GRADE: 8

UNIT (S): Number Theory & Computation

TOPIC: Division & Divisibility Rules

DATE: November 24 – November 28, 2025 (1 week)

STANDARDS:
AT1A: Know the value of numerals, associate them with their names, numbers, ordinals and use concrete objects to model patterns, expressions, and numbers.
AT1B: Develop proficiency in the four basic operations with whole numbers.

GENERAL OBJECTIVES:

- Students will develop computational fluency and confidence in solving a variety of division problems.
- Students will appreciate the logical structure of numbers through divisibility rules.
- Students will strengthen problem-solving skills by applying division to realistic scenarios.

SPECIFIC OBJECTIVES:
By the end of the week, students will:

1. Use divisibility rules to identify if a whole number is divisible by 2, 3, 5, or 10.
2. Divide 3-digit whole numbers by a 1-digit number to get a 3-digit quotient (e.g., 652 ÷ 3).
3. Divide a 3-digit whole number by a 1-digit number, resulting in a 2-digit quotient with a remainder (e.g., 127 ÷ 4).
4. Divide 4-digit whole numbers by a 1-digit number to get both 4-digit and 3-digit quotients, with or without remainders.
5. Express a quotient with a remainder as a mixed number (e.g., 13 R 2 becomes 13 2/5 when dividing by 5).
6. Divide a 3-digit whole number by a 2-digit number to get both 2-digit and 1-digit quotients.
7. Divide a 4-digit whole number by a 2-digit number to get both 3-digit and 2-digit quotients.
8. Use rounded numbers to estimate quotients when the divisor has 2 digits.

9. Solve word problems involving sharing (partitive) and inverse-of-multiplication (measurement) division.

KEY VOCABULARY:

- Dividend
- Divisor
- Quotient
- Remainder
- Mixed Number
- Inverse Operation
- Divisibility Rule
- Estimate / Estimation
- Regrouping
- Factor

RESOURCES:

- Whiteboards and markers
- Base-ten blocks / Place value charts
- Divisibility rule summary charts
- "Problem of the Day" task cards
- "Division Scavenger Hunt" clue cards
- Digital games (e.g., Kahoot! for divisibility rules)
- Calculators (for checking work only)

PRIOR LEARNING:

Check that students can:

- Recall multiplication facts up to 12 x 12.
- Understand basic place value up to ten-thousands.
- Perform long division with a 1-digit divisor and a 2-digit dividend.

LEARNING OUTCOME:

Students will be able to confidently and accurately solve a wide range of division problems, use estimation to check the reasonableness of their answers, and apply these skills to solve multi-step word problems.

CONTENT

Division is the inverse of multiplication and can be used for sharing or grouping. Divisibility rules provide shortcuts to determine factors. The standard algorithm for division is used for larger numbers, which may involve regrouping and result in remainders. A remainder can be

expressed as a mixed number. Estimation, using rounded numbers, is a valuable tool for predicting and checking answers.

TEACHING/LEARNING ACTIVITY:

ENGAGE

The teacher will write four numbers on the board: 20, 45, 108, and 350. Students will be asked to work in their table groups to find as many ways as possible to divide each number into equal groups with nothing left over. Students will then use counters, diagrams, or mental math to explore the numbers. After five minutes, the teacher will ask groups to share their discoveries. The teacher will then pose the question: "What patterns do you notice about which numbers can be divided evenly?" This will lead to introducing the term "divisibility."

EXPLORE

The teacher will organize students into small groups and assign each group a "special number": 2, 3, 5, or 10. Each group will receive a set of number cards. Students will be asked to investigate their number cards and discover the rule that makes a number divisible by their special number. Students will then use chart paper to record their proposed rule and examples that prove it works. The teacher will facilitate as groups prepare to present their findings to the class.

EXPLAIN

The teacher will lead a session to formalize the divisibility rules. The teacher will write each correct rule on the board as groups present their discoveries. Students will be asked to copy these rules into their math journals. The teacher will then model the long division process using a think-aloud strategy. The teacher will pose a 3-digit division problem and demonstrate each step, emphasizing where regrouping occurs. Students will practice a similar problem with a partner.

ELABORATE

The teacher will provide scenario cards featuring real-world problems. Students will be asked to work in small groups to solve their assigned scenario using division. Students will then use their knowledge of divisibility rules, the division algorithm, and converting remainders to mixed numbers to find their solutions. The teacher will pose challenging questions such as, "How

would you express the remainder if you were sharing pizzas?" Each group will create a poster showing their work and solution. The teacher will then ask groups to present their problems and solutions to the class.

EVALUATE

The teacher will observe students during group activities to assess understanding. Students will be asked to complete exit tickets at the end of sessions to demonstrate quick comprehension of skills like applying divisibility rules. The teacher will provide a final Division Proficiency Check worksheet for students to complete independently. This check will include computation problems and word problems where students will be asked to explain their reasoning in writing.

DIFFERENTIATION:

The teacher will provide step-by-step templates for students needing support. The teacher will pose challenge problems with larger numbers for students ready for extension. Students will be asked to create their own word problems as an extension activity.

ASSESSMENT:

- Observation and checklists during group activities and station work.
- Accuracy of completed "Detective's Handbook" and "Division Dash" task cards.
- Successful participation and problem-solving in the "Scavenger Hunt."
- Quality, accuracy, and justification of calculations in the "Plan a Class Event" project and presentation.

LINKS TO OTHER SUBJECTS:

- **Financial Literacy:** Budgeting and allocating funds for the class event project.
- **Language Arts:** Clear communication and justification of their plan during the presentation.
- **Science:** Using estimation and calculation for data analysis and measurement.