**MPS 9 Translation** Objectives 
**Translation:** Given a set of words or equations, we are able to accurately represent the information in another form. The focus in this unit is on drawing diagrams, creating graphs, selecting symbols and terminology, and identifying the system..

**Skill development:**

1. Further appreciation that others solve problems differently than you do.
2. Through self awareness, build self confidence.
3. Skill in seeing the same ideas from different viewpoints.
4. Extend awareness of your personal preference.
5. Through the *everybody-share* technique, build more skill in giving and receiving feedback.
6. Through the *everybody-share* technique, acquire skill in extracting common ideas.

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**Pretest:**

**Awareness**: how aware are you of what you do when you use this ability? Rate with an "x"

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Unaware I just do it | | | | Aware of Some | | | | | I can describe The details of how I do it | Very aware |

**Skill**: how skilled are you in doing this activity? Rate with an "x"

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Poor | | Fair | | Good | | | Very good | | | Excellent |

**Comments:**

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_____
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Learning objectives

**MPS 9** Translation.

1.1 given a term listed under "concepts introduced", you should be able to give a word definition, list pertinent characteristics and cite an example.

2.3 given the name of a chemical process equipment, you will be able to identify the number of streams that must enter and leave. You will be able to write the function of the equipment and describe what exchanges between the streams entering and leaving.

5.1 given a verbal description of the situation, you will be able to draw at least one diagram to represent the situation. On the drawing you will note the stated goal. This will be judged by the tutor and by peers to be a helpful and unambiguous representation.

5.2 given a diagram and a problem situation, you will be able to draw a dotted line representing the boundary of at least one system. The location of the boundary shall be judged by the tutor and by peers to be a helpful and unambiguous representation.

5.3 given a problem statement and a diagram, you will be able to select the best coordinate axis and draw it on

the diagram. The choice will be judged by the tutor and by peers to be a helpful and unambiguous representation.

5.4 given a set of ideas, you will be able to create symbols for those ideas. 80% of the symbols will be judged by the tutor to be unique, self consistent and unambiguous.

6.1 given an everybody-share technique, you will be able to assess the degree to which a peer's efforts **help** or **hinder** your approach to solving problems. You will elaborate to provide evidence for your assessment. You will refrain from assessing the effort as *good* or *bad.*

**Concepts introduced** variable, symbol, diagram, system., various pieces of chemical engineering equipment.

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**MPS 9:** Translation Example assessment tasks:

1. For the problem given in Table 1, draw a diagram and identify the system for the purpose of doing an overall mass balance.

2. The problem you are working on is given in Table 2. This involves the mass balance around a chemical process. You are given volumetric flowrates, mass flowrates, molar flowrates, volume compositions and mass fractions. Different values and units are scattered throughout. You believe part of the difficulty in this problem will be unit conversions and just keeping track of the information. Ultimately, you want everything to be expressed as mass. For each variable, some possible symbols are suggested. Which ones might you select. Rationalize your choice.

Volumetric flowrate stream 2, $V_2$ $Q_2$ $F_{V,2}$ $V^2$ $Q^2$ FR(2) other

Mass flowrate steam 3. $M_3$ $Ma_3$ $F_{mass,3}$ $M^3$ $Q^3$ MaFR(3) other

Molar flowrate of stream 10

volume concentration component 2 in stream 4 $v_{4,2}$ $c_{2,4}$ $x_{2\,(4)}$ other

mass fraction of component 1 in stream 5