

Quantitative Reasoning – Data for three-year period

Definition

A process of manipulating or analyzing quantitative data for the purpose of asking and/or answering meaningful questions pertaining to that data.

Outcomes

Students identify a problem given in quantitative terms and demonstrate conceptual understanding of it. This includes the ability to interpret the problem and to determine the information needed to develop a method or strategy for solving it.

Goal(s)

Upon completion of the liberal arts core math courses, 75% of students should be rated as competent in each of the following the categories: conceptual understanding, problem solving strategy, and communication. 15% should be rated as more than competent in those categories.

Method(s)

Students in terminal liberal arts core math classes (Math 1050, 1110,1210, and 1180) are assessed based on their performance on selected questions on tests that measure quantitative reasoning. Their performance is measured in each category (conceptual understanding, problem solving strategy, and communication) on a three-point scale, which is detailed in a rubric. Scores over 2 are considered competent; those over 2.75 are considered more than competent.

Quantitative Reasoning (2016-17)

Class	Total Number of Students	Conceptual Understanding		Problem Solving Strategy		Communication	
		≥ 2.75	≥ 2.00	≥ 2.75	≥ 2.00	≥ 2.75	≥ 2.00
	N = 307						
Math 1050 Applications of Mathematics	81	62 76.5%	80 98.8%	61 75.3%	79 97.5%	60 74.1%	79 97.5%
Math 1180 Elementary Probability and Statistics	70	59 84.3%	67 95.7%	49 70.0%	66 94.3%	47 67.1%	65 92.9%
Math 1110 Precalculus I	95	40 42.1%	71 74.7%	33 34.7%	67 70.5%	28 29.5%	57 60.0%
Math 1210 Precalculus II	61	36 59.0%	51 83.6%	33 54.1%	47 77.0%	27 44.3%	49 80.3%

Quantitative Reasoning (2017-18)

Class	Total Number of Students	Conceptual Understanding		Problem Solving Strategy		Communication	
		≥ 2.75	≥ 2.00	≥ 2.75	≥ 2.00	≥ 2.75	≥ 2.00
	N =280						
Math 1050 Applications of Mathematics	64	50 78.1%	57 89.1%	47 73.4%	55 85.9%	37 57.8%	57 89.1%
Math 1180 Elementary Probability and Statistics	106	72 67.9%	90 84.9%	67 63.2%	84 79.2%	66 62.3%	86 81.1%
Math 1110 Precalculus I	54	20 37.0%	47 87.0%	19 35.2%	43 79.6%	14 25.9%	42 77.8%
Math 1210 Precalculus II	56	27 48.2%	54 96.4%	23 41.1%	52 92.9%	21 37.5%	45 80.4%

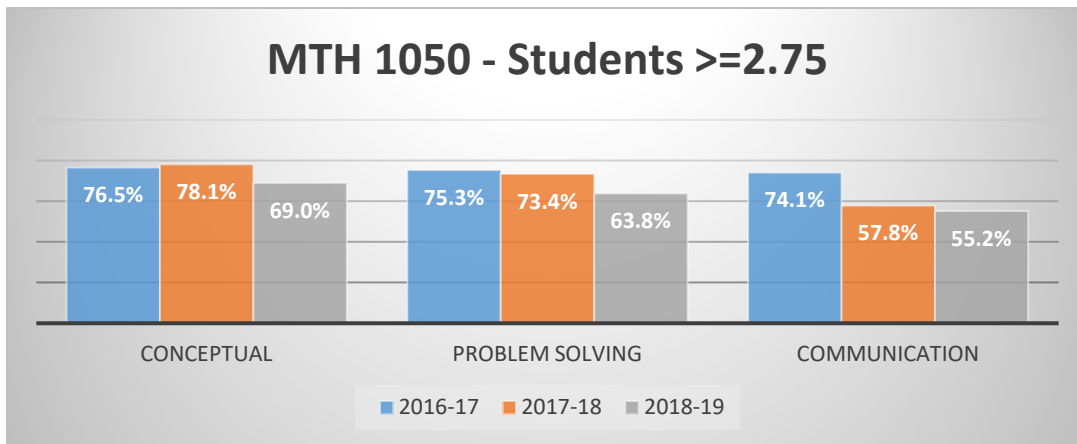
Quantitative Reasoning (2018-19)

Class	Total	Conceptual Understanding		Problem Solving Strategy		Communication	
		≥ 2.75	≥ 2.00	≥ 2.75	≥ 2.00	≥ 2.75	≥ 2.00
	N = 279						
Math 1050 Applications of Mathematics	58	40 69.0%	48 82.8%	37 63.8 %	45 77.6%	32 55.2%	47 81.0%
Math 1180 Elementary Probability and Statistics	130	101 77.7%	121 93.1%	81 62.3%	117 90.0%	90 69.2%	117 90.0%
Math 1110 Precalculus I	36	13 36.1%	29 80.6%	13 36.1%	29 80.6%	10 27.8%	26 72.2%
Math 1210 Precalculus II	55	40 72.7%	52 94.5%	33 60.0%	52 94.5%	32 58.2%	51 92.7%

Each Course over a Three-Year Period

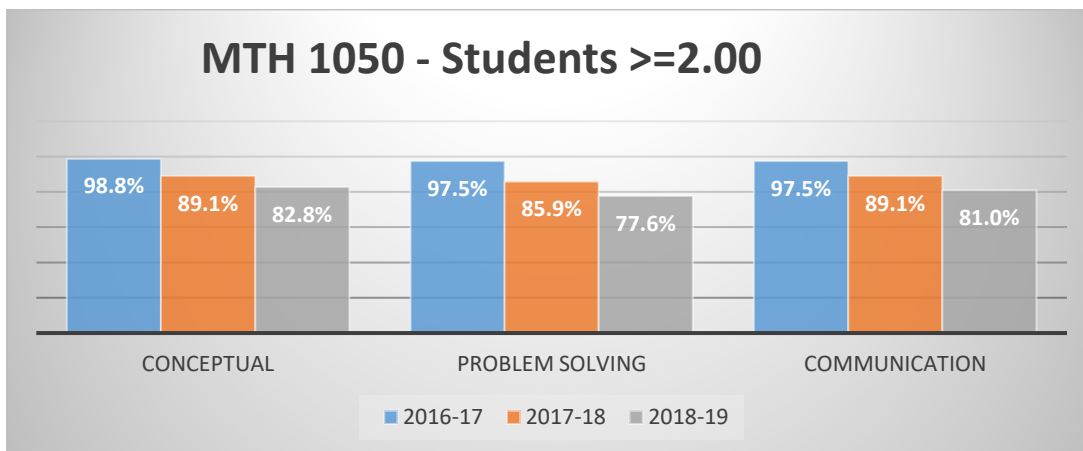
MTH 1050: Applications of Mathematics (Students ≥ 2.75)

Math 1050	Conceptual	Problem Solving	Communication	Total # of Students
2016-17	76.5%	75.3%	74.1%	81
2017-18	78.1%	73.4%	57.8%	64
2018-19	69.0%	63.8%	55.2%	58



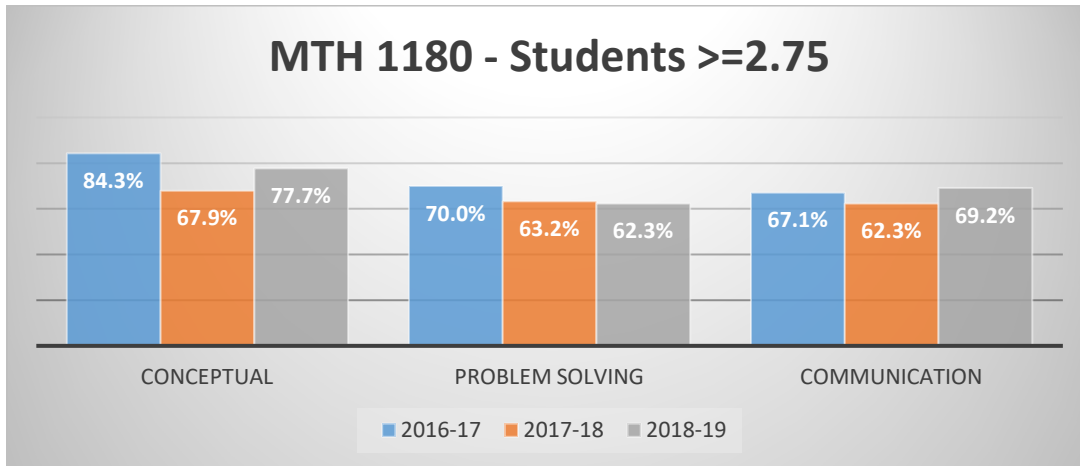
MTH 1050: Applications of Mathematics (Students ≥ 2.00)

Math 1050	Conceptual	Problem Solving	Communication	Total # of Students
2016-17	98.8%	97.5%	97.5%	81
2017-18	89.1%	85.9%	89.1%	64
2018-19	82.8%	77.6%	81.0%	58



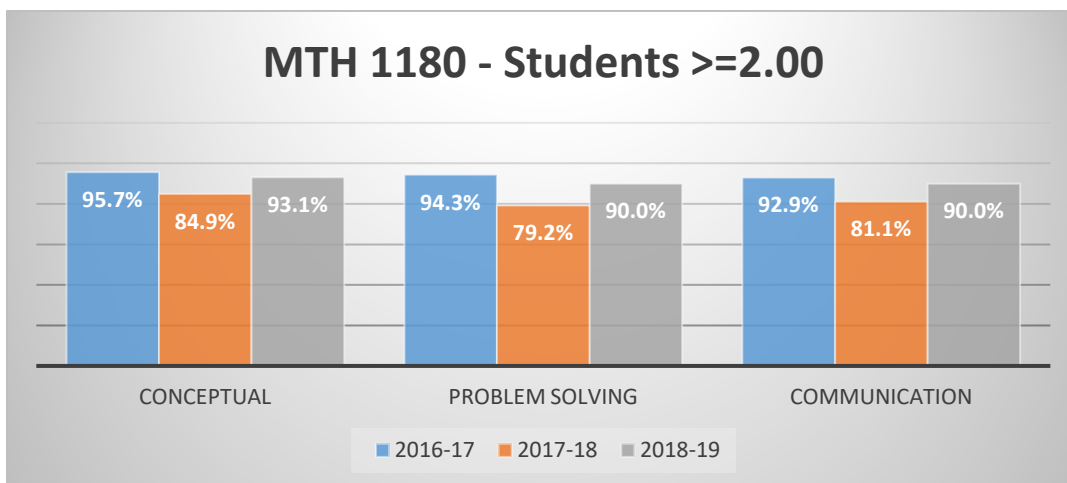
MTH 1180: Elementary Probability & Statistics (Students ≥ 2.75)

Math 1180	Conceptual	Problem Solving	Communication	Total # of Students
2016-17	84.3%	70.0%	67.1%	70
2017-18	67.9%	63.2%	62.3%	106
2018-19	77.7%	62.3%	69.2%	130



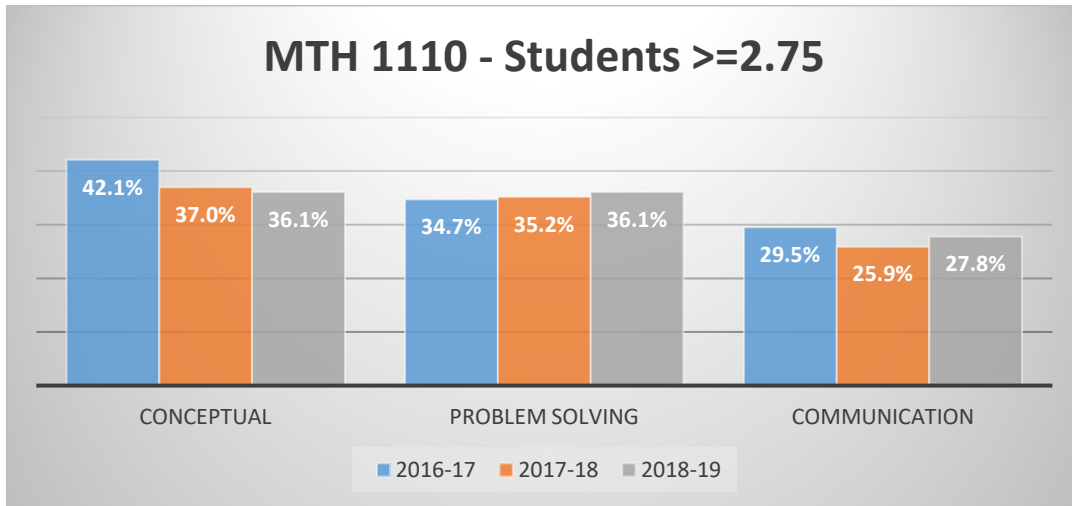
MTH 1180: Elementary Probability & Statistics (Students ≥ 2.00)

Math 1180	Conceptual	Problem Solving	Communication	Total # of Students
2016-17	95.7%	94.3%	92.9%	70
2017-18	84.9%	79.2%	81.1%	106
2018-19	93.1%	90.0%	90.0%	130



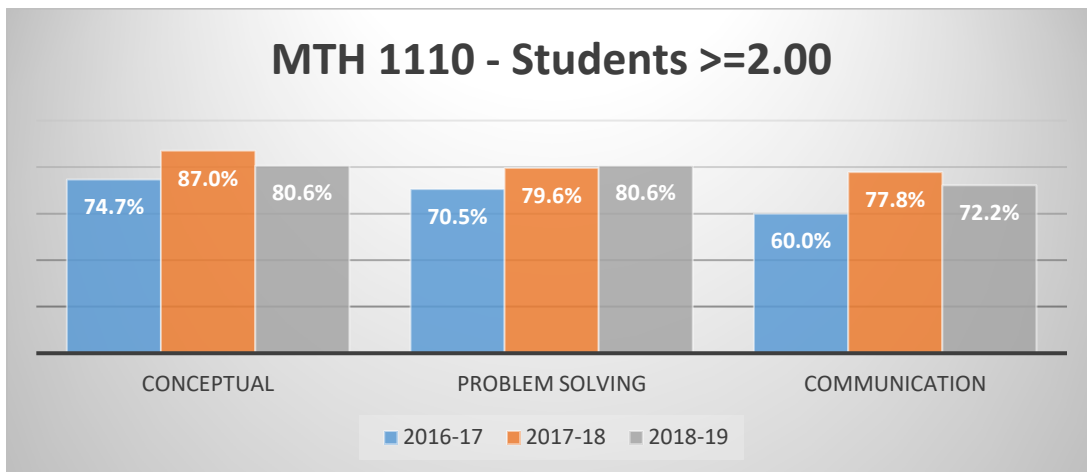
MTH 1110: Precalculus I (Students ≥ 2.75)

Math 1110	Conceptual	Problem Solving	Communication	Total # of Students
2016-17	42.1%	34.7%	29.5%	95
2017-18	37.0%	35.2%	25.9%	54
2018-19	36.1%	36.1%	27.8%	36



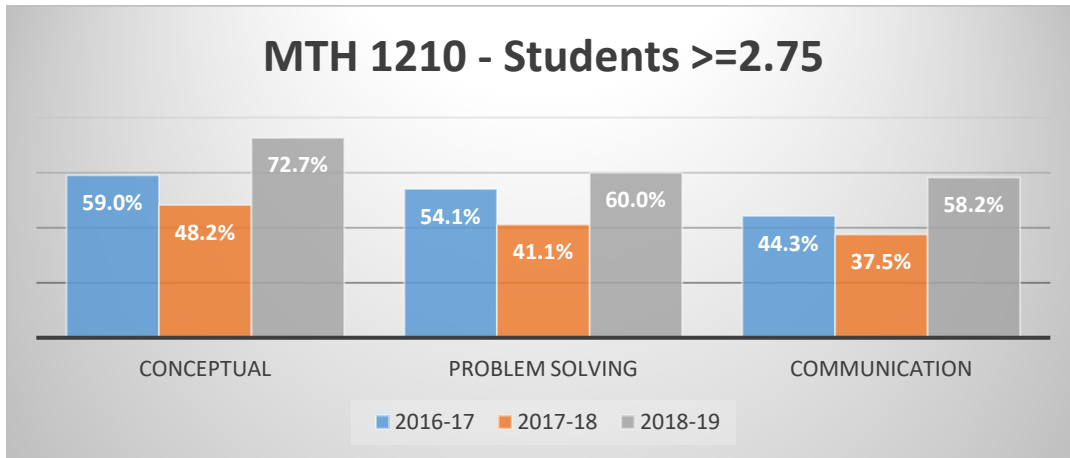
MTH 1110: Precalculus I (Students ≥ 2.00)

Math 1110	Conceptual	Problem Solving	Communication	Total # of Students
2016-17	74.7%	70.5%	60.0%	95
2017-18	87.0%	79.6%	77.8%	54
2018-19	80.6%	80.6%	72.2%	36



MTH 1210: Precalculus II (Students ≥ 2.75)

Math 1210	Conceptual	Problem Solving	Communication	Total # of Students
2016-17	59.0%	54.1%	44.3%	61
2017-18	48.2%	41.1%	37.5%	56
2018-19	72.7%	60.0%	58.2%	55



MTH 1210: Precalculus II (Students ≥ 2.00)

Math 1210	Conceptual	Problem Solving	Communication	Total # of Students
2016-17	83.6%	77.0%	80.3%	61
2017-18	96.4%	92.9%	80.4%	56
2018-19	94.5%	94.5%	92.7%	55

