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GRADE 1 • MODULE 5

Identifying, Composing, and Partitioning Shapes

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OVERVIEW

Throughout the year, students have explored part–whole relationships in many ways, such as their work with number bonds, tape diagrams, and the relationship between addition and subtraction. In Module 5, students consider part–whole relationships through a geometric lens.

In Topic A, students identify the defining parts, or attributes, of two- and three-dimensional shapes, building on their kindergarten experiences of sorting, analyzing, comparing, and creating various two- and three-dimensional shapes and objects (**1.G.1**). Using straws, students begin the exploration by creating and describing two-dimensional shapes without naming them. This encourages students to attend to and clarify a shape's defining attributes. In the following lessons, students name two- and three-dimensional shapes and find them in pictures and in their environment. New shape names are added to the students' repertoire, including *trapezoid, rhombus, cone,* and *rectangular prism*.

Exemplars are the typical visual prototypes of the shape category.

Variants are other examples of the shape category.

Palpable distractors are nonexamples with little or no overall resemblance to the exemplars.

Difficult distractors are visually similar to examples but lack at least one defining attribute.

In Topic B, students combine shapes to create a new whole: a composite shape (**1.G.2**). Students identify the name of the composite shape as well as the names of each shape that forms it. Students see that another shape can be added to a composite shape so that the composite shape becomes part of an even larger whole.

In Topic C, students relate geometric figures to equal parts and name the parts as halves and fourths (or quarters) (**1.G.3**). For example, students now see that a rectangle can be partitioned into two equal triangles (whole to part) and that the same triangles can be recomposed to form the original rectangle (part to whole). Students see that as they create more parts, decomposing the shares from halves to fourths, the parts get smaller.

The module closes with Topic D, in which students apply their understanding of halves (**1.G.3**) to tell time to the hour and half-hour (**1.MD.3**). Students construct simple clocks and begin to understand the hour hand, then the minute hand, and then both together. Throughout each lesson, students read both digital and analog clocks to tell time.

Throughout Module 5, students continue daily fluency with addition and subtraction, preparing for Module 6, where they will add within 100 and ensure their mastery of the grade-level fluency goal of sums and differences within 10.
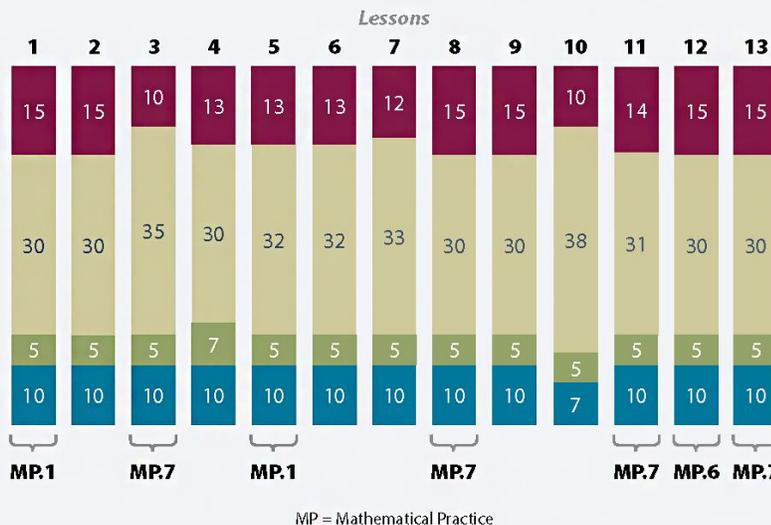
Notes on Pacing for Differentiation

The work of this module is foundational to the Geometry domain of the Grade 1 standards. Therefore, it is not recommended to omit any lessons from Module 5.

Distribution of Instructional Minutes

This diagram represents a suggested distribution of instructional minutes based on the emphasis of particular lesson components in different lessons throughout the module.

■ Fluency Practice
■ Concept Development
■ Application Problems
■ Student Debrief

Lessons

	1	2	3	4	5	6	7	8	9	10	11	12	13
Fluency Practice	15	15	10	13	13	13	12	15	15	10	14	15	15
Concept Development	30	30	35	30	32	32	33	30	30	38	31	30	30
Application Problems	5	5	5	7	5	5	5	5	5	5	5	5	5
Student Debrief	10	10	10	10	10	10	10	10	10	7	10	10	10

MP.1   MP.7   MP.1   MP.7   MP.7 MP.6 MP.7

MP = Mathematical Practice

Focus Grade Level Standards

Tell and write time and money.[1]

1.MD.3   Tell and write time in hours and half-hours using analog and digital clocks. Recognize and identify coins, their names, and their values.

Reason with shapes and their attributes.

1.G.1   Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.

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[1]Time alone is addressed in this module. The second portion, regarding money, was added by New York State and is addressed in Module 6.

1.G.2   Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape. (Students do not need to learn formal names such as "right rectangular prism.")

1.G.3   Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves, fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

Foundational Standards

K.G.2   Correctly name shapes regardless of their orientations or overall size.

K.G.3   Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").

K.G.4   Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).

K.G.6   Compose simple shapes to form larger shapes. For example, *"Can you join these two triangles with full sides touching to make a rectangle*?"

Focus Standards for Mathematical Practice

MP.1   **Make sense of problems and persevere in solving them.** Although some students thrive on the visual–spatial perspective of geometric concepts, it can be quite challenging for others. Throughout the module, students are encouraged to continue working toward success when trying to arrange shapes to create specific composite shapes and when recomposing the pieces into different shapes. For some students, sorting shapes into groups without using the common shape names can also create challenges through which they must persevere. This takes place as students distinguish shapes from among variants, palpable distractors, and difficult distractors in Topic A. See examples to the right.[2]

MP.6   **Attend to precision.** Students use clear definitions with peers as they define attributes. For example, while working with a partner, students describe a composite figure by explaining surfaces, sides, and corners so that their partners can create the same composite shape without seeing a visual representation. Students appropriately name parts of a whole using terms such as *halves, fourths,* and *quarters*.

MP.7   **Look for and make use of structure.** Students identify attributes in order to classify shapes such as triangles and cylinders. Students recognize that attributes such as the number of sides, surfaces, etc., are defining attributes, whereas color, size, and orientation are not. Students use their understanding of the partitioning of a circle to tell time.

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[2]This image, plus further clarification, is found in the Geometry Progressions document, p. 6.

Overview of Module Topics and Lesson Objectives

Standards		Topics and Objectives	Days
1.G.1	A	**Attributes of Shapes**	3
		Lesson 1: Classify shapes based on defining attributes using examples, variants, and non-examples.	
		Lesson 2: Find and name two-dimensional shapes including trapezoid, rhombus, and a square as a special rectangle, based on defining attributes of sides and corners.	
		Lesson 3: Find and name three-dimensional shapes including cone and rectangular prism, based on defining attributes of faces and points.	
1.G.2	B	**Part–Whole Relationships Within Composite Shapes**	3
		Lesson 4: Create composite shapes from two-dimensional shapes.	
		Lesson 5: Compose a new shape from composite shapes.	
		Lesson 6: Create a composite shape from three-dimensional shapes and describe the composite shape using shape names and positions.	
1.G.3	C	**Halves and Quarters of Rectangles and Circles**	3
		Lesson 7: Name and count shapes as parts of a whole, recognizing relative sizes of the parts.	
		Lessons 8–9: Partition shapes and identify halves and quarters of circles and rectangles.	
1.MD.3 **1.G.3**	D	**Application of Halves to Tell Time**	4
		Lesson 10: Construct a paper clock by partitioning a circle and tell time to the hour.	
		Lessons 11–13: Recognize halves within a circular clock face and tell time to the half-hour.	
		End-of-Module Assessment: Topics A–D (assessment ½ day, return ½ day, remediation or further applications 1 day)	2
Total Number of Instructional Days			**15**

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Terminology

## New or Recently Introduced Terms

- Attributes (characteristics of an object such as color or number of sides)
- Composite shapes (shapes composed of two or more shapes)
- Digital clock
- Face (two-dimensional surface of a three-dimensional solid)
- Fourth of (shapes), fourths (1 out of 4 equal parts)
- Half-hour (interval of time lasting 30 minutes)
- Half of, halves (1 out of 2 equal parts)
- Half past (expression for 30 minutes past a given hour)
- Hour (unit for measuring time, equivalent to 60 minutes or 1/24 of a day)
- Hour hand (component on clock tracking hours)
- Minute (unit for measuring time, equivalent to 60 seconds or 1/60 of an hour)
- Minute hand (component on clock tracking minutes)
- O'clock (used to indicate time to a precise hour, with no additional minutes)
- Quarter of (shapes) (1 out of 4 equal parts)
- Three-dimensional shapes:
  - Cone
  - Rectangular prism
- Two-dimensional shapes:
  - Half-circle
  - Quarter-circle
  - Rhombus (flat figure enclosed by four straight sides of the same length wherein two pairs of opposite sides are parallel)
  - Trapezoid (a quadrilateral in which at least one pair of opposite sides is parallel[3])
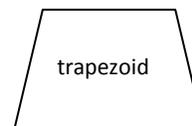
digital clock
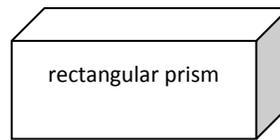
cone

rectangular prism
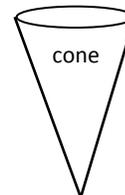
quarter-circle

half-circle

trapezoid

[3]This is the formal definition that students learn in Grade 4. It is placed here to signify to teachers the precise definition used in later grades and is not required to be shared with students now. Descriptive explanations such as, "This is a trapezoid. What are its interesting features?" are the general expectation for Grades 1 and 2.

Familiar Terms and Symbols[4]
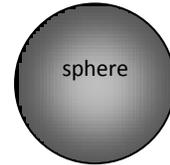
- Clock
- Shape names (two-dimensional and three-dimensional) from Kindergarten:

    - Circle
    - Cube
    - Cylinder
    - Hexagon (flat figure enclosed by six straight sides)
    - Rectangle (flat figure enclosed by four straight sides and four right angles)
    - Sphere
    - Square (rectangle with four sides of the same length)
    - Triangle (flat figure enclosed by three straight sides)

clock

circle
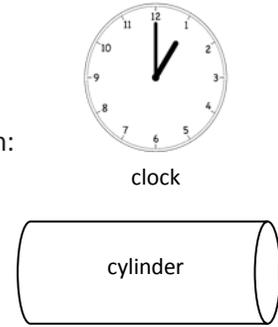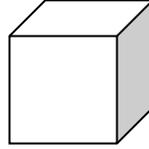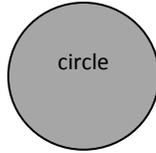
cylinder

sphere

Suggested Tools and Representations

- Pattern blocks
- Square tiles
- Straws
- Student clocks, preferably with gears that can provide the appropriate hour-hand alignment
- Three-dimensional shape models (commercially produced or commonly found examples) including cube, cone, cylinder, rectangular prism, and sphere

Homework

Homework at the K–1 level is not a convention in all schools. In this curriculum, homework is an opportunity for additional practice of the content from the day's lesson. The teacher is encouraged, with the support of parents, administrators, and colleagues, to discern the appropriate use of homework for his or her students. Fluency exercises can also be considered as an alternative homework assignment.

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[4]These are terms and symbols students have seen previously.

Scaffolds[5]

The scaffolds integrated into *A Story of Units* give alternatives for how students access information as well as express and demonstrate their learning. Strategically placed margin notes are provided within each lesson elaborating on the use of specific scaffolds at applicable times. They address many needs presented by English language learners, students with disabilities, students performing above grade level, and students performing below grade level. Many of the suggestions are organized by Universal Design for Learning (UDL) principles and are applicable to more than one population. To read more about the approach to differentiated instruction in *A Story of Units,* please refer to "How to Implement *A Story of Units*."

Assessment Summary

Type	Administered	Format	Standards Addressed
End-of-Module Assessment Task	After Topic D	Constructed response with rubric	1.MD.3 1.G.1 1.G.2 1.G.3

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[5]Students with disabilities may require Braille, large print, audio, or special digital files. Please visit the website www.p12.nysed.gov/specialed/aim for specific information on how to obtain student materials that satisfy the National Instructional Materials Accessibility Standard (NIMAS) format.

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