|  |  |
| --- | --- |
| Title | **Perform technical mathematics** |
| Level | **2** | **Credits** | **6** |

|  |  |
| --- | --- |
| Purpose | This Competency Standard identifies the competencies required to perform technical mathematics at workplace by an architect in accordance with the organization’s approved guidelines and procedures. You will be expected to Calculate decimals and fractions, Apply unit conversion in system of measurement, Apply ratio/proportion using scales, Calculate perimeter, area and volume of objects and Derive area and perimeter using trigonometric formula, either manually or computerized at workplace. Your underpinning knowledge regarding technical mathematics will be sufficient to provide you the basis for your work. |

|  |  |
| --- | --- |
| Classification ISCED | 0732 Building and civil engineering |

|  |  |
| --- | --- |
| Available grade | Competent / Not yet competent |

|  |  |
| --- | --- |
| Modification history | N/A |

| **Unit of Competency** | **Performance Criteria** | **Knowledge** | **Tools & Equipment** |
| --- | --- | --- | --- |
| B1. Calculate decimals and fractions | You will be able to: P1. Arrange tools required for the jobP2. Apply tools to calculate mathematical fractions  | You will be able to: K1. Describe the usage of tools required for this job K2. Identify the symbols of mathematical fractions  | Computer, calculator, stationary items,  |
| B2. Apply unit conversion in system of measurement | You will be able to: P1. Arrange tools required for the jobP2. Apply tools to calculate mathematical conversion factors P3. Apply the FPS (foot pound second) and MKS (meter, kilogram, second) systems of measurement | You will be able to: K1. Describe the usage of tools required for this job K2. Explain the systems of measurements K3. Describe the FPS (foot pound second) and MKS (meter, kilogram, second) systems of measurement  | Computer, calculator, stationary items  |
| B3. Apply ratio/proportion using scales | You will be able to:  P1. Select scales required for the job P2. Apply the concept of ratio of scale (e.g: 1/96 to a foot)P3. Select the scale ratio appropriate to draw larger object into a smaller one and vice versa  | You will be able to: K1. Describe the usage of scale required for this jobK2. Describe the concept of proportionK3. Describe the concept of ratio of scale (e.g: 1/96 to a foot) | Architectural triangular scale, measuring tape, computer, stationary items |
| B4. Calculate perimeter, area and volume of objects  | You will be able to:P1. Select tools required for calculation P2. Calculate area of square, rectangle, triangle and circle etc using formulaP3. Calculate perimeter of square, rectangle, triangle and circle etc using formulaP4. Calculate volume of cube, slab, prism, sphere etc using formulaP5. Add standard units to the derived quantity (e.g: Square foot Sft etc.)P6. Calculate area and perimeter using Auto CAD (software)  | You will be able to: K1. Describe the usage of tools required for this jobK2. Describe the geometrical figures K3. Describe the formula for calculating areaK4. Describe the formula for calculating perimeterK5. Describe the formula for calculating volume K6. Explain the standard units for area, perimeter and volume K7. Describe the Auto CAD commands used for calculation of area and perimeter  | Computer, calculator, stationary items |
| B5. Derive area and perimeter using trigonometric formulae  | You will be able to: P1. Select tools required for calculation P2. Use trigonometric tableP3. Calculate area of triangle by using trigonometric formula P4. Calculate perimeters of triangle using trigonometric formulaP5. Add standard units to the derived quantity (e.g: Square foot Sft etc.) | You will be able to:K1. Describe the usage of tools required for this jobK2. Explain use of trigonometric table K3. Describe formulas for derivation of perimeter and area K4. Explain the standard units for area, perimeter and volumeK5. Explain the use of standard units to the derived quantity (e.g: Square foot Sft etc.) | Calculator, stationary item, trigonometric table |