

Understanding Tolerance Interval Lesson Plan

Name: Michele Longsine

District: Oconto Falls School District, Oconto

Falls, WI

2017

Overview:

Students will be able to determine tolerance intervals and whether dimensions fall within those limits.

Featured Externship Business:

KS Kolbenschmidt

Subject:

Mathematics

Grade Level(s):

7th and 8th

Learning objectives:

After doing this activity, students should be able to:

• determine a tolerance interval and if given measurements, determine if they fall within the stated acceptable tolerance range.

Workplace Readiness Skill:

X Social Skills X Communication X Teamwork X Critical Thinking

X Attitude and Initiative X Planning and Organization

X Professionalism

Media Etiquette

Type of Activity:

X Individual

X Small Group

X Whole class

Model Academic Standards for School Counseling:

Academic Development Domain:

Content Standard C: Students will understand the relationship of academics to the world of work, and to life at home and in the community.

Core Performance Standard 1: Understand how to relate school to life experiences.

Career Development Domain:

Content Standard H: Students will understand the relationship between educational achievement and career development.

Core Performance Standard 2: Participate in ongoing, lifelong learning experiences to adapt to and excel in a diverse and changing economy.

Common Core State Mathematics Standards:

B.8.2 Perform and explain operations on rational numbers

7.NS.1 Apply and extend previous understandings of addition and subtraction to add and subtract Rational numbers

Time:

20-30 MINUTES

Materials:

- SmartNotebook
- Notes on Tolerance Intervals (attached)
- Paper
- Writing Utensil

Directions:

- 1. Introduce the idea of tolerance intervals using the SmartNotebook notes (attached). Make sure students understand what the \pm symbol means.
- 2. Work with students to determine the permissible limits of variation in the four example problems (Slide 2).
- 3. Have students complete the group activity from the notes (Slide 3).
- 4. Have students check each other's work through the extension activity (Slide 4).

Wrap-up:

Have students answer the questions on Slide 5.

1

When machining parts, certain specifications must be met. The acceptable range of measurements is called the **TOLERANCE**.



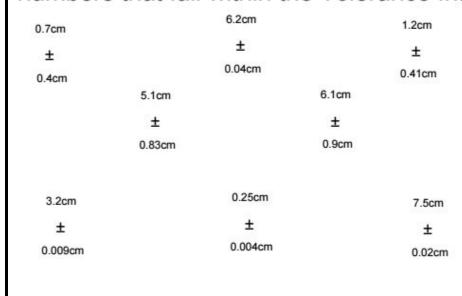
Tolerance is the permissible limits of variation. The range is given using the symbol ±.

2

Example: Find permissible limits of variation...Tolerance Interval for each problem

- A. $7 \text{ cm} \pm 0.5 \text{ cm}$
- B. $4 \text{ mm} \pm 0.02 \text{ mm}$
- C. $0.04 \text{ mm} \pm .003 \text{ mm}$
- D. $0.3 \text{ cm} \pm 0.01 \text{ cm}$

Activity: Send someone from your table to pop a balloon. Everyone at your table needs to write down the Tolerance Interval for your problem. Each student needs to generate a list of 5 numbers that fall within the Tolerance Interval.



4

Activity Extension: Exchange your paper with someone from a different table. Check their work.

- Did they write the tolerance interval correctly?
- 2. Did they make a list of 5 numbers that fall within that interval?
- 3. Did they label their answers?

If you find any errors, respectfully discuss them with the other student. Together, make all corrections in a different color.

Wrap UP: On the back of your paper, write a complete sentence to answer each question.

- 1. What is a tolerance interval?
- 2. How it is determined?
- 3. What does the symbol ± mean?
- 4. Why might companies be concerned about checking tolerance intervals?

