Standards for Mathematical Practice Brief Form

Students using these practices understand and apply mathematics with confidence. Therefore, the mathematical practices describe behaviors that we want all students to develop.

1 Make sense of problems and persevere in solving them.
►Find meaning in problems, ►Analyze, predict and plan solution pathways, ►Verify answers, ►Continually ask themselves: "Does this make sense?"

2 Reason abstractly and quantitatively.
►Make sense of quantities and their relationships, ►Use two complementary abilities: *decontextualize*–to abstract a given situation and represent it symbolically and manipulate the representing symbols, and *contextualize*–to pause during the manipulation process to consider the referents for the symbols involved, ►Create coherent representations.

3 Construct viable arguments and critique the reasoning of others.
►Understand and use information to construct arguments, ►Make and explore the truth of conjectures, ►Justify conclusions and respond to arguments of others.

4 Model with mathematics.
►Apply mathematics to problems in everyday life, society, and the workplace, ►Identify quantities in a practical situation, ►Interpret results in the context of the situation and reflect on whether the results make sense.

5 Use appropriate tools strategically.
►Consider the available tools when solving problems, including mental math, pencil and paper, concrete models, protractor, calculators, and other technological tools.

6 Attend to precision.
►Communicate precisely to others, ►Use clear definitions, ►State the meaning of symbols, and specify units, ►Label axes, ►Calculate accurately and efficiently.

7 Look for and make use of structure.
►Discern patterns and structures, ►Can step back for an overview and shift perspective, ►See complicated things as single objects or as being composed of several objects.

8 Look for and express regularity in repeated reasoning.
►When calculations are repeated, look for general methods, patterns and shortcuts, ►Maintain oversight of the process, while attending to the details, ►Evaluate whether intermediate results and answers makes sense.

The full version Mathematical Practices is on pages 6-8 of the Common Core State Standards for Mathematics. Available for download at: www.corestandards.org/

By Jim Olsen

Standards for Mathematical Practice Brief Form

Students using these practices understand and apply mathematics with confidence. Therefore, the mathematical practices describe behaviors that we want all students to develop.

1 Make sense of problems and persevere in solving them.
►Find meaning in problems, ►Analyze, predict and plan solution pathways, ►Verify answers, ►Continually ask themselves: "Does this make sense?"

2 Reason abstractly and quantitatively.
►Make sense of quantities and their relationships, ►Use two complementary abilities: *decontextualize*–to abstract a given situation and represent it symbolically and manipulate the representing symbols, and *contextualize*–to pause during the manipulation process to consider the referents for the symbols involved, ►Create coherent representations.

3 Construct viable arguments and critique the reasoning of others.
►Understand and use information to construct arguments, ►Make and explore the truth of conjectures, ►Justify conclusions and respond to arguments of others.

4 Model with mathematics.
►Apply mathematics to problems in everyday life, society, and the workplace, ►Identify quantities in a practical situation, ►Interpret results in the context of the situation and reflect on whether the results make sense.

5 Use appropriate tools strategically.
►Consider the available tools when solving problems, including mental math, pencil and paper, concrete models, protractor, calculators, and other technological tools.

6 Attend to precision.
►Communicate precisely to others, ►Use clear definitions, ►State the meaning of symbols, and specify units, ►Label axes, ►Calculate accurately and efficiently.

7 Look for and make use of structure.
►Discern patterns and structures, ►Can step back for an overview and shift perspective, ►See complicated things as single objects or as being composed of several objects.

8 Look for and express regularity in repeated reasoning.
►When calculations are repeated, look for general methods, patterns and shortcuts, ►Maintain oversight of the process, while attending to the details, ►Evaluate whether intermediate results and answers makes sense.

The full version Mathematical Practices is on pages 6-8 of the Common Core State Standards for Mathematics. Available for download at: www.corestandards.org/

By Jim Olsen

Standards Codes

For K–8 there are 11 Domains

CC = Counting and Cardinality,
OA = Operations and Algebraic Thinking,
NBT = Number and Operations in Base 10,
MD = Measurement and Data,
G = Geometry,
NF = Number and Operations-Fractions,
RP = Ratios and Proportional Relationships,
NS = Number System,
EE = Expressions and Equations,
SP = Statistics and Probability,
F = Functions.

The numbering system for K-8 is
Grade.Domain.Standard#   For example: 2.MD.7

For High School there are 6 Conceptual Categories

Number and Quantity (N)
N-RN = The Real Number System
N-Q = Quantities
N-CN = The Complex Number System
N-VM = Vector and Matrix Quantities

Algebra (A)
A-SSE = Seeing Structure in Expressions
A-APR = Arithmetic with Polynomials and Rational Expressions
A-CED = Creating Equations
A-REI = Reasoning with Equations and inequalities

Functions (F)
F-IF = Interpreting Functions
F-BF = Building Functions
F-LE = Linear and Exponential Models
F-TF = Trigonometric Functions

Modeling ($\star$)
Appear throughout the HS standards

Geometry (G)
G-CO = Congruence
G-SRT = Similarity, Right Triangles, and Trigonometry
G-C = Circles
G-GPE = Expressing Geometric Properties with Equations
G-GMD = Geometric Measurement and Dimension
G-MG = Modeling with Geometry

Statistics and Probability (S)
S-ID = Categorical and Quantitative Data
S-IC = Inferences and Justifying Conclusions
S-CP = Conditional Probability and Rules of Probability
S-MD = Using Probability to Make Decisions

The numbering system for HS is
Category.Domain.Standard#   Examples: F.LE.2 or F.LE.1b

$$+ - \times \div + - \times \div + - \times \div + - \times \div + - \times \div$$

Common Core State Standards for Mathematics – CCSSM

This card available for download at:
faculty.wiu.edu/JR-Olsen/wiu/common-core/front.html
By Jim Olsen

Standards Codes

For K–8 there are 11 Domains

CC = Counting and Cardinality,
OA = Operations and Algebraic Thinking,
NBT = Number and Operations in Base 10,
MD = Measurement and Data,
G = Geometry,
NF = Number and Operations-Fractions,
RP = Ratios and Proportional Relationships,
NS = Number System,
EE = Expressions and Equations,
SP = Statistics and Probability,
F = Functions.

The numbering system for K-8 is
Grade.Domain.Standard#   For example: 2.MD.7

For High School there are 6 Conceptual Categories

Number and Quantity (N)
  N-RN = The Real Number System
  N-Q = Quantities
  N-CN = The Complex Number System
  N-VM = Vector and Matrix Quantities
Algebra (A)
  A-SSE = Seeing Structure in Expressions
  A-APR = Arithmetic with Polynomials and Rational Expressions
  A-CED = Creating Equations
  A-REI = Reasoning with Equations and inequalities

Functions (F)
  F-IF = Interpreting Functions
  F-BF = Building Functions
  F-LE = Linear and Exponential Models
  F-TF = Trigonometric Functions
Modeling ($\star$)
  Appear throughout the HS standards
Geometry (G)
  G-CO = Congruence
  G-SRT = Similarity, Right Triangles, and Trigonometry
  G-C = Circles
  G-GPE = Expressing Geometric Properties with Equations
  G-GMD = Geometric Measurement and Dimension
  G-MG = Modeling with Geometry
Statistics and Probability (S)
  S-ID = Categorical and Quantitative Data
  S-IC = Inferences and Justifying Conclusions
  S-CP = Conditional Probability and Rules of Probability
  S-MD = Using Probability to Make Decisions

The numbering system for HS is
Category.Domain.Standard#   Examples: F.LE.2 or F.LE.1b

$$+ - \times \div + - \times \div + - \times \div + - \times \div + - \times \div$$

Common Core State Standards for Mathematics – CCSSM

This card available for download at:
    faculty.wiu.edu/JR-Olsen/wiu/common-core/front.html
                                                                    By Jim Olsen