

Task Title: Calculating Tolerances

in Manufacturing and Construction

# OALCF Cover Sheet – Practitioner Copy

**Learner Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Date Started: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Date Completed: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |
| --- | --- | --- |
| **Goal Path:** | Employment | Apprenticeship |
| Secondary School | Post Secondary | Independence |

**Successful Completion:**  Yes No

**Task Description:** The learner will calculate measurement parameters based on tolerance.

**Main Competency/Task Group/Level Indicator:**

* Communicate Ideas and Information/Complete and create documents/B3.2a
* Understand and Use Numbers/Use measures/C3.2

**Materials Required:**

* Pen/pencil and paper and/or digital device
* Calculator or digital device with calculator function

# Learner Information

People working in skilled trades often need to determine whether a measurement is within acceptable parameters. This is called tolerance. This includes things like the length or width of materials, how flat a surface is, or angles of joints used for construction. Tolerance allows for small variations while ensuring safety and quality standards are met.

# Work Sheet

**Task 1: Calculate the minimum and maximum measurements based on the tolerance given. Complete the chart.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Measurement** | **Tolerance** | **Minimum** | **Maximum** |
| **3.5 mm** | **+/- 0.02 mm** |  |  |
| **28.01 inches** | **+/- 0.03 inches** |  |  |
| **3.375 inches** | **+/- 0.002 inches** |  |  |
| **4.63 inches** | **+/- 0.1 inches** |  |  |

**Task 2: Determine whether each given measurement falls within tolerance. Complete the chart.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tolerance** | **Minimum** | **Maximum** | **Given Measurement** | **Is this measurement within tolerance?** |
| 3.450 mm +/- 0.05 mm |  |  | 3.453 mm |  |
| 12.000 mm +/- 0.003 mm |  |  | 12.098 mm |  |
| 22.01 +/- 0.01 mm |  |  | 22.00 mm |  |
| 18.874 +/- 0.005 |  |  | 18.880 mm |  |

# Answers

**Task 1: Calculate the minimum and maximum measurements based on the tolerance given. Complete the chart.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Measurement** | **Tolerance** | **Minimum** | **Maximum** |
| **3.5 mm** | **+/- 0.02 mm** | 3.48 mm | 3.52 mm |
| **28.01 inches** | **+/- 0.03 inches** | 27.98 inches | 28.04 inches |
| **3.375 inches** | **+/- 0.002 inches** | 3.373 inches | 3.377 inches |
| **4.63 inches** | **+/- 0.1 inches** | 4.53 inches | 4.73 inches |

**Task 2: Determine whether each given measurement falls within tolerance. Complete the chart.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tolerance** | **Minimum** | **Maximum** | **Given Measurement** | **Is this measurement within tolerance?** |
| **3.450 mm +/- 0.05 mm** | 3.400 mm | 3.500 mm | **3.453 mm** | Yes |
| **12.000 mm +/- 0.003 mm** | 11.997 mm | 12.003 mm | **12.098 mm** | No |
| **22.01 +/- 0.01 mm** | 22.00 mm | 22.02 mm | **22.00 mm** | Yes |
| **18.874 +/- 0.005** | 18.869 mm | 18.879 mm | **18.880 mm** | No |

# Performance Descriptors

| Levels | Performance Descriptors | Needs Work | Completes task with support from practitioner | Completes task independently |
| --- | --- | --- | --- | --- |
| B3.2a | uses layout to determine where to make entries |  |  |  |
|  | begins to make some inferences to decide what information is needed, where and how to enter the information |  |  |  |
|  | follows instructions on documents |  |  |  |
| C3.2 | calculates using numbers expressed as whole numbers, fractions, decimals, percentages and integers |  |  |  |
|  | chooses and performs required operation(s); may make inferences to identify required operation(s) |  |  |  |
|  | selects appropriate steps to solutions |  |  |  |
|  | interprets, represents, and converts measures using whole numbers, decimals, percentages, ratios and simple, common fractions (e.g. ½, ¼) |  |  |  |
|  | uses strategies to check accuracy (e.g. estimating, using a calculator, repeating a calculation, using the reverse operation) |  |  |  |

This task: Was successfully completed Needs to be tried again

Learner Comments:

Instructor (print): Learner (print):

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**