

## GRADE 2 UNIT 5 – REPRESENT DATA AND RECOGNIZESHAPES AND THEIR ATTRIBUTES

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| <p><b>Established Goals:</b><br/>Standards</p> <p><b><u>Number &amp; Base Ten</u></b></p> <p><b>2.NBT.5,7</b> Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction, relate the strategy to a written method.</p> <p><b><u>Geometry</u></b></p> <p><b>2.G.1,2,3</b></p> <p>Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.</p> <p><b><u>Measurement and data</u></b></p> <p><b>2.MD.9,10</b></p> <p>Generate measurement data by measuring lengths of several objects to the nearest whole unit, Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories</p> <p><b><u>Operations and algebraic thinking</u></b></p> <p><b>2.OA.2</b></p> <p>Fluently add and subtract within 20 using mental strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers.</p> | <b>Transfer</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p><i>Students will be able to:</i></p> <p>Utilize geometry and measurement concepts to solve real world problems.</p> <p>Analyze and record data effectively for a tool to organize information</p>                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Meaning</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>ENDURING UNDERSTANDING</b>                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>ESSENTIAL QUESTIONS</b>                                                                                                                                                                                                                                                                                                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>Two and three dimensional objects can be described, classified, and analyzed by their attributes.</p> <ul style="list-style-type: none"> <li>•Identical wholes can be partitioned in various ways and still be identified as equal shares.</li> <li>•Data can be collected and represented using various tables, charts, and graphs chosen appropriately.</li> <li>•Three digit numbers can be added and subtracted using a variety of strategies</li> </ul> | <p>How would you describe or classify a given object?</p> <ul style="list-style-type: none"> <li>•What ways can you divide a given shape into equal shares?</li> <li>•How should you show your data using a chart, table, or graph?</li> <li>•What is a strategy used to add or subtract three digit numbers</li> </ul>   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Acquisition</b>                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>KNOWLEDGE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>SKILLS</b>                                                                                                                                                                                                                                                                                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p><i>Students will know how to...</i></p> <ul style="list-style-type: none"> <li>• Recognize that all objects have specific attributes.</li> <li>• Divide an object into equal shares more than one way.</li> <li>• Use various ways to collect and organize data.</li> <li>• Use various strategies, based on place value, to add and subtract three digit numbers</li> </ul>                                                                                 | <p><i>Students will be skilled at...</i></p> <ul style="list-style-type: none"> <li>• Naming the attributes of objects.</li> <li>• Dividing objects into equal shares more than one way.</li> <li>• Creating a graph, table, or chart to organize data.</li> <li>• Adding and subtracting three digit numbers.</li> </ul> |

| Vocabulary                                                                                                                                                                                                                                                                                                                  | Instruction and Pacing (suggested order to teach)                            |                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------|
| solid figure sphere cylinder cone rectangular prism pyramid cube face flat surface edge vertex angle side vertices plane shapes circle square triangle rectangle trapezoid parallelogram quadrilateral pentagon hexagon polygon rows columns equal unequal halves thirds fourths bar graph pictograph data line plot symbol | <b>Geometry Basics – Plane and Solid Figures/Shapes &amp; Attributes</b>     | <b>2 ½ Weeks</b> |
|                                                                                                                                                                                                                                                                                                                             | <b>Applying fractional concepts to Geometry &amp; Measurement principles</b> | <b>1 ½ Weeks</b> |
|                                                                                                                                                                                                                                                                                                                             | <b>Data Analysis (Bar Graphs/Pictographs/Line Plots)</b>                     | <b>2 Weeks</b>   |
|                                                                                                                                                                                                                                                                                                                             | <b>Benchmark Testing &amp; Reteaching</b>                                    | <b>2 Weeks</b>   |
|                                                                                                                                                                                                                                                                                                                             |                                                                              |                  |

| Common Misconceptions                                                              | Proper Conceptions                                                           |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Students have difficulty visualizing all sides of solid                            | Using objects the everyday world can help us see attributes of solid figures |
| A sphere has one flat surface                                                      | A Sphere has one curved surface                                              |
| Different shaped rectangles are altogether different shapes                        | Shapes can be different sizes but the same shape                             |
| Students lose track when counting sides                                            | Mark or track the sides of objects when counting sides                       |
| Students have difficulty dividing shapes into equal parts                          | Divide shapes in half first, then see if it can be divided again equally.    |
| All halves and fourths are the same size                                           | A half is equal to two equal parts and fourths are four equal parts divided  |
| Students have difficulty remembering all of the names of solid/plane shapes        | Shapes have a mathematical name to distinguish their attributes              |
| Students have difficulty with basic addition and subtraction facts                 | Continually practicing addition and subtraction helps in all areas of math   |
| Students add in the tens column before the ones column                             | Steps for add/sub help us to add and subtract correctly                      |
| Data – students incorrectly use tally marks                                        | Grouping tallies by 5's helps us to keep track of the number correctly       |
| Students have difficulty determining which item is the most on a Bar/Picture Graph | The row that is the longest or most pictures has the most                    |

**Resources**

Common Core Standards, New Jersey Model Curriculum  
 Envisions Math Program Suggested Topics  
 Topic 12 Geometry  
 Topic 16 (Lessons involving Graphs and Data)

MANIPULATIVES & GRAPHIC ORGANIZERS – Pattern Blocks, Flat Shapes, Solid (3-D Shapes), Everyday Solid 3D Shapes (Tissue Boxes, Cereal Boxes, Small Balls, Wrapping Paper Cylinders, etc.), Graph Paper (Bar Graphs), Templates for Communicators/Smart Pal Sleeves

**Utilize links below to continually review Place Value Concepts, Addition and Subtraction with Regrouping and Fluency Standards (Add/Sub within 20)**

<https://grade2commoncoremath.wikispaces.hcpss.org/>

<http://illuminations.nctm.org>, <https://www.illustrativemathematics.org>

**Additional Resources for ELL Learners**

<http://www.dreambox.com/teachertools> activities for interactive whiteboard, some available in Spanish

<http://www.mathinenglish.com/worksheetsgrade2.php> printables for second grade math

<http://www.lessonstudygroup.net/lq/conference/-456048990.pdf> (multiple strategies for regrouping)

<http://www.njctl.org/courses/math/2nd-grade/time-money/>

<http://www.njctl.org/courses/math/2nd-grade/length/>  
<http://www.njctl.org/courses/math/2nd-grade/place-value/>  
<http://www.njctl.org/courses/math/2nd-grade/2-digit-addition-subtraction/>  
<http://www.state.nj.us/education/modelcurriculum/math/ellscaffolding/2u4.pdf>

**Math site for parents and Math from different countries** <http://www.aamatematicas.com/>

### Differentiation and Accommodations

Provide graphic organizers  
 Provide additional examples and opportunities for additional problems for repetition  
 Provide tutoring opportunities  
 Provide retesting opportunities after remediation (up to teacher and district discretion)  
 Teach for mastery not test  
 Teaching concepts in different modalities  
 Adjust pace and homework assignments

#### **ELL Modifications**

- Assess/teach prerequisite skills
- Illustrated reference charts (i.e. shapes with their attributes, graphs, regrouping strategies)
- Student illustrated word walls for key math terms
- Bring in real life examples of two and three dimensional shapes. Allow students to explore shapes and gain experience to match the math vocabulary (vertices, faces, etc.). Students should have time to build with the objects to make composite shapes.
- Read picture books to build vocabulary and background knowledge (samples below)
  - <https://www.cantonpl.org/blog/post/picture-books-about-shapes>
  - <http://childrenpicturebooks.info/math/fractions.htm>
  - <http://www.the-best-childrens-books.org/teaching-graphs.html>
- Teach a variety of strategies that students can use to problem solve (act it out, manipulatives, hundreds chart, draw a picture, etc.)
- Read all directions and word problems. Translate if necessary.
- Utilize Envision Spanish Version/Interactive Path and Printable Resources

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| <b>21<sup>st</sup> Century Skills</b> | Critical Thinking, Creative Thinking, Collaborating, Communicating, and Technology Literacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Instructional Strategies</b>       | <p>Fairfield Township School recognizes the importance of the varying methodologies that may be successfully employed by teachers within the classroom and, as a result, identifies a wide variety of possible instructional strategies that may be used effectively to support student achievement. These may include, but not be limited to, strategies that fall into categories identified by the Framework for Teaching by Charlotte Danielson:</p> <ul style="list-style-type: none"> <li>• Communicating with students</li> <li>• Using questioning and discussion techniques</li> <li>• Engaging students in learning</li> <li>• Using assessment in instruction</li> <li>• Demonstrating Flexibility and Responsiveness</li> </ul> |
| <b>Interdisciplinary Connections</b>  | ELA, Science, and Technology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

### Performance Task

You are taking two identical rectangular cakes to a party. One is chocolate and one is white.

You must divide the cakes evenly to fit into four different containers.

Two containers are long and thin, and the other two containers are square.

Draw a line to show how each cake needs to be cut into two equal pieces to fit into the four containers.

What fraction names each part of the cake that you have cut?

If your cakes cost you \$4.95 each, how much did you spend on the cakes?

There are 26 people at the party. Eight people at the party like chocolate cake and 11 people at the party like white cake. Someone has also brought a peanut butter cake and a strawberry short cake. 5 people want the peanut butter cake and 2 people want strawberry short cake. Using this data, complete a bar graph showing how many people wanted each kind of cake. Make sure to label all information.

### Rubric

**3 points:** Student correctly divides the cakes into 2 equal shares, two different ways and names the fraction.

Student correctly adds the cost of two cakes.

Student correctly labels and completes the bar graph.

**2 points:** Student correctly divides the cakes into 2 equal shares, names the fraction and adds the costs correctly.

Student attempts to label and complete the graph, but some info is incorrect.

**1 point:** Student correctly divides 1 or 2 cakes to show equal shares 2 different ways.

Student adds the cost.

Student attempts to label and complete the bar graph but most info is incorrect.

**0 points:** Student shows no understanding of concepts or cannot be read or understood.

# ASSESSMENTS

## **Suggested Formative Assessment**

Problem of the Day

Lesson Quizzes

Exit Ticket

Anecdotal Records (Topic Observation Checklist)

**Suggested Summative Assessment** - Grade Level developed Unit/Envisions Topic Tests/ Ed Connect Tests/ State Unit Benchmark/Performance Task