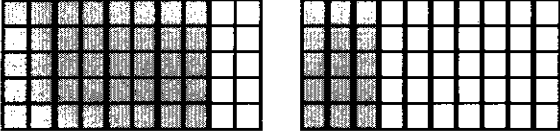
Exemplar Response:

Points Awarded	Response
2	<p style="text-align: center;">Fish Fiona Caught</p>  <p style="text-align: center;">Fish (pounds)</p> <p>AND</p> $\frac{1}{2} = \frac{4}{8}, \frac{1}{4} = \frac{2}{8}, 1 = \frac{8}{8}$ <p><i>I rewrote some fractions and the whole number so they would all be fractions with the same denominator.</i></p> $\frac{1}{8} + \frac{1}{8} + \frac{2}{8} + \frac{4}{8} + \frac{4}{8} + \frac{4}{8} + \frac{8}{8} = \frac{24}{8} = 3$ <p><i>I added the numerators to find the sum. Then I rewrote the sum as a whole number.</i></p> <p><i>Fiona caught 3 pounds of fish.</i></p>
1	<p style="text-align: center;">Fish Fiona Caught</p>  <p style="text-align: center;">Fish (pounds)</p> <p>OR</p> $\frac{1}{2} = \frac{4}{8}, \frac{1}{4} = \frac{2}{8}, 1 = \frac{8}{8}$ <p><i>I rewrote some fractions and the whole number so they would all be fractions with the same denominator.</i></p> $\frac{1}{8} + \frac{1}{8} + \frac{2}{8} + \frac{4}{8} + \frac{4}{8} + \frac{4}{8} + \frac{8}{8} = \frac{24}{8} = 3$ <p><i>I added the numerators to find the sum. Then I rewrote the sum as a whole number.</i></p> <p><i>Fiona caught 3 pounds of fish.</i></p>
0	<p><i>Response is irrelevant, inappropriate, or not provided.</i></p>

Item 30**Scoring Rubric**

Points	Description
4	The response achieves the following: <ul style="list-style-type: none">• A score of 4 demonstrates that the student completely understands comparing fractions by reasoning about size; recording comparisons using $>$, $<$, or $=$; and comparing fractions by comparing them to a benchmark fraction.
3	The response achieves the following: <ul style="list-style-type: none">• A score of 3 demonstrates that the student mostly understands comparing fractions by reasoning about size; recording comparisons using $>$, $<$, or $=$; and comparing fractions by comparing them to a benchmark fraction.
2	The response achieves the following: <ul style="list-style-type: none">• A score of 2 demonstrates that the student somewhat understands comparing fractions by reasoning about size; recording comparisons using $>$, $<$, or $=$; and comparing fractions by comparing them to a benchmark fraction.
1	The response achieves the following: <ul style="list-style-type: none">• A score of 1 demonstrates that the student has a limited understanding of comparing fractions by reasoning about size, recording comparisons using $>$, $<$, or $=$; and comparing fractions by comparing them to a benchmark fraction.
0	The response achieves the following: <ul style="list-style-type: none">• A score of 0 demonstrates that the student has no understanding of the concept of comparing fractions by reasoning about size; recording comparisons using $>$, $<$, or $=$; and comparing fractions by comparing them to a benchmark fraction.

Exemplar Response:

Points Awarded	Response
4	<p>Part A: </p> <p>AND</p> <p>Part B: $\frac{4}{5} > \frac{3}{10}$ OR $\frac{3}{10} < \frac{4}{5}$</p> <p>AND</p> <p>Part C: The wholes are the same size, so I could compare the parts of the models that I shaded. I can see that the shaded part for $\frac{4}{5}$ has a greater area than the shaded part for $\frac{3}{10}$.</p> <p>AND</p> <p>Part D: $\frac{4}{5} > \frac{1}{2}$ $\frac{3}{10} < \frac{1}{2}$ I know that $\frac{4}{5}$ is greater than the benchmark $\frac{1}{2}$. And I know that $\frac{3}{10}$ is less than $\frac{1}{2}$. So I know that $\frac{4}{5}$ must be greater than $\frac{3}{10}$.</p>
3	Any combination of three correct parts
2	Any combination of two correct parts
1	Any one correct part
0	Response is irrelevant, inappropriate, or incomplete.

Item 60

Scoring Rubric

Points	Description
2	The response achieves the following: <ul style="list-style-type: none"> A score of 2 demonstrates a complete understanding of rewriting a fraction with denominator 10 as a fraction with denominator 100 in order to add it to a fraction with denominator 100.
1	The response achieves the following: <ul style="list-style-type: none"> A score of 1 demonstrates a partial understanding of rewriting a fraction with denominator 10 as a fraction with denominator 100 in order to add it to a fraction with denominator 100.
0	The response achieves the following: <ul style="list-style-type: none"> A score of 0 demonstrates limited to no understanding of rewriting a fraction with denominator 10 as a fraction with denominator 100 in order to add it to a fraction with denominator 100.

Exemplar Response:

Points Awarded	Response
2	$\frac{53}{100}$ <p>AND</p> $\frac{5}{10} = \frac{5 \times 10}{10 \times 10} = \frac{50}{100}$ <p>I rewrote $\frac{5}{10}$ as $\frac{50}{100}$ by multiplying the numerator and denominator by 10.</p> $\frac{3}{100} + \frac{50}{100} = \frac{53}{100}$ <p>Since the fractions have the same denominator, I could add the numerators.</p> <p>OR other valid explanation</p>
1	$\frac{53}{100}$ <p>OR</p> $\frac{5}{10} = \frac{5 \times 10}{10 \times 10} = \frac{50}{100}$ <p>I rewrote $\frac{5}{10}$ as $\frac{50}{100}$ by multiplying the numerator and denominator by 10.</p> $\frac{3}{100} + \frac{50}{100} = \frac{53}{100}$ <p>Since the fractions have the same denominator, I could add the numerators.</p> <p>OR other valid explanation</p>
0	Response is irrelevant, inappropriate, or not provided.

Student Scoring Record

Student Name _____ Date _____

Item Number(s)	Points Possible	Points Scored
Section 1		
1-27	27	
28-29	4	
30	4	
Section 1 Total		
Section 2		
31-59	28	
60	2	
61-63	3	
Section 2 Total		

Section 1 Total	
Section 2 Total	
ASSESSMENT TOTAL	