

Dish Drain Math Review

Grade Level: 6th

Content area(s): *Math* Warm up – Area/perimeter, measurement (TAKS Obj. 1 (6.2)A, Obj. 2 (6.4)A,

Classroom Time: 15 minutes

Purpose: Review area, perimeter, circumference, measurement, and work with fractions/decimals, practice writing skills.

Skills Addressed: Math: Measurement and Geometry

Writing: Short descriptive essay

Visual Arts Skill:

Supplies:

Handout, pencil, ruler – both customary and metric, calculator optional

Lesson Process:

A. Warm-up Procedure–

1. Distribute handout including the picture, and either rulers with customary and metric measures.
2. Students first find the perimeter of the grate and a slot in the grate in inches then in centimeters from the picture. Their answers are written on the handout. . – *Grate in inches = 18.25" (18 1/4")*, *Slot in inches = 4.25" = 4 1/4" = 13/4"* – *Grate in cm = 46 cm.*, *Slot in cm = 12.6 cm*
3. The students use the measurements from the grate to find the area in both square inches and square centimeters. – *Area in sq inches = 19 15/16 sq in. = 319/16 sq in = 19.9375 sq in*, *Area in sq cm = 1.8 sq cm*
4. Remind the students that when they find area they are multiplying therefore their answers will be in terms of square inches or square centimeters.
5. Mention to the students legends on maps. The legend relates the measurement on the map to actual lengths or distances. Remind them the picture is smaller than the actual object.
6. Students decide which expression would be the equation to find the actual width of the grate. - *B. $w = 4\frac{1}{2} \cdot 9$. Since the width is 9 cm and 1 cm represents 4 1/2 cm, the two are multiplied together to find the actual length.*
7. Ask the students what the formula for the circumference of a circle is. – *Two times the radius times pi, $2(\pi)r$ or the diameter times pi, $d\pi$.*
8. Students select the equation to find the circumference of the described circle. – *D. $(\pi)2$. Since the diameter is 2 inches the formula $c = d \pi$ is the correct one to use.*



9. Go to the following website, <http://justcreativedesign.com/2008/04/08/creative-photographs/>, to show students some unique photographs. Ask students to describe a photograph they would like to create. – *Descriptions will vary.*

B. Student assessment or final product to be developed:

Classroom observation and handout

C. Extension activities:

1. Students can produce models for their photograph and
2. Students can print a copy of the map of Sam Houston State University, <http://www.shsu.edu/map/>, measure distances between buildings, the size of the buildings and/or find actual distances, lengths and measurements.
3. Students can create a “map” of their school using either customary or metric measurements.
4. Students can create a model of their school following a stated ratio.

Scaled Rooms

1. Find the perimeter of the *grate* in inches, show work.
2. Find the perimeter of *one of the slots in the grate* using inches, show work.
3. Find the perimeter of *grate* in centimeters, show work.
4. Find the perimeter of the *one of the slots in the grate* using centimeters, show work.
5. Find the area of the *grade and a slot in the grate* in both inches and centimeters.
6. Find the diameter of the plate in inches.
7. Find the diameter of the plate in centimeters.
8. If one centimeter represent four and one half centimeters in actual length, in order to find the actual width of the *great* which expression would be used.
 - A. $w = 1 + 4\frac{1}{2}$
 - B. $w = 4\frac{1}{2} \cdot 9$
 - C. $w = 9 + 4\frac{1}{2}$
 - D. $w = 1 \cdot 4\frac{1}{2}$
9. Which expression could be used to find the approximate circumference of the circle in inches?
 - A. $2(\pi)2$
 - B. $2(2)$
 - C. $2(\pi)4$
 - D. $(\pi)2$
10. Your assignment is to create a photograph that is unique and has a message. State the message you are trying to portray.



National Standards:

Number and Operations Standard for Grades 6–8

Understand numbers, ways of representing numbers, relationships among numbers, and number systems

- work flexibly with fractions, decimals, and percents to solve problems;

Compute fluently and make reasonable estimates

- select appropriate methods and tools for computing with fractions and decimals from among mental computation, estimation, calculators or computers, and paper and pencil, depending on the situation, and apply the selected methods;

Geometry Standard for Grades 6–8

Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships

- understand relationships among the angles, side lengths, perimeters, areas, and volumes of similar objects;

Measurement Standard for Grades 6–8

Understand measurable attributes of objects and the units, systems, and processes of measurement

- understand both metric and customary systems of measurement;
- understand relationships among units and convert from one unit to another within the same system;
- understand, select, and use units of appropriate size and type to measure angles, perimeter, area, surface area, and volume.

Apply appropriate techniques, tools, and formulas to determine measurements

- select and apply techniques and tools to accurately find length, area, volume, and angle measures to appropriate levels of precision;
- develop and use formulas to determine the circumference of circles and the area of triangles, parallelograms, trapezoids, and circles and develop strategies to find the area of more-complex shapes;
- solve problems involving scale factors, using ratio and proportion;

TAKS Objectives

Objective 1

The student will demonstrate an understanding of numbers, operations, and quantitative reasoning.

(6.2) **Number, operation, and quantitative reasoning.** The student adds, subtracts, multiplies, and divides to solve problems and justify solutions. The student is expected to

(A) model addition and subtraction situations involving fractions with [objects,] pictures, words, and numbers;

Objective 2

The student will demonstrate an understanding of patterns, relationships, and algebraic reasoning.

(6.4) **Patterns, relationships, and algebraic thinking.** The student uses letters as variables in mathematical expressions to describe how one quantity changes when a related quantity changes. The student is expected to

(A) use tables and symbols to represent and describe proportional and other relationships such as those involving conversions, arithmetic sequences (with a constant rate of change), perimeter and area; and