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| **Grade 5 Module 2: Multi-Digit Whole Number and Decimal Fraction Operations** | | | | |
| **Topic A: Prime and Composite Numbers** | | | |  |
| **Lesson 1** | Divide Using the Area Model **(4.4E, 4.4F)** | Find the Unknown Factor **(3.5D)** | Mental Multiplication **(4.4C, 4.4D)** |  |
| **Lesson 2** | Use Arrays to find Factors **(4.4D)** | Multiply Two Factors **(4.4D)** | Prime or Composite **(5.4A)** |  |
| **Lesson 3** | Group Counting **(3.4E)** | Prime or Composite **(5.4A)** | Test for Factors **(5.4A)** |  |
| **Lesson 4** | Test for Factors **(5.4A)** | Multiples are Infinite **(4.2A, 4.4B)** | Prime or Composite **(5.4A)** |  |
| **Topic B: Mental Strategies for Multi-Digit Whole Number Multiplication** | | | | |
| **Lesson 5** | Multiply by 10, 100 and 1000 **(5.2A)** | Place Value **(4.2A, 4.2B, 5l.2A)** | Round to Different Place Values **(4.2D)** |  |
| **Lesson 6** | Sprint: Multiply by 10, 100 and 1000 **(5.2A)** | Round to Different Place Values **(4.2D)** | Multiply by Multiples of 10 **(5.3B)** |  |
| **Topic C: The Standard Algorithm for Multi-Digit Whole Number Multiplication** | | | | |
| **Lesson 7** | Multiply by Multiples of 10 **(5.2A)** | Estimate Products **(5.3A)** | Decompose a Factor: The Distributive Property **(5.4A)** |  |
| **Lesson 8** | Estimate Products **(5.3A)** | Decompose Multiplication Sentences **(3.5D)** | Write the Value of the Expression **(5.4F)** |  |
| **Lesson 9** | Estimate Products (5.3A) | Multiply Mentally **(5.3B)** | Multiply by Multiples of 100 **(5.2A)** |  |
| **Lesson 10** | Multiply Mentally **(5.3B)** | Multiply by Multiples of 100 **(5.2A)** | Multiply Using the Area Model **(5.3B, 5.4B)** |  |
| **Lesson 11** | Sprint: Multiply by Multiples of 10 and 100 **(5.2A)** | Multiply Using the Area Model **(5.3B, 5.4B)** |  |  |
| **Lesson 12** | Multiply Using the Area Model with a Zero in One Factor **(5.3B, 5.4B)** |  |  |  |
| **Lesson 13** | Multiply the Divide by Multiples of 10 **(5.2A)** | Estimate Products by Rounding **(5.3A, 5.3B, 5.4B)** |  |  |
| **Topic D: Decimal Multi-Digit Multiplication** | | | | |
| **Lesson 14** | Multiply the Divide the Same Number **(4.2A)** | Decompose Decimals **(5.2A)** |  |  |
| **Lesson 15** | Sprint: Multiply Decimals **(5.3E)** | Multiply then Divide by the Same Number **(4.2A)** |  |  |
| **Lesson 16** | Unit Conversions **(5.7)** | State the Decimal **(5.2A)** |  |  |
| **Topic E: Measurement Word Problems with Whole Number and Decimal Multiplication** | | | | |
| **Lesson 17** | Multiply by 0.1, 0.01, 0.001 **(5.2A)** | Multiply Using the Area Model **(5.3D)** | Unit Conversions **(5.7)** |  |
| **Lesson 18** | Divide by Multiples of 10 **(4.2A)** | Unit Conversions **(5.7)** | Prime or Composite **(5.4A)** |  |
| **Lesson 19** | Sprint: Convert Inches to Feet and Inches **(5.7)** | Divide by Multiples of 10 and 100 **(5.3C)** |  |  |
| **Topic F: Mental Strategies for Multi-Digit Whole Number Division** | | | | |
| **Lesson 20** | Sprint: Divide by Multiples of 10 and 100 **(4.2A)** | Round to the Nearest Ten **(4.2D)** | Group Count by Multiples of 10 **(4.2A)** |  |
| **Lesson 21** | Group Count by Multiples of 10 **(4.2A)** | Round to the Nearest Ten **(4.2D)** | Divide by Multiples of 10, 100, and 1,000 (5.3A, 5.3C) |  |
| **Lesson 22** | Group Count by Multiples of 10 **(4.2A)** | Divide by Multiples of 10, 100, and 1,000 **(5.3A, 5.3C)** | Estimate and Divide **(5.3A, 5.3C)** |  |
| **Topic G: Partial Quotients and Multi-Digit Whole Number Division** | | | | |
| **Lesson 23** | Estimate and Divide **(5.3A, 5.3C)** | Group Count by Multiples of 10 **(4.2A)** | Group Count by Multi-Digit Numbers **(4.2D)** |  |
| **Lesson 24** | Group Count by Multi-Digit Numbers **(4.2D)** | Estimate and Divide **(5.3A, 5.3C)** | Divide by Multiples of Ten with Remainder **(5.3C)** |  |
| **Lesson 25** | Group Count by Multi-Digit Numbers **(4.2D)** | Divide by Two-Digit Numbers **(5.3A, 5.3C)** |  |  |
| **Lesson 26** | Divide Decimals **(5.3A, 5.3F)** | Group Count by Multi-Digit Numbers **(4.2D)** | Divide by Two- Digit Numbers **(5.3A, 5.3C)** |  |
| **Lesson 27** | Divide Decimals **(5.3F, 5.3G)** | Rename Tenths and Hundredths **(5.2A)** | Divide by Two-Digit Numbers **(5.3A, 5.3C)** |  |
| **Topic H: Partial Quotients and Multi-Digit Decimal Division** | | | | |
| **Lesson 28** | Rename Tenths and Hundredths **(5.2A)** | Divide Decimals **(5.3F, 5.3G)** | Divide by Two-Digit Numbers **(5.3A, 5.3C)** |  |
| **Lesson 29** | Rename Tenths and Hundredths **(5.2A)** | Divide Decimals by 10 **(5.3F, 5.3G)** | Divide Decimals by Multiples of 10 **(5.3F, 5.3G)** |  |
| **Lesson 30** | Rename Tenths and Hundredths **(5.2A)** | Divide Decimals by Multiples of 10 **(5.3F, 5.3G)** | Estimate the Quotient **(5.3A)** |  |
| **Lesson 31** | Divide Decimals by Multiples of 10 **(5.3F, 5.3G)** | Unit Conversions **(5.7)** | Divide by Two-Digit Numbers **(5.3A, 5.3C)** |  |
| **Topic I: Measurement Word Problems with Multi-Digit Division** | | | | |
| **Lesson 32** | Sprint: Divide Decimals by Multiples of 10 **(5.3F, 5.3G)** | Unit Conversions **(5.7)** |  |  |
| **Lesson 33** | Unit Conversions **(5.7)** | Divide Decimals by Two-Digit Numbers **(5.3F, 5.3G)** |  |  |

**Grade 5 Module 2**

**Lesson 1**

Fluency Practice (12 minutes)

⬛ Divide Using the Area Model 4.4E, 4.4F (4 minutes)

⬛ Find the Unknown Factor 3.5D (5 minutes)

⬛ Mental Multiplication 4.4C, 4.4D (3 minutes)

**Divide Using the Area Model (4 minutes)**

Materials: (S) Personal white board

Note: This fluency activity reviews content from Grade 4

in preparation for today’s lesson.

Diagram

Description automatically generated

T: (Project an area model that shows 68 ÷ 2.) Write a

division expression for this area model.

S: (Write 68 ÷ 2.)

T: Label the length of each rectangle in the area model.

S: (Write 30 above the 60 and 4 above the 8.)

T: Solve using the standard algorithm or the distributive

property with a number bond.

Continue with the following possible sequence: 96 ÷ 3, 72 ÷ 3, and 72 ÷ 4.Text

Description automatically generated

**Lesson 2**

Fluency Practice (12 minutes)

⬛ Use Arrays to Find Factors 4.4D (6 minutes)

⬛ Multiply Two Factors 4.4D (4 minutes)

⬛ Prime or Composite? 5.4A (2 minutes)

**Use Arrays to Find Factors (6 minutes)**

Materials: (S) Personal white board

Note: This fluency activity reviews Lesson 1’s content. To challenge students, have them construct the

arrays instead of having them projected.

T: (Project a 1 Å~ 8 array.) What is the width of the array?

S: 1 unit.

T: (Write 1.) What’s the length of the array?

S: 8 units.

T: (Write 8.) Write the multiplication sentence.

S: (Write 1 Å~ 8 = 8.)

Chart, box and whisker chart

Description automatically generated

Repeat process for a 2 Å~ 4 array.

T: List the factors of 8.

S: (Write factors of 8: 1, 2, 4, 8.)

Continue with following possible sequence: factors of 12, factors of 16, and factors of 18.

**Multiply Two Factors (4 minutes)**

Materials: (S) Personal white board

Note: This fluency activity reviews the Concept Development from Lesson 1.

T: (Write 174 Å~ 2 = \_\_\_\_.) On your personal white board, solve the multiplication sentence using the

standard algorithm.

S: What are 4 factors of 348 you know right away?

S: 1 and 348, 2 and 174.

Repeat the process using the following possible sequence: 348 Å~ 2, 696 Å~ 2, and 1,392 Å~ 2. Students may realize that if 348 is a factor of 696, then 174 is, too!

**Prime or Composite? (2 minutes)**

Materials: (S) Personal white board

Note: This fluency activity reviews Lesson 1’s Concept

Development.

T: (Write 7.) Is it prime or composite?

S: Prime.

T: Write the factor pair of 7.

S: (Write 1 and 7.)

T: (Write 12.) Is it prime or composite?

S: Composite.

T: Write the factor pairs of 12.

S: (Write 1 and 12, 2 and 6, 3 and 4.)

Repeat the process for the following possible sequence: 15, 17, and 21.

**Lesson 3**

Fluency Practice (12 minutes)

⬛ Group Counting 3.4E (5 minutes)

⬛ Prime or Composite? 5.4A (2 minutes)

⬛ Test for Factors 5.4A (5 minutes)

**Group Counting (5 minutes)**

Note: Group counting reviews factors and patterns that students use during the Concept Development.

Direct students to count forward and backward, occasionally changing the direction of the count.

⬛ Twos to 20

⬛ Threes to 30

⬛ Fours to 40

⬛ Fives to 50

⬛ Sixes to 60

⬛ Tens to 100

**Prime or Composite? (2 minutes)**

Materials: (S) Personal white board

Note: This fluency activity reviews Lesson 1’s content.

Repeat the process from Lesson 2 for the following possible sequence: 5, 15, 12, 19, and 24.

**Test for Factors (5 minutes)**

Materials: (S) Personal white board

Note: This fluency activity reviews Lesson 2’s content.

T: (Project 30, 45, 48, and 56.) On your personal white board, write the number that has 10 as a factor.

S: (Write 30.)

T: Write the division equations that prove both 5 and 2 are factors of 30.

S: (Write 30 ÷ 5 = 6 and 30 ÷ 2 = 15.)

T: Write the numbers that have 6 as a factor.

S: (Write 30 and 48.)

T: Prove that both 3 and 2 are factors of 30 and 48, using the associative property.

S: (Write 30 ÷ 3 = 10, 30 ÷ 2 = 15, 48 ÷ 3 = 16, and 48 ÷ 2 = 24.)

T: Write the numbers that have 8 as a factor.

S: (Write 48 and 56.)

T: Prove that both 4 and 2 are factors of 48 and 56, using the associative property.

**Lesson 4**

Fluency Practice (12 minutes)

⬛ Test for Factors 5.4A (5 minutes)

⬛ Multiples Are Infinite 4.2A, 4.4B (5 minutes)

⬛ Prime or Composite? 5.4A (2 minutes)

**Test for Factors (5 minutes)**

Materials: (S) Personal white board

Note: This fluency activity reviews Lesson 2’s content.

T: (Project 40, 64, 54, and 42.) On your personal white board, write the number that has 10 as a factor.

S: (Write 40.)

T: Use division to prove both 4 and 2 are factors of 40.

T: Write the numbers that have 6 as a factor.

S: (Write 54 and 42.)

T: Prove that both 3 and 2 are factors of 54 and 42, using the associative property.

T: Write the numbers that have 8 as a factor.

S: (Write 40 and 64.)

T: Prove that both 4 and 2 are factors of 40 and 64, using the associative property.

**Multiples Are Infinite (5 minutes)**

Have students make groups of four. Assign each foursome a different number to count by starting at 0.

Allow students two minutes to count round robin in their groups.

T: Let’s share our results. (Call on each group to share.)

T: Could you have kept counting by (assigned number) after I told you to stop?

S: Yes, because we just kept adding on (assigned number) more.  Yes, because you can keep

counting forever.

T: (Allow all groups to share.) We now know the multiples for any number are infinite—they go on

forever. How is that different from the factors of a number? Turn and talk to your partner about

this question.

S: Every number has only a certain amount of factors but an unlimited number of multiples.  The

number of factors any number has is finite, but the number of multiples is infinite.

**Prime or Composite? (2 minutes)**

Materials: (S) Personal white board

Note: This fluency reviews Lesson 1's content.

Repeat the process from Lesson 2 for the following possible sequence: 10, 13, 20, 21, and 81.

**Lesson 5**

Fluency Practice (12 minutes)

⬛ Multiply by 10, 100, and 1,000 5.2A (3 minutes)

⬛ Place Value 4.2A, 4.2B, 5.2A (4 minutes)

⬛ Round to Different Place Values 4.2D (5 minutes)

**Multiply by 10, 100, and 1,000 (3 minutes)**

Note: This fluency activity reviews Module 1 skills and lays the

groundwork for today’s lesson in which both factors are

multiples of 10.

T: (Write 3 Å~ 10.) Say the product.

S: 30.

Repeat the process using the following possible sequence: 3 Å~ 100, 3 Å~ 1,000, 5 Å~ 1,000, 0.005 Å~ 1,000,

50 Å~ 100, 0.05 Å~ 100, 30 Å~ 100, 30 Å~ 1,000, 32 Å~ 1,000, 0.32 Å~ 1,000, 52 Å~ 100, 5.2 Å~ 100, 4 Å~ 10, 0.4 Å~ 10,

0.45 Å~ 1,000, 30.45 Å~ 1,000, 7 Å~ 100, 72 Å~ 100, and 7.002 Å~ 100.

**Place Value (4 minutes)**

Note: This fluency activity reviews composing and decomposing units, crucial to multiplying multiples of 10 in Lesson 6.

Materials: (S) Personal white board, millions to thousandths place value chart (Template)

T: (Project place value chart. Draw 4 tens disks in the tens column.) How many tens do you see?

S: 4 tens.

T: (Write 4 underneath the disks.) There are 4 tens and how many ones?

S: Zero ones.

T: (Write 0 in the ones column. Below it, write 4 tens = .) Fill in the blank.

S: 4 tens = 40.

Repeat the process for 4 ten thousands, 4 hundred thousands, 7 millions, and 2 thousands.

T: (Write 5 hundreds = .) Show the answer in your place value chart.

S: (Students write 5 in the hundreds column and 0 in the tens and ones columns.)

Repeat the process for 3 tens, 53 tens, 6 ten thousands, 36 ten thousands, 8 hundred thousands 36 ten

thousands, 8 millions 24 ten thousands, 8 millions 17 hundred thousands, and 1,034 hundred thousands.

**Round to Different Place Values (5 minutes)**

Note: Practicing rounding to different place values in isolation helps students when they estimate to find

products in Lesson 6.

Materials: (S) Personal white board

T: (Project 8,735.) Say the number.

S: 8,735.

T: Let’s round to the thousands, hundreds, and tens places.

T: Draw a vertical number line on your personal white board with two points and a midpoint between

them.

T: Between which two thousands is 8,735?

S: 8 thousand and 9 thousand.

T: Label the two outside points with these values.

S: (Label.)

T: What’s the midpoint for 8,000 and 9,000?

S: 8,500.

T: Label your number line. 8,500 is the same as how many hundreds?

S: 85 hundreds.

T: How many hundreds are in 8,735?

S: 87 hundreds.

T: (Write 8,735 ≈ .) Show 8,735 on your number line, and write the number sentence.

S: (Label 8,735 between 8,500 and 9,000 on the number line, and write 8,735 ≈ 9,000.)

Students round to the hundreds and tens. Follow the same process and procedure for 7,458.

**Lesson 6**

**Lesson 7**

**Lesson 8**

**Lesson 9**

**Lesson 10**

**Lesson 11**

**Lesson 12**

**Lesson 13**

**Lesson 14**

**Lesson 15**

**Lesson 16**

**Lesson 17**

**Lesson 18**

**Lesson 19**

**Lesson 20**

**Lesson 21**

**Lesson 22**

**Lesson 23**

**Lesson 24**

**Lesson 25**

**Lesson 26**

**Lesson 27**

**Lesson 28**

**Lesson 29**

**Lesson 30**

**Lesson 31**

**Lesson 32**

**Lesson 33**