

## **Math Strand 3: Geometric and Spatial Relationship**

**CLE: 3.4 Use visualization, spatial reasoning and geometric modeling to solve problems.**

**Health Profession: Dentist**

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**Reference:**

**Larson B.S (2001). McDougal Litell *Geometry Teachers edition*. Evanston, IL: McDougal Litell Inc.**

**Objectives:**

**At the completion of this presentation the high school student will be able to:**

- 1. State how geometry can be applied while doing dental work.**
- 2. Illustrate how different angles can be measured; and why knowledge of angles is important. Draw several diagrams in three dimension**
- 3. Identify the importance of spatial relationship and its use in dentistry.**

**Background Summary of Information as related to Dentists and CLE.**

The nature of the work of a dentist involves diagnosing, examining x-rays and treating problems of the teeth. They also do procedures such as teeth extraction, filling of cavities, removing tooth decay, and repairing fractured teeth. Dentists also offer teaching on how to take care of teeth, in the area of brushing, flossing, and other aspects of dental care. Dental schools require a minimum of two years of college level pre dental education prior to admittance. Dental schools normally take four academic years. High school and college students who want to become dentist should take courses in mathematics, chemistry, physics, and biology. According to U.S department of labor, employment of dentists is projected to grow nine per cent through 2016, about as fast as the average of all occupations. The demand is expected to increase. Median annual earnings of salaried dentists were \$136,690 in 2006 per U.S department of labor.

Geometric Polygons are commonly used in dentistry to enhance communication with reference to general examination and making diagnosis. For instance, triangles of the head and neck are important to dentists. In the course of doing dental work, two triangular areas are observed. These areas contain important organs that may present with a problem that the dentist will be the first to detect. Catching a problem such as tumors early may save a life. Examples: The contents of the anterior (front) triangle of the neck are:

- The trachea**
- The parathyroid glands**
- The carotid arteries**
- Jugular veins**
- The thyroid gland**

**The contents of the posterior (back) triangle of the neck are:  
Lymph nodes draining the head and the neck.  
Nervous complexes to neck and upper arm.**

**Dentists need to know the boundaries of these triangles and potential problems with their content.**

**Scenario:**

**Mary is a 25-year-old girl who dearly loves chocolate and sweet candies. Her last dental exam was when she was 17 years old. For the last one month, she has been having mild sensitivity in her right lower teeth upon drinking cold beverages or while chewing. Last night she could barely sleep due to pain on her entire right jaw and a severe throbbing headache. This morning Dr. Kirk, was assigned to Mary as her attending dentist for the first time.**

- **What is your first priority at this time pertaining Mary's condition?**
- **Why is it necessary to examine her anterior and posterior triangle of the neck?**
- **What kind of investigation is needed at this time, and what are the implications if they it is not done appropriately?**

**Activities:**

**Problem solving**

**Divide the class in three.**

**Group 1**

**Suppose you have a box that measures 10in. long by 4in wide by 6 in. high that you want to use to store toy blocks that are in 1in. by 1 in. by 1 in. How many blocks will fit in the box? In the same way, this is what happens in the dental world when the teeth/ tooth are/is filled.**

**Formula: Length x width x height.**

**$10 \times 4 \times 6 = 240$  blocks.**

**Group 2**

**You are assisting your dentist today, and he wants you to do several oral x-rays on the patient. He wants you to use different angles. What would a right angle look like? How many degrees are in it? How do a  $90^{\circ}$ , and  $45^{\circ}$  angles differ from each other? Knowing the different angles and their degrees will enable the students to know how they are applied in day-to-day events in dentistry especially while taking X-rays.**

