

Unit Design Template

Subject: Math- 6

Unit: Ch. 8-10

Part I: Clarity of Learning Targets

What are the grade level indicators that go with this unit? Place a star next to the grade level indicators that are Power Indicators. Are the indicators in student friendly language? Place the level of Bloom's Taxonomy next to each Power Indicator.

Geometry and Spatial Sense

1. Classify and describe two-dimensional and three-dimensional geometric figures and objects by using their properties; e.g., interior angle measures, perpendicular/parallel sides, congruent angles/sides.
2. Use standard language to define geometric vocabulary: vertex, face, altitude, diagonal, isosceles, equilateral, acute, obtuse and other vocabulary as appropriate.
3. Use multiple classification criteria to classify triangles; e.g., right scalene triangle.
4. Identify and define relationships between planes; i.e., parallel, perpendicular and intersecting.
5. Predict and describe sizes, positions and orientations of two-dimensional shapes after transformations such as reflections, rotations, translations and dilations.
7. Build three-dimensional objects with cubes, and sketch the two-dimensional representations of each side; i.e., projection sets.

Measurement

1. Understand and describe the difference between surface area and volume.
2. Use strategies to develop formulas for finding circumference and area of circles, and to determine the area of sectors; e.g., $\frac{1}{2}$ circle, $\frac{2}{3}$ circle, $\frac{1}{3}$ circle, $\frac{1}{4}$ circle.
4. Determine which measure (perimeter, area, surface area, volume) matches the context for a problem situation; e.g., perimeter is the context for fencing a garden, surface area is the context for painting a room.
5. Understand the difference between perimeter and area, and demonstrate that two shapes may have the same perimeter, but different areas or may have the same area, but different perimeters.

*** Power Indicators**

6. Describe what happens to the perimeter and area of a two-dimensional shape when the measurements of the shape are changed; e.g. length of sides are doubled.

I can describe what happens to the perimeter and area of a 2-dimensional shape when the measurements of the shape are changed. (Conceptual-Understand)

3. Estimate perimeter or circumference and area for circles, triangles and quadrilaterals, and surface area and volume for prisms and cylinders by:

- a. estimating lengths using string or links, areas using tiles or grid, and volumes using cubes;**
- b. measuring attributes (diameter, side lengths, or heights) and using established formulas for circles, triangles, rectangles, parallelograms and rectangular prisms.**

I can estimate the perimeter or circumference and area for circles, triangles, and quadrilaterals. (Meta-cognitive Understand)

I can estimate surface area and volume.

6. Draw similar figures that model proportional relationships; e.g., model similar figures with a 1 to 2 relationship by sketching two of the same figure, one with corresponding sides twice the length of the other.

I can draw similar figures using proportional relations. (Conceptual, Create)

What are the Big Ideas that go with this unit?

1 GS) 2-d objects can be transformed and have many properties that can be sorted.

2 GS) 3-d objects can be represented as 2-d figures.

3 M) Math formulas and estimates provide efficient ways to find volume, surface area, perimeter, and area.

4 M) Perimeter, area, surface area, and volume apply to different real life situations.

5 M) Changing side lengths of a geometric figure affects its perimeter and area.

What are the Essential Questions that go with this unit?

Question 1 GS) How can a figure be transformed and sorted in multiple ways?

Daily Objective: I can use geometric words to name and describe two and three-dimensional figures.

Daily Objective: I can define geometric words and represent them with symbols.

Daily Objective: I can name a triangle based on its sides and angles.

Daily Objective: I can identify and describe the relationship between planes (parallel, perpendicular, and intersecting)

Daily Objective: I can predict and describe the size and position of two-dimensional shapes after transformations (reflection, rotation, translation, and dilation).

Daily Objective (Power): *I can draw similar figures using proportional relations.

Covered in lessons: 8-5, 8-6, 8-7, 8-10, 8-10 lab, 8-10 from book 2, 8-11

Question 2 GS) How does a 3-d object look as a 2-d model?

Daily Objective: I can build a 3-dimensional object and draw a 2-dimensional picture of the model.

Covered in lessons: 10-6 and 10-6 lab

Question 3 M) How are estimates and formulas of geometric figures related?

Daily Objective (Power): * I can describe what happens to the perimeter and area of a 2-dimensional shape when the measurements of the shape are changed.

Daily Objective (Power): * I can estimate the perimeter or circumference and area for circles, triangles, and quadrilaterals.

Daily Objective (Power): * I can estimate surface area and volume.

Daily Objective (Power): *I can draw similar figures using proportional relations.

Daily Objective: I can understand and describe the difference between surface area and volume.

Daily Objective: I can use and develop formulas for finding circumference and area of circles and sectors (part of a circle).

**Daily Objective: I can understand the difference between perimeter and areas.
I can show and explain that two shapes can have the same perimeter, but different areas.
I can show and explain the same area, but different perimeter.**

Covered in lessons: 9-7, Circumference lab, 9-8, 10-1, 10-2, 10-4, 10-5, Quiz A (need to complete this question)

Question 4 M) What real life scenarios would cause you to find perimeter, area, surface area, and volume?

Daily Objective: I can understand and describe the difference between surface area and volume.

Daily Objective: I can determine which real life situation matches the type of measurement (perimeter, area, surface area, and volume).

**Daily Objective: I can understand the difference between perimeter and areas.
I can show and explain that two shapes can have the same perimeter, but different areas.
I can show and explain the same area, but different perimeter.**

Covered in lessons: 10-4, 10-7, 10-9 (volume and surface area), and ODE Lesson

What strategies will we use in order to make learning targets clearer for all students, before, during and after instruction? How will you communicate the learning indicators to students?

- Large poster-Essential Questions (with lessons)
- I can posters (non-power) on regular paper-mounted on black (with lessons)
- I can posters (power indicators)-mounted on color
- Strong work examples posted in the classroom and/or next to the “I can” statements

Strategies for making learning targets clearer for students

- ✓ At the beginning of a unit, share the Big Idea or Essential Question with the students. Once you have taught a lesson, refer to the Big Idea or Essential Question and have the students make connections between the lesson and the Big Idea or Essential Question.
- ✓ Pose the Essential Question throughout or at the end of the unit. Have the students answer the Essential Question in their own words. The goal in this case is for the students to be able to respond to the Essential Question with the Big Idea stated in their own words.
- ✓ Share the grade level indicator with the students before, during, and after the lesson. Make connections between the grade level indicator and the Big Idea/Essential Question.
- ✓ Have the students summarize what they have learned in an exit slip.

- ✓ Introduce the language of a rubric to students by asking them what they already know and then linking their thoughts to the main concepts in the rubric.
- ✓ Create rubrics that are in student friendly language.
- ✓ Teach students how to use the rubric to evaluate models of strong and weak work samples.

Part II: Feedback and Assessments (Formative and Summative)

How will we provide students with feedback throughout the unit?

What formative assessments will we use? (Non-graded assignments that check for understanding and provide feedback to the students) Incorporate the 7 Strategies of Assessment for Learning here.

- Formative short answer or extended question based on student needs
 1. Students complete the question
 2. The next day, the teacher will go over the criteria for the answer and use models of strong and weak answers
 3. Students practice scoring answers as a class using 4-3-2-1 cards and discuss how they could improve the answer
 4. Students switch with a partner – partner scores the answer and provides feedback. (Teacher could put the ‘correct’ score and feedback on the back of the paper)
 5. Students are given an opportunity to change/correct their answer

How will students be involved with keeping track of their own learning progress (note-this is different than tracking points for a grade)?

- Students self-assess their level of understanding by using post-it notes – the students choose whether they “got it”, “need more practice”, or “need help”
- Students review quizzes before the test
- Students correct 3 missed problems on the quiz – students use the “Correcting Mistakes” handout to study/review before the test

Interventions: What will you do for the kids who don’t do well? Ex. The students have to re-read and correct their answers independently – conference with the teacher.

- STAR intervention
- Partner up with a student who is understanding the material
- Extra help from the teacher

What summative assessments will we use? (Graded, evaluative assessments)

- 8A Quiz (Vocabulary)
- 8B Quiz
- 8C Quiz
- Chapter 8 Test

- 9B Quiz

- 10A Quiz
- 10B Quiz
- Chapter 10 Test

Part III: Instruction and Student Activities

What instructional and student activities will we use for this unit? These activities should directly align with the indicators and assessments.

*See part I for the common lessons that are taught with the essential question/learning targets