**3D Shapes Unit**

**Grade Level:** 2nd Grade

**Subject Area:** Mathematics 🡪 Geometry

**Materials Needed:** My Math Chapter 12, SMART Board Access, online version of student workbook, pencils, iPads, Xtra Math app, rulers, 3 Digit Subtraction war cards, Gynzy games, Play Doh, dice, Rows and Columns videos

**Standard:**

* ***2.G.1*** - Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. (***Primary Standard*** 🡪 emphasized in whole group instruction and guided practice)
* ***2.MD.7*** -Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. (***Secondary Standard*** 🡪 to be supplemented in a review station)

**Objectives:**

* Students will compare differences between 2D shapes and 3D forms.
* Students will define characteristics of 3D forms.
* Students will identify 3D forms by their characteristics and by name.
* Students will practice comparing analog and digital time.

**Learning Activities:**

Day 1:

* Direct students to ***Pg. 759*** of their student workbooks.
* There are both 2D and 3D shapes in this picture. Who can identify the 2D shapes?
  + 2D shapes have only a length and a width.
  + Who can identify the 3D shapes?
    - 3D shapes have a length, width, and height. We can touch all sides of a 3D shape.
* Have students read through and point to each vocabulary word on ***Pg. 760***.
  + Complete ***Pg. 760-762*** together.
  + Students complete ***Pg. 763, 764*** individually. Review together.
* Students break up into small group Math Stations.
  + ***Group 1-*** Check My Progress (Pg. 757) with teacher at back table.
    - Group will review concepts of 2D shapes from previous week’s instruction.
  + ***Group 2-*** Telling Time Analog vs. Digital Practice, with 2nd teacher in hallway.
    - Teacher will have list of times and will call them to students.
    - Students must fill in digital clock with stated time and then also write in analog clock with the same time.
      * Alternate option (time cards, students grab cards with digital time, fill in digital and analog clocks accordingly.)
  + ***Group 3-*** Xtra Math on iPads

Day 2:

* Review types if 3D shapes and what they are made of.
* What these forms are made of is going to be a big part of our lesson today.
* Today we are moving on to the different parts of a 3D shape.
  + 3D shapes have faces, edges and vertices.
  + A face is a flat side of a 3D shape. What type of 3D shape do we have on ***Pg. 766***?
    - Yes, it is a cube. What is a cube made out of? Squares, all those squares are the different faces of the cube.
    - Whisper to a partner, “A face is a flat side of a 3D shape.”
  + Where two faces meet, we call that an edge. Take a look at the book on your desk, it has faces and edges. What shape are its faces? Rectangles. Can you show me where the edges of your book are? Along the binding, along the outsides of the pages.
    - Whisper to your partner, “An edge is where two faces touch.”
  + There is one last part of a 3D shape and that is called a vertex. A vertex is found at a corner where 3 or more faces touch. What is the difference between an edge and a vertex?
    - An edge is long and connects two sides, a vertex is just a corner point but it connects 3 or more sides.
    - Whisper to a partner, “A vertex is a corner point where 3 or more faces touch.”
    - Show me where on our book we could find a vertex? Where can you find a corner on your book where 3 faces come together? Corners of the binding.
* Let’s do a little practice by working through ***Pg. 766***.
  + Have 3D models available for more concrete application.
  + Invite one student to come up and count the faces.
    - Give them stickers to use as they count so they do not repeat.
    - Remove stickers, invite another student to do the same practice with edges.
    - Remove stickers, invite another student to do the same practice with vertices.
  + Let’s think about what these shapes are made of. All of the faces of a cube have the same shape, square. A square has 4 sides. If we look at the base we know that there is a side for each edge of the base. That means there are 4 sides and 2 bases, all together that means we have 6 faces. To find out how many edges we have we also have to look at the base. Our base is a square and so by connecting sides to the base we know we have 4 edges along the bottom. If we have 4 edges along the bottom we also have 4 edges on the top since all of the sides are the same on this shape. So we take the 4 edges on the bottom plus the four edges on the top, that is 8 edges and we also have 4 more edges that connect the top to the bottom. 8 edges around the based plus 4 edges in the middle will give us 12 edges.
  + Continue dissecting each shape on ***Pg. 766*** together.
  + Do ***Pg. 767-768*** together.
* Students will split into small group Math Stations:
  + ***Group 1:*** Complete **My Homework** independently at desk.
  + ***Group 2:*** Works on building 3D shapes and identifying faces, edges and vertices with teacher at back table. Complete template found at bottom of document.
    - Use precut construction paper and tape to make pyramids.
    - Explore other everyday objects:
      * Small ball
      * Dice, box
      * Funnel, paper cones
      * Paper Towel Tubes, Lysol Wipes Canisters
  + ***Group 3:*** Xtra Math on iPads

**WEEK 2**

Day 1:

* Last week we started to look at what a 3D shape is really made of. We know that the faces are all different 2D shapes. Who can remember what a face is? A flat surface of a 3D shape.
  + Direct students to ***Pg. 772***
  + Take this cube for instance, we can see that each face of this cube is made up of what? Squares.
  + Continue the rest of ***Pg. 722-774*** together.
* Students will split into SMALL GROUPS
  + ***Group 1 –*** Color by Shape Assessment in hall with Mrs. Jacobson
  + ***Group 2 –*** Create cube and discuss vocabulary (face, edge, vertex) at back table with teacher
  + ***Group 3 –*** Xtra Math on the iPads

Day 2:

* We have already seen how a 3D shape can be broken down into 2D shapes. But did you know that we can break 2D shapes into smaller parts? These are called fractions. Fractions are used when we are referring to only one small part of a whole.
  + Direct students to ***Pg. 777***
  + In your morning work before I know you have been asked to take a rectangle and split it into 3 equal pieces. How could we do that with this rectangle on our page?
    - Each one of these pieces could be described as 1 pieces out of 3 total pieces. We would write this number as 1/3 and say it as one-third.
    - Continue with ¼ and ½.
  + Discuss new vocabulary on ***Pg. 778.***
  + Work through ***Pg. 778-780***  together as guided practice.
* Students will split into SMALL GROUPS
  + ***Group 1 –*** 2D/Cube Vocabulary Assessment in the hall
  + ***Group 2 –*** ***My Homework*** (Pg. 781-782)
  + ***Group 3 –*** Xtra Math on the iPads

Day 3:

* Review fractions
  + Do 1 Super teacher worksheet together on the SMART Board
  + Fraction Assessment
  + Xtra Math on iPads

Day 4:

* Fractions with Home Room Class
* Simple fractions
* Play-Doh Fractions
  + Each student will be given their own personal tub of Play-Doh and be asked to make a circle or a rectangle.
    - Students will then be asked to partition the Doh into halves, fourths, or thirds.
      * Students may be asked to show ¾, 2/3, etc.
* 1 Fish, 2 Fish Graphing
* Gynzy Fraction Circle/Wheel

Day 5:

* Finish Fractions
* WHOLE GROUP
  + Discuss how to write/represent halves, thirds and fourths
* Students will split into SMALL GROUPS
  + ***Group 1 –*** Cut and Paste Fractions
  + ***Group 2 –*** Fraction Memory Game in partners at back table
  + ***Group 3 –*** Xtra Math on the iPads

**WEEK 3**

Day 1:

* Introduce Area
  + Brain Pop 🡪 discuss
  + Lesson 8
  + Complete ***Pg. 784-786*** together.
    - Give students rulers and have them measure out 1 in columns and rows for open boxes.
    - Complete workbook pages with students on SMART Board.
* Students break into SMALL GROUPS
  + ***Group 1-*** 3 Digit Subtraction Battle (w/ sub)
  + ***Group 2-*** Roll to Find Area work page (w/ Teacher at back table)
  + ***Group 3-*** Xtra Math on iPads

Day 2:

* Introduce Partitioning (rows and columns)
  + Play ***Rows and Columns Song by Miss Modena***
    - Discuss visuals of columns on buildings and rows of tree rows and music staffs.
  + Practice together. Draw rows and ask students to ID. Draw Columns and ask students to ID. Have students count numbers of rows and columns.
    - Complete ***Modeled Practice*** page together.
    - Have students complete ***Guided Practice*** individually as Assessment.
      * Pace students together question by question.
* Students break into SMALL GROUPS
  + ***Group 1-*** SMART Board 🡪 Gynzy Fractions Games
  + ***Group 2-*** 3 Digit Subtraction Dice game at back table
  + ***Group 3-*** Xtra Math on iPads

Day 3:

* Review Partitions
  + Show ***eSpark Learning: Partitioning Rectangles with Rows and Columns*** video
  + Discuss rows and columns
  + Discuss labeling shares
* Complete ***Partition Assessment***
* Math Fact BINGO

**Assessment:**

* Formative: all review activities, class discussions, small group activities, worksheets
* Summative: traditional tests at the end of Chapter 12.

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