lumos Learning
Developed by Expert Teachers

Grade 4

GEORGIA
Math
GMAS Practice

Updated for 2021-22

(((tedBook)))

ONLINE

2 GMAS Practice Tests

7 Question Types

COVERS 30+ SKILLS

Georgia Department of Education does not sponsor or endorse this product.

Important Instruction

Students, Parents, and Teachers can use the URL or QR code provided below to access two full-length Lumos GMAS practice tests. Please note that these assessments are provided in the Online format only.

URL
Visit the URL below and place the book access code **http://www.lumoslearning.com/a/tedbooks** **Access Code: G4MGMAS-15070-P**

This is a sample copy and not the full version of the workbook

INTRODUCTION

This book is specifically designed to improve student achievement on the Smarter Balanced Assessment Consortium (GMAS) Test. With over a decade of expertise in developing practice resources for standardized tests, Lumos Learning has designed the most efficient methodology to help students succeed on the state assessments (See Figure 1).

Lumos Smart Test Practice provides students GMAS assessment rehearsal along with an efficient pathway to overcome any standards proficiency gaps. Students perform at their best on standardized tests when they feel comfortable with the test content as well as the test format. Lumos online practice tests are meticulously designed to mirror the GMAS assessment. It adheres to the guidelines provided by the GMAS for the number of questions, standards, difficulty level, sessions, question types, and duration.

The process starts with students taking the online diagnostic assessment. This online diagnostic test will help assess students' proficiency levels in various standards.

After completion of the diagnostic assessment, students can take note of standards where they are not proficient. This step will help parents and educators in developing a targeted remedial study plan based on a student's proficiency gaps.

Once the targeted remedial study plan is in place, students can start practicing the lessons in this workbook that are focused on specific standards.

After the student completes the targeted remedial practice, the student should attempt the second online GMAS practice test. Record the proficiency levels in the second practice test to measure the student progress and identify any additional learning gaps. Further targeted practice can be planned

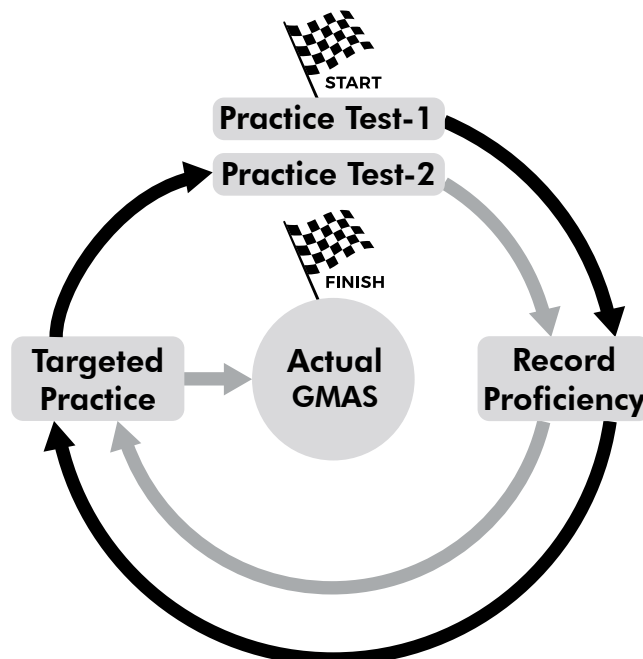## Lumos Smart Test Prep Methodology

Figure 1

Table of Contents

Chapter 1

Lumos Smart Test Prep Methodology

Use the URL and access code provided below or scan the QR code to access the first GMAS practice test to get started. The online GMAS practice test mirrors the actual Smarter Balanced assessments in number of questions, item types, test duration, test tools and more.

After completing the test, your student will receive immediate feedback with detailed reports on standards mastery. With this report, use the next section of the book to design a practice plan for your student.

URL
Visit the URL below and place the book access code **http://www.lumoslearning.com/a/tedbooks** **Access Code: xxxxxxx-xxxxxxx**
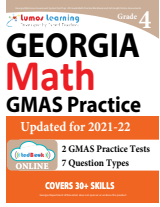
Step 2: Review the Personalized Study Plan Online

After student complete the online Practice Test 1, student can access their individualized study plan from the table of contents (Figure 2).

Parents and Teachers can also review the study plan through their Lumos account.

Lumos StepUp GMAS Online Practice and Assessments Grade 4 Math

HOMEWORK

Lesson Name		Total Questions	Total Points	Incorrect	Student Score	% Score	Pending
PT1 Practice Test 1	Study Plan	4	4	3	1	25%	0
CAT 1		4	4	3	1	25%	
PT 1							

BACK COURSE   **Lumos Smart Test Practice: Personalized Study Plan for Sam**

Lumos StepUp - GMAS Online Practice and Assessments - Grade 4 Math

Based on your performance in the online Practice Test 1, we recommend the following additional practice.
Please uses the related lessons in the Grade 4 GMAS Math practice book you purchased.

Upgrade to Full Program

50   90

EXPORT AS EXCEL

Lesson Name	Standard Info	☐ Targeted practice status	Percentage Score	
Operations and Algebraic Thinking				
Number Sentences	4.OA.A.1	☐	0%	●
Real World Problems	4.OA.A.2	☐	0%	●
Multi-Step Problems	4.OA.A.3	☐	0%	●

Step 3: Complete Targeted Practice

Using the information provided in the study plan report, complete the targeted practice using the appropriate lessons to overcome proficiency gaps. With lesson names included in the study plan, find the appropriate topics in this workbook and answer the questions provided. Students can refer to the answer key and detailed answers provided for each lesson to gain further understanding of the learning objective. Marking the completed lessons in the study plan after each practice session is recommended.(See Figure 3)

BACK COURSE	Lumos Smart Test Practice: Personalized Study Plan for Sam	

Lumos StepUp - GMAS Online Practice and Assessments - Grade 4 Math

Based on your performance in the online Practice Test 1, we recommend the following additional practice.
Please uses the related lessons in the Grade 4 GMAS Math practice book you purchased.

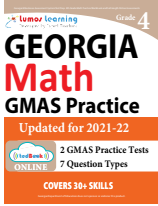**Upgrade to Full Program**

50   90

X
EXPORT AS EXCEL

Lesson Name	Standard Info	☐ Targeted practice status	Percentage Score
Operations and Algebraic Thinking			
Number Sentences	4.OA.A.1	☑	0% ●
Real World Problems	4.OA.A.2	☑	0% ●
Multi-Step Problems	4.OA.A.3	☐	0% ●

Figure 3

Step 4: Access the Practice Test 2 Online

After completing the targeted practice in this workbook, students should attempt the second GMAS practice test online. Using the student login name and password, login to the Lumos website to complete the second practice test.

Step 5: Repeat Targeted Practice

Repeat the targeted practice as per Step 3 using the second study plan report for Practice test 2 after completion of the second GMAS rehearsal.

Visit http://www.lumoslearning.com/a/lstp for more information on Lumos Smart Test Prep Methodology or Scan the QR Code

Chapter 2:
Operations and Algebraic Thinking

Lesson 1: Number Sentences

You can scan the QR code given below or use the url to access additional EdSearch resources including videos and mobile apps related to *Number Sentences*.

Categories

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Comparing with multiplication

Resource: Khan Academy
Standard: 4.OA.A.1
Grade: 4
Subject: Math

Topic   Standard

ed Search   *Number Sentences*

URL	QR Code
http://www.lumoslearning.com/a/4oaa1	

1. Andrew is twice as old as his brother, Josh. Which equation could be used to figure out Andrew's age if Josh's age, n, is unknown?

   Ⓐ a = n + 2
   Ⓑ a = n ÷ 2
   Ⓒ n = a + 2
   Ⓓ a = 2 x n

2. Mandy bought 28 marbles. She wants to give the same number of marbles to each of her four friends. What equation or number sentence would she use to find the number of marbles each friend will get?

   Ⓐ 28 - 4 = n
   Ⓑ 28 ÷ 4 = n
   Ⓒ 28 + 4 = n
   Ⓓ 28 - 4 = n

3. What number does n represent?
   3 + 6 + n = 22

   Ⓐ n = 9
   Ⓑ n = 13
   Ⓒ n = 18
   Ⓓ n = 31

4. Cindy's mother baked cookies for the school bake sale. Monday she baked 4 dozen cookies. Tuesday she baked 3 dozen cookies. Wednesday she baked 4 dozen cookies. After she finished baking Thursday afternoon, she took 15 dozen cookies to the bake sale. Which equation shows how to determine the number of cookies that she baked on Thursday?

   Ⓐ 4 + 3 + 4 + n = 15
   Ⓑ 4 + 3 + 4 = n
   Ⓒ 4 x 3 x 4 x n = 15
   Ⓓ 15 ÷ 11 = n

5. There are 9 students in Mrs. Whitten's class. She gave each student the same number of popsicle sticks. There were 47 popsicle sticks in her bag. To decide how many sticks each student received, Larry wrote the following number sentence: 47 ÷ 9 = n. How many popsicle sticks were left in the bag after dividing them evenly among the 9 students?

   Ⓐ 0
   Ⓑ 2
   Ⓒ 3
   Ⓓ 4

6. Sixty-three students visited the science exhibit. The remainder of the visitors were adults. One hundred forty-seven people visited the science exhibit in all. How would you determine how many of the visitors were adults?

Ⓐ 63 + 147 = n
Ⓑ 147 ÷ 63 = n
Ⓒ 147 ÷ n = 63
Ⓓ 63 + n = 147

7. Donald bought a rope that was 89 feet long. To divide his rope into 11 foot long sections, he solved the following problem: 89 ÷ 11 = n. How many feet of rope was left over?

Ⓐ 0 feet
Ⓑ 1 foot
Ⓒ 2 feet
Ⓓ 3 feet

8. If 976 - n = 325 is true, which of the following equations is NOT true?

Ⓐ 976 + 325 = n
Ⓑ 976 - 325 = n
Ⓒ n + 325 = 976
Ⓓ 325 + n = 976

9. Mary has $54. Jack has n times as much money as Mary does. The total amount of money Jack has is $486. What is n?

Ⓐ 19
Ⓑ 29
Ⓒ 9
Ⓓ None of these

10. Mrs. Williams went to Toys R' US to purchase the following items for each of her 3 children: one bicycle for $150, one bicycle helmet for $8, one arts and crafts set for $34 and one box of washable markers for $2 for each child. What is the total amount she spent before taxes?

Ⓐ $194.00
Ⓑ $582.00
Ⓒ $572.00
Ⓓ $482.00

11. Write an equation to show how many crayons are below.
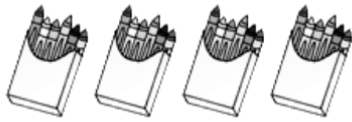
___ × ___ = ___ crayons

12. Alice has 5 bags with 8 pens in each. Which of the following choices represent a number sentence for this situation. Note that more than one option may be correct. Select all the correct answers.

Ⓐ 8 + 8 + 8 + 8 + 8 = 40
Ⓑ 5 x 8 = 40
Ⓒ 5 + 8 = 13
Ⓓ 8 x 8 = 64

13. Create an equation from the following situation: Tim had a box of chocolates. He started with 18 chocolates, but then gave 6 to his friends. How many does he have left?

14. John draws a regular hexagon. Each side measures 12 centimeters. He also draws a rhombus. The perimeter of the hexagon and the rhombus are the same. How much does each side of the rhombus measure? Shade the cells to indicate the correct answer. Note : Each shaded cell is equivalent to 2 cms.

15. Jose purchased 4 books and 8 pens. Each book costs $3, and each pen costs $5. If he gave $100 to the shopkeeper, how much change did he receive back? Circle the correct answer.

Ⓐ $52
Ⓑ $48
Ⓒ $62
Ⓓ $38

Chapter 2:

Operations and Algebraic Thinking

Answer Key
&
Detailed Explanations

Lesson 1: Number Sentences

Question No.	Answer	Detailed Explanation
1	D	It requires multiplication to find out the amount for twice as many. The symbol for multiplication is x. If **n** represents Josh's age, then **a** represents Andrew's age.
2	B	Mandy is making 4 equal groups out of 28. Therefore, 28 divided by 4 equal the number of marbles each friend receives.
3	B	To find n, we need to get it alone by subtracting the other numbers. This is an equation that needs to stay balanced, so what is done on one side of the = sign must be done on the other side. If we subtract 9 (6+3) from both sides, we have n = 13.
4	A	It is known that Cindy's mother baked 4 + 3 + 4 dozens of cookies plus an unknown number (n). The correct equation adds the amount baked Monday through Wednesday and adds the unknown (n).
5	B	47 divided by 9 = 5 with a remainder of 2.
6	D	There is a difference between the number of visitors to the science exhibit and the number of adult visitors. Subtract 63 from 147 to find n. The inverse equation is the correct answer: 63 + n = 147
7	B	89 divided by 11 is 8 with a remainder of 1. The remainder is the number of feet left over.
8	A	Adding 976 and 325 is the opposite of what the problem is stating: what number **subtracted** from 976 = 325.
9	C	Divide 486 by 54. 486 ÷ 54 = 9. Jack has 9 times as much money as Mary does.
10	B	For each child, Mrs. Williams spent $150 + 8 + 34 + 2 = $194.00. However, the beginning of the problem states she is shopping for all three of her children so you will need to determine her full total. For three children, she would spend a total of $194.00 x 3 = $582.00.
11	4x6=24	Since there are 4 boxes, with 6 crayons in each box, to find the total number of crayons, multiply 4 and 6 together, which equals 24.
12	A & B	Each of the 5 bags have 8 pens, so we can either multiply 5 x 8 or add 8 together 5 times (8 + 8 + 8 + 8 + 8) because multiplication is repeated addition.

Question No.	Answer	Detailed Explanation
13	18 - 6 = 12	Let the number of chocolates Tim had be N He gave 6 to his friends. Hence, the balance will be N - 6 So, the number of chocolates left with him will be 18 - 6 = 12
14	18cm	Total No. of Rows x Columns:2 x 6 Cells to be highlighted:9 A regular hexagon has six equal sides. Therefore, perimeter of the hexagon = 6 x 12 = 72 cm. A rhombus has four equal sides. Let the length of each side be s. perimeter of the rhombus = 4 x s = perimeter of the hexagon = 72 cm 4 x s = 72; s = 72 ÷ 4 = 18 cm.
15	B	This is a two-step problem. First, we calculate the total cost of 4 books and 8 pens; Total cost = (4 x 3) + (8 x 5) = 12 + 40 = $52. Next, we subtract the total cost from the amount Jose gave to the shopkeeper to calculate the change he receives back; 100 - 52 = $48.

Chapter 3:
Number & Operations in Base Ten

Lesson 1: Place Value

You can scan the QR code given below or use the url to access additional EdSearch resources including videos and mobile apps related to *Place Value*.

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Dividing whole numbers by 10

Resource: Khan Academy
Standard: 4.NBT.A.1
Grade: 4
Subject: Math

Topic   Standard

ed Search   *Place Value*

URL	QR Code
http://www.lumoslearning.com/a/4nbta1	

1. **What number can be found in the ten-thousands digit of 291,807?**

     Ⓐ 9
     Ⓑ 1
     Ⓒ 2
     Ⓓ 0

2. **Consider the number 890,260.**
    The 8 is found in the _____ place.

     Ⓐ ten-thousands
     Ⓑ millions
     Ⓒ thousands
     Ⓓ hundred-thousands

Place Value Chart

Hundred-billions	Ten-billions	Billions	Hundred-millions	Ten-millions	Millions	Hundred-thousands	Ten-thousands	Thousands	Hundreds	Tens	Ones

3. **What number correctly completes this statement?**
    9 ten thousands = _____ thousands

     Ⓐ 90
     Ⓑ 900
     Ⓒ 9
     Ⓓ 19

4. **Which number is in the thousands place in the number 984,923?**

    (A) 9
    (B) 8
    (C) 4
    (D) 2

5. **What is the value of the 8 in 683,345?**

    (A) 80
    (B) 800
    (C) 8,000
    (D) 80,000

6. **Which number equals 4 thousands, 6 hundreds, 0 tens, and 5 ones?**

    (A) 465
    (B) 4,605
    (C) 4,650
    (D) 4,065

7. **What number is in the tens place in 156.25?**

    (A) 1
    (B) 5
    (C) 6
    (D) 2

8. **Which number equals 2 ten thousands, 1 hundred thousand, and 3 ones**

    (A) 120,003
    (B) 210,003
    (C) 102,003
    (D) 213,000

9. **Which answer shows the value of each 7 in this number: 7,777?**

    (A) 7,000, 700, 70, 7
    (B) 7 x 7 x 7 x 7
    (C) 700,000, 70,000, 700, 70
    (D) 7 + 7 + 7 + 7

10. Mrs. Winters went to the bank with eight 100 dollar bills. She wanted to replace them with all 10 dollar bills. How many 10 dollar bills will the bank give her in exchange?

Ⓐ 800 ten dollar bills
Ⓑ 8,000 ten dollar bills
Ⓒ 8 ten dollar bills
Ⓓ 80 ten dollar bills

11. Select the correct value for each number

	5	50	500
How many hundreds are in 500?	○	○	○
How many tens are in 500?	○	○	○
How many ones are in 500?	○	○	○

12. Select the correct value for each number

	9	90	900
How many hundreds are in 900?	○	○	○
How many tens are in 900?	○	○	○
How many ones are in 900?	○	○	○

13. Which number equals 8 millions, 5 tens? Circle the correct answer

Ⓐ   800,050
Ⓑ   8,000,500
Ⓒ   8,000,005
Ⓓ   8,000,050

14. John has $500. Karen has 10 times as much money. How much money does Karen have? Write your answer in the box below

Chapter 3:

Number and Operations in Base Ten

Answer Key
&
Detailed Explanations

Lesson 1: Place Value

Question No.	Answer	Detailed Explanation
1	A	Place values are read from right to left, beginning with the "ones" place, "tens", "hundreds", "thousands", "ten thousands", "hundred thousands", "millions", etc. If you were to write the number in the boxes below, you see the 9 is in the ten-thousand column.

Place Value Chart

Hundred-billions	Ten-billions	Billions	Hundred-millions	Ten-millions	Millions	Hundred-thousands	Ten-thousands	Thousands	Hundreds	Tens	Ones

Question No.	Answer	Detailed Explanation
2	D	Begin naming the place values for each number from the right. Number 9 is in the ten thousands place. Place values increase by multiplying 10: 1 ten is 10, 10 tens is a hundred, 10 hundreds is a thousand, etc.
3	A	Multiply 9 x 10,000 to find 90,000.
4	C	Number 3 is in the "ones" place. Number 2 is in the "tens" place. Number 9 is the "hundreds" place. The "thousands" place is next.
5	D	The 8 is in the ten thousands place, which is 8 x 10,000.
6	B	Write the 4 in the thousands place, the 6 in the hundreds place, the 0 in the tens place and the 5 in the ones place.
7	B	Numbers to the right of the decimal point begin with the value of tenths, hundredths, etc. Numbers to the left of the decimal place are the ones, tens, hundreds, etc.

one millions hundred thousands ten thousands one thousands hundreds tens ones tenths hundredths thousandths ten thousandths hundred thousandths millionths

9 , 6 0 5 , 8 7 2 . 1 4 5 6 7 8

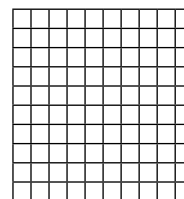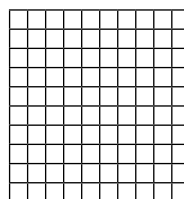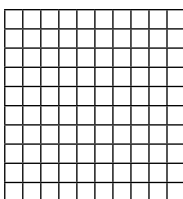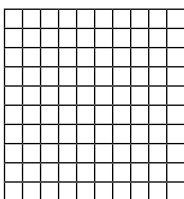| Question No.	Answer	Detailed Explanation
8	A	Though not stated as such in the problem, the digit in the hundred thousands place is written first. The 2 ten thousands is written next: 2 ten thousands is 2 x 10,000. The next place that has any value is the ones place, which has 3. The thousands and hundreds place have no value, so zeros are placed there.
9	A	Write the numbers in expanded notation, which shows the entire value of the number written out. 7 in the thousands place is written as 7,000. 7 in the hundreds place is written as 700. 7 in the tens place is written as 70. 7 in the ones place is written as 7.
10	D	There are ten 10 dollar bills in $100. Therefore, there are 80 ten-dollar bills in $800.

11

	5	50	500
How many hundreds are in 500?	◯		
How many tens are in 500?		◯	
How many ones are in 500?			◯
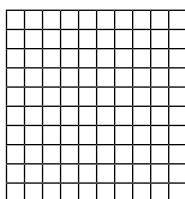
Question No.	Answer	Detailed Explanation

12

	9	90	900
How many hundreds are in 900?	○		
How many tens are in 900?		○	
How many ones are in 900?			○
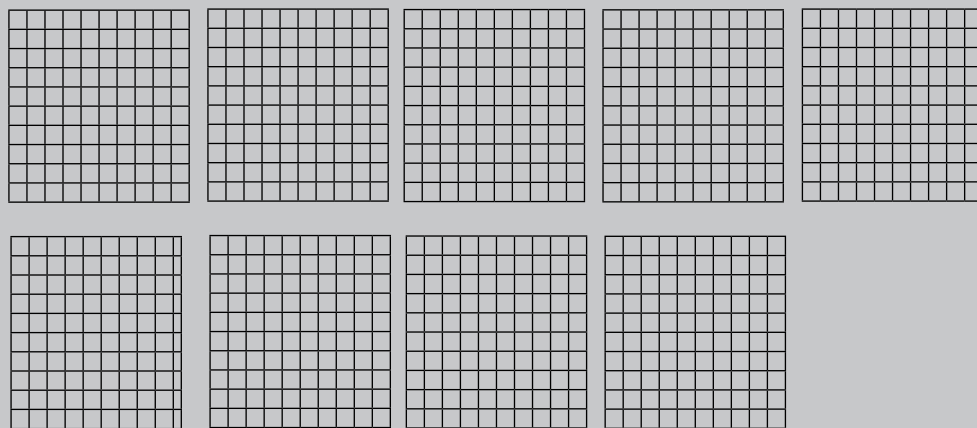
13   A   Place values are read from right to left, beginning with the "ones" place, "tens", "hundreds", "thousands", "ten thousands", "hundred thousands", "millions" etc

Place Value Chart

Hundred-billions	Ten-billions	Billions	Hundred-millions	Ten-millions	Millions	Hundred-thousands	Ten-thousands	Thousands	Hundreds	Tens	Ones

14 $5000   Karen has 10 times as much money. It means we have to multiply the money John has by 10; 500 x 10 = $5,000.

Chapter 4:
Number & Operations - Fractions

Lesson 1: Equivalent Fractions

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Equivalent fractions

Resource: Videos

Important: if you multiply a fraction's numerator and the denominator by the same number, you'll end up with an equivalent fraction. Got it? Maybe? No problem, we'll help!...

ed Search   *Equivalent Fractions*

URL	QR Code
http://www.lumoslearning.com/a/4nfa1	

1. **What fraction of these shapes are squares?**

   □ □ ○ ● ▲
   △ △ ● ■ □

   Ⓐ $\frac{1}{4}$

   Ⓑ $\frac{4}{6}$

   Ⓒ $\frac{4}{10}$

   Ⓓ $\frac{1}{3}$

2. **What fraction of these shapes are not circles?**

   □ □ ○ ● ▲
   △ △ ● ■ □

   Ⓐ $\frac{3}{7}$

   Ⓑ $\frac{8}{10}$

   Ⓒ $\frac{7}{10}$

   Ⓓ $\frac{1}{3}$

3. **What fraction of the squares are shaded?**

   □ □ ○ ● ▲
   △ △ ● ■ □

   Ⓐ $\frac{1}{4}$

   Ⓑ $\frac{1}{10}$

   Ⓒ $\frac{1}{3}$
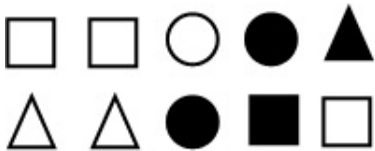
   Ⓓ $\frac{3}{4}$

4. What fraction of the shaded shapes are circles?

   □ □ ○ ● ▲
   △ △ ● ■ □

   Ⓐ $\frac{2}{10}$

   Ⓑ $\frac{1}{3}$

   Ⓒ $\frac{2}{2}$
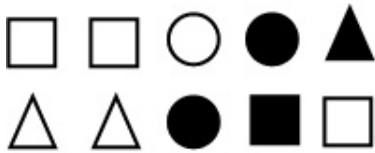
   Ⓓ $\frac{2}{4}$

5. Continue the pattern of equivalent fractions:
   $\frac{1}{2}, \frac{2}{4}, \frac{3}{6}, \frac{4}{8} \cdots$
   What fraction would come next in the pattern?

   Ⓐ $\frac{1}{3}$

   Ⓑ $\frac{1}{16}$

   Ⓒ $\frac{5}{10}$

   Ⓓ $\frac{3}{4}$

6. Which pair of addends have the fraction $\frac{11}{12}$ as a sum?

   Ⓐ $\frac{9}{6} + \frac{2}{6}$

   Ⓑ $\frac{7}{12} + \frac{4}{12}$

   Ⓒ $\frac{9}{12} + \frac{1}{12}$

   Ⓓ $\frac{11}{12} + \frac{1}{1}$

7. Which fraction is equivalent to this model?

   Ⓐ $\frac{1}{5}$

   Ⓑ $\frac{3}{7}$

   Ⓒ $\frac{2}{7}$

   Ⓓ $\frac{4}{16}$
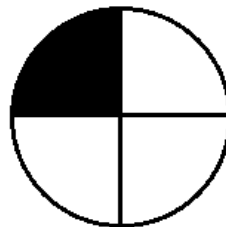
8. **Which fraction is equivalent to 8/18?**

    Ⓐ $\frac{1}{5}$

    Ⓑ $\frac{3}{7}$

    Ⓒ $\frac{2}{7}$

    Ⓓ $\frac{4}{9}$

9. **Continue the pattern of equivalent fractions:**
    $$\frac{5}{6}, \frac{10}{12}, \frac{15}{18} \cdots$$
    What fraction would come next in the pattern?

    Ⓐ $\frac{7}{14}$

    Ⓑ $\frac{20}{24}$

    Ⓒ $\frac{9}{45}$

    Ⓓ $\frac{12}{36}$

10. **Reduce the fraction $\frac{21}{49}$ to its lowest terms:**

    Ⓐ $\frac{1}{5}$

    Ⓑ $\frac{3}{7}$

    Ⓒ $\frac{2}{7}$

    Ⓓ $\frac{4}{9}$

11. **Reduce the fraction $\frac{44}{99}$ to its lowest terms:**

    Ⓐ $\frac{1}{5}$

    Ⓑ $\frac{3}{7}$

    Ⓒ $\frac{2}{7}$

    Ⓓ $\frac{4}{9}$

12. Patrick climbed $\frac{4}{5}$ of the way up the trunk of a tree. Jacob climbed $\frac{80}{100}$ of the way up the same tree. To accomplish the same distance as Patrick and Jacob, how far up that tree trunk will Devon have to climb?

Ⓐ $\frac{15}{20}$

Ⓑ $\frac{60}{75}$

Ⓒ $\frac{100}{200}$

Ⓓ $\frac{28}{42}$

13. The cheerleaders ate $\frac{9}{18}$ of a sheet cake. Write this fraction in lowest terms.

Ⓐ $\frac{1}{9}$

Ⓑ $\frac{1}{2}$

Ⓒ $\frac{2}{3}$

Ⓓ $\frac{3}{6}$

14. Which group of fractions can all be reduced to $\frac{2}{9}$?

Ⓐ $\frac{23}{27}, \frac{4}{36}, \frac{30}{270}$

Ⓑ $\frac{25}{50}, \frac{30}{60}, \frac{50}{100}$

Ⓒ $\frac{4}{18}, \frac{6}{27}, \frac{50}{225}$

Ⓓ $\frac{6}{21}, \frac{20}{70}, \frac{36}{84}$

15. What do these fractions have in common?
$\frac{10}{16}, \frac{15}{24}, \frac{20}{32}, \frac{25}{40}, \frac{30}{48}$

Ⓐ These fractions are equivalent to $\frac{5}{9}$.

Ⓑ These fractions are equivalent to $\frac{5}{8}$

Ⓒ These fractions are equivalent to $\frac{10}{12}$.

Ⓓ These fractions are equivalent to $\frac{4}{8}$.

16. Select whether the fraction pair is equivalent or not equivalent.

	Equivalent	Not Equivalent
$\frac{12}{15}$ and $\frac{3}{5}$	◯	◯
$\frac{18}{24}$ and $\frac{9}{12}$	◯	◯
$\frac{18}{200}$ and $\frac{9}{100}$	◯	◯
$\frac{3}{15}$ and $\frac{3}{25}$	◯	◯

17. Write the simplest form of $\frac{120}{150}$. Write the answer in the box given below.

18. Circle on all of the fractions that can be simplified to $\frac{1}{2}$

Ⓐ $\frac{24}{26}$

Ⓑ $\frac{2}{4}$

Ⓒ $\frac{5}{11}$

Ⓓ $\frac{35}{70}$

Ⓔ $\frac{9}{20}$

Ⓕ $\frac{7}{14}$

19. Which group of fractions are equivalent to $\frac{4}{12}$? Select all the correct answers.

Ⓐ $\frac{1}{3}$, $\frac{2}{5}$, $\frac{3}{9}$

Ⓑ $\frac{1}{3}$, $\frac{2}{6}$, $\frac{3}{9}$

Ⓒ $\frac{1}{3}$, $\frac{2}{5}$, $\frac{5}{20}$

Ⓓ $\frac{6}{18}$, $\frac{12}{36}$, $\frac{15}{45}$

Chapter 4:

Number & Operations - Fractions

Answer Key
&
Detailed Explanations

Lesson 1: Equivalent Fractions

Question No.	Answer	Detailed Explanation
1	C	The denominator (bottom number) is the total number of items presented. The numerator (top number) is the number of identified items.
2	C	There are three different shapes represented. This question is asking for the number of squares and triangles. That number of shapes that are not circles is the numerator and the total number of shapes is the denominator.
3	A	The fraction should only pertain to the number of squares: the number of shaded squares is the numerator and the total number of squares is the denominator.
4	D	The number of shaded circles is the numerator and the total number of shaded shapes is the denominator.
5	C	All of these fractions represent $\frac{1}{2}$. The numerators are 1 part out of 2 parts: 4 is two parts of 2. 6 is two parts of 3.
6	B	The correct answer would be fractions which have numerators with a sum of 11 and denominators that are both 12.
7	D	The model represents 1 part of something that is divided into 4 equal pieces. An equivalent fraction would also be $\frac{1}{4}$ of a total number of parts.
8	D	Draw a model of $\frac{8}{18}$. Choose the fraction that has the same portion sizes as $\frac{8}{18}$.
9	B	Each equivalent fraction represents 5 parts out of 6. When we multiply both numerators and denominators by a common factor, the new fraction will be equivalent to $\frac{5}{6}$. For eg. $\frac{5 \times 2}{6 \times 2} = \frac{10}{12}$ is equivalent to $\frac{5}{6}$. So, among the options, we see that option (B) $= \frac{20}{24}$ is correct. Because $\frac{20}{24}$ reduces to $\frac{5}{6}$, when the common factor is canceled. $\frac{20}{24} = \frac{5 \times 4}{6 \times 4} = \frac{5}{6}$.
10	B	Find the GCF. This is the largest number that both the numerator and denominator can be divided by. The quotients are the numerator and denominator reduced to its lowest terms: for example, $\frac{15}{20}$ is reduced to $\frac{3}{4}$ because 15 is divided by 5 (GCF) 3 times and 20, 4 times. Five is the largest number that 15 and 20 can be divided by evenly. In our problem, $\frac{21}{49}$ can be reduced to $\frac{3}{7}$, because 21 is divided by 7 (GCF) 3 times and 49, 7 times.

Question No.	Answer	Detailed Explanation
11	D	Find the GCF, which is the largest factor that both the numerator and denominator can be divided by.
12	B	The correct fraction can be reduced to its lowest terms of $\frac{4}{5}$: Find the Greatest Common Factor (GCF), which is a number that the numerator and denominator can be divided by: 80 divided by 20 = 4 and 100 divided by 20 = 5. In this case, the GCF is 20. The number of times the numerator and denominator divides evenly into the GCF ($\frac{4}{5}$) is the lowest terms. $\frac{60}{75}$ also reduces to $\frac{4}{5}$ when reduced to lowest terms. (GCF = 15)
13	B	Reduce the fraction to its lowest terms by dividing the numerator and denominator by the GCF (9).
14	C	Use the GCF of the numerator and denominator of each fraction to determine if it is equivalent to $\frac{2}{9}$.
15	B	These fractions all reduce to $\frac{5}{8}$ in their lowest terms.

16

	Equivalent	Not Equivalent
$\frac{12}{15}$ and $\frac{3}{5}$		⊙
$\frac{18}{24}$ and $\frac{9}{12}$	⊙	
$\frac{18}{200}$ and $\frac{9}{100}$	⊙	
$\frac{3}{15}$ and $\frac{3}{25}$		⊙

To find if the fractions are equivalent, change both of them into their simplest form. If the simplest form is the same, they are equivalent fractions. For example, 18/24 and 9/12 can be reduced to 3/4. So 18/24 and 9/12 are equivalent fractions. If the simplest forms are not the same, then the fractions are not equivalent. For example, 12 /15 reduces to 4/5. So, 12/15 and 3/5 are not equivalent.

| 17 | 4/5 | 30 is the GCF of 120 and 150. When the GCF is taken out from both the numerator and denominator, 120/150 reduces to 4/5. |

Question No.	Answer	Detailed Explanation
18	B,D,F	Divide out common terms as much as you can. Once you cannot simplify anymore, see which fractions are equivalent to $\frac{1}{2}$. $\frac{2}{4} = \frac{^2/_2}{^4/_2} = \frac{1}{2}$ $\frac{35}{70} = \frac{^{35}/_{35}}{^{70}/_{35}} = \frac{1}{2}$ $\frac{7}{14} = \frac{^7/_7}{^{14}/_7} = \frac{1}{2}$ Therefore, $\frac{2}{4}$, $\frac{35}{70}$ and $\frac{7}{14}$ are equivalent to $\frac{1}{2}$
19	B & D	$\frac{1}{3} = \frac{1 \times 2}{3 \times 2} = \frac{2}{6}$; $\frac{1}{3} = \frac{1 \times 3}{3 \times 3} = \frac{3}{9}$; Therefore, option (B) is correct. $\frac{1}{3} = \frac{1 \times 6}{3 \times 6} = \frac{6}{18}$; $\frac{1}{3} = \frac{1 \times 12}{3 \times 12} = \frac{12}{36}$; $\frac{1}{3} = \frac{1 \times 15}{3 \times 15} = \frac{15}{45}$ Therefore, option (D) is correct.

Progress Chart

Standard	Lesson	Page No.	Practice		Mastered	Re-practice /Reteach
CCSS			Date	Score		
4.OA.A.1	Number Sentences	10				
4.OA.A.2	Real World Problems	14				
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4.OA.B.4	Number Theory	22				
4.OA.B.5	Patterns	27				
4.NBT.A.1	Place Value	46				
4.NBT.A.2	Compare Numbers and Expanded Notation	50				
4.NBT.A.3	Rounding Numbers	54				
4.NBT.B.4	Addition & Subtraction	58				
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4.NF.A.1	Equivalent Fractions	87				
4.NF.A.2	Compare Fractions	93				
4.NF.B.3.A	Adding & Subtracting Fractions	99				
4.NF.B.3.B	Adding and Subtracting Fractions Through Decompositions	103				
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4.NF.B.4.A	Multiplying Fractions	113				
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CCSS			Date	Score		
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4.MD.C.6	Measuring and Sketching Angles	209				
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4.G.A.1	Points, Lines, Rays and Segments	233				
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