

WHAT DO THE STANDARDS OF MATHEMATICAL PRACTICE LOOK LIKE "IN PRACTICE"?

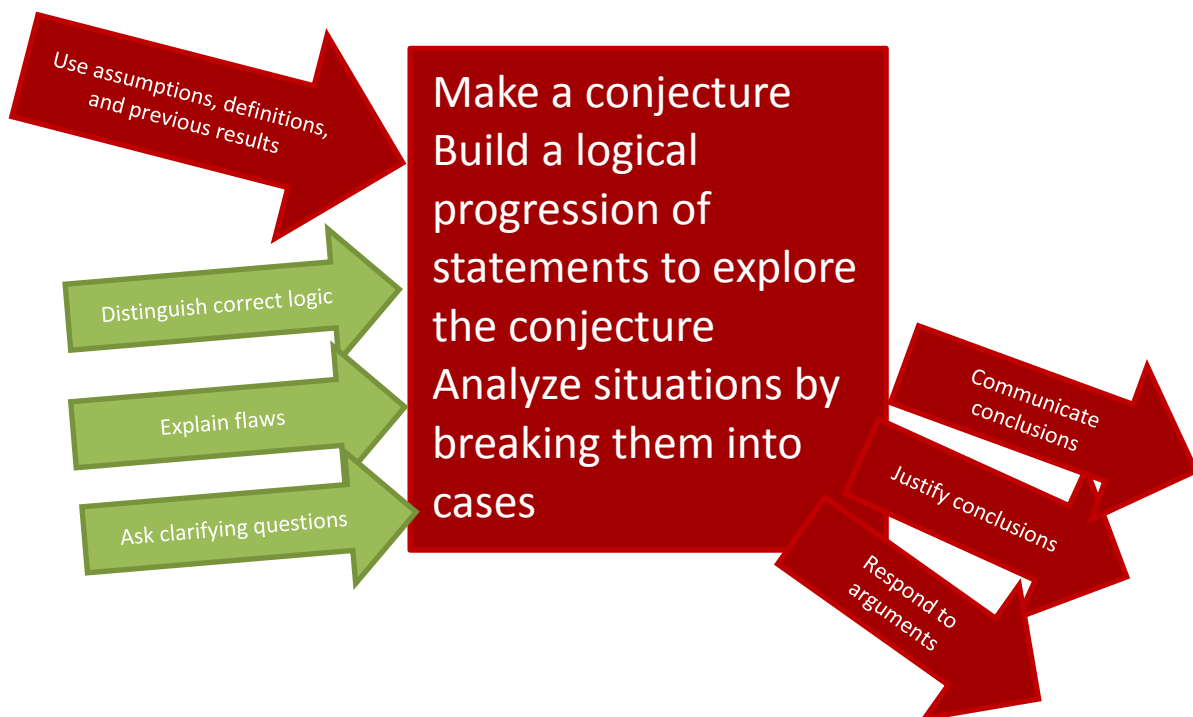
MP 1: MAKE SENSE OF PROBLEMS AND PERSEVERE IN SOLVING THEM.

- EXPLAIN THE MEANING OF THE PROBLEM TO THEMSELVES
- LOOK FOR ENTRY POINTS AND RELEVANT PRIOR KNOWLEDGE
- ANALYZE GIVENS, CONSTRAINTS, RELATIONSHIPS, GOALS
- MAKE CONJECTURES ABOUT THE SOLUTION
- CONSIDER ANALOGOUS PROBLEMS AND LOOK FOR TRY SPECIAL CASES AND SIMILAR FORMS
- MONITOR AND EVALUATE PROGRESS, AND CHANGE COURSE IF NECESSARY
- CHECK THEIR ANSWER TO PROBLEMS USING A DIFFERENT METHOD
- CONTINUALLY ASK THEMSELVES "DOES THIS MAKE SENSE?"

MP 2: REASON ABSTRACTLY AND QUANTITATIVELY

- STUDENTS CYCLICALLY CONTEXTUALIZE AND DECONTEXTUALIZE THE MATHEMATICS IN A PROBLEM.
- DECONTEXTUALIZE – REPRESENT AS SYMBOLS, ABSTRACT THE SITUATION
- CONTEXTUALIZE – PAUSE AS NEEDED TO REFER BACK TO SITUATION

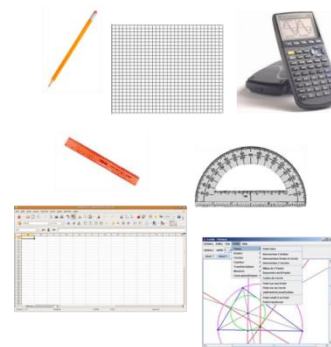
MP 3: CONSTRUCT VIABLE ARGUMENTS AND CRITIQUE THE REASONING OF OTHERS



- MAKE ASSUMPTIONS AND APPROXIMATIONS TO SIMPLIFY A SITUATION, REALIZING THESE MAY NEED REVISION LATER
- INTERPRET MATHEMATICAL RESULTS IN THE CONTEXT OF THE SITUATION AND REFLECT ON WHETHER THEY MAKE SENSE

MP 5: USE APPROPRIATE TOOLS STRATEGICALLY –

- SUFFICIENTLY FAMILIAR WITH APPROPRIATE TOOLS TO DECIDE WHEN EACH TOOL IS HELPFUL, KNOWING BOTH THE BENEFIT AND LIMITATIONS
- DETECT POSSIBLE ERRORS
- IDENTIFY RELEVANT EXTERNAL MATHEMATICAL RESOURCES, AND USE THEM TO POSE OR SOLVE PROBLEMS



MP 6: ATTEND TO PRECISION

- COMMUNICATE PRECISELY TO OTHERS WITH CLEAR DEFINITIONS AND LANGUAGE
- STATE THE MEANING OF THE SYMBOLS THEY USE
- SPECIFY UNITS OF MEASUREMENT
- LABEL THE AXES TO CLARIFY CORRESPONDENCE WITH PROBLEM
- CALCULATE ACCURATELY AND EFFICIENTLY
- EXPRESS NUMERICAL ANSWERS WITH AN APPROPRIATE DEGREE OF PRECISION

MP7: LOOK FOR AND MAKE USE OF STRUCTURE

- LOOK CLOSELY TO DISCERN A PATTERN OR STRUCTURE
- STEP BACK FOR AN OVERVIEW AND SHIFT PERSPECTIVE
- SEE COMPLICATED THINGS AS SINGLE OBJECTS, OR AS COMPOSED OF SEVERAL OBJECTS

MP8: LOOK FOR AND EXPRESS REGULARITY IN REPEATED REASONING

- NOTICE IF CALCULATIONS ARE REPEATED AND LOOK BOTH FOR GENERAL METHODS AND FOR SHORTCUTS
- MAINTAIN OVERSIGHT OF THE PROCESS WHILE ATTENDING TO THE DETAILS, AS THEY WORK TO SOLVE A PROBLEM
- CONTINUALLY EVALUATE THE REASONABLENESS OF THEIR INTERMEDIATE RESULTS