Math – Grade 8

Number

Excelling	Meeting	Approaching	Working Below
Consistently uses precise mathematical language	Routinely uses correct mathematical language	Sometimes uses correct mathematical language	Rarely uses correct mathematical language
Consistently and independently makes appropriate connections among concrete, pictorial and symbolic representations	Routinely makes effective connections among concrete, pictorial and symbolic representations	Sometimes makes connections among concrete, pictorial and symbolic representations with support	Rarely makes connections among concrete, pictorial and symbolic representations
Consistently and independently selects and applies appropriate strategies to solve a range of complex problems	Routinely selects and applies appropriate strategies to solve problems	Sometimes selects and applies appropriate strategies to solve problems	Rarely selects or applies appropriate strategies to solve problems
Consistently and independently makes insightful connections between and within the different strands of mathematics	Routinely makes effective connections between and within the different strands of mathematics	Sometimes makes connections between and within the different strands of mathematics	Rarely makes connections between and within the different strands of mathematics
Consistently represents, compares and orders a wide range of whole numbers, square roots, integers, decimals, and fractions accurately	Routinely represents, compares and orders whole numbers, square roots, integers, decimals, and fractions accurately	Sometimes represents, compares and orders whole numbers, square roots, integers, decimals, and fractions accurately; may require pictorial or other representations	Has difficulty representing, comparing and ordering whole numbers, square roots, integers, decimals, and fractions accurately, even with concrete or pictorial representations
Consistently and independently makes connections between a wide range of fractions, ratios, decimals, whole numbers, squares, square roots, percent, and integers	Routinely makes connections between fractions, ratios, decimals, whole numbers, squares, square roots, percent, and integers	Sometimes makes connections between fractions, ratios, decimals, whole numbers, squares, square roots, percent, and integers	Rarely makes connections between fractions, ratios, decimals, whole numbers, squares, square roots, percent, and integers
Consistently and independently uses referents and estimation strategies effectively and efficiently	Routinely and effectively uses referents and estimation strategies	Sometimes uses referents and estimation strategies	Rarely uses referents and estimation strategies
Consistently uses benchmarks and patterns effectively and efficiently	Routinely and effectively uses benchmarks and patterns	Sometimes uses benchmarks and patterns	Rarely uses benchmarks and patterns
Makes efficient and logical estimates to predict outcomes and check for reasonableness	Routinely makes effective and logical estimates to predict outcomes and check for reasonableness	Sometimes makes effective and logical estimates to predict outcomes and check for reasonableness	Rarely makes logical estimates to predict outcomes or checks for reasonableness
Uses strategies (including mental math) effectively and efficiently	Routinely uses strategies (including mental math) effectively	Sometimes uses strategies (including mental math) effectively	Rarely uses strategies effectively (including mental math)
Consistently and independently explains strategies and reasoning with clarity, precision, and thoroughness	Routinely and clearly explains strategies and reasoning	Sometimes explains strategies and reasoning, or explanations may be incomplete	Has difficulty explaining strategies and reasoning
Rarely makes minor errors	Few minor errors	Some major errors	Many major errors
Evidence: (following Statistics and Probability section) **Glossary of key words**: (following Evidence section at end of document)			

Expectations included in all 4 strands

Patterns and Relations

	Excelling	Meeting	Approaching	Working Below
Expectations included in all 4 strands	Consistently uses precise mathematical language	Routinely uses correct mathematical language	Sometimes uses correct mathematical language	Rarely uses correct mathematical language
	Consistently and independently makes appropriate connections among concrete, pictorial and symbolic representations	Routinely makes effective connections among concrete, pictorial and symbolic representations	Sometimes makes connections among concrete, pictorial and symbolic representations with support	Rarely makes connections among concrete, pictorial and symbolic representations
	Consistently and independently selects and applies appropriate strategies to solve a range of complex problems	Routinely selects and applies appropriate strategies to solve problems	Sometimes selects and applies appropriate strategies to solve problems	Rarely selects or applies appropriate strategies to solve problems
	Consistently and independently makes insightful connections between and within the different strands of mathematics	Routinely makes effective connections between and within the different strands of mathematics	Sometimes makes connections between and within the different strands of mathematics	Rarely makes connections between and within the different strands of mathematics
	Consistently and independently makes connections among a wide range of representations of patterns (equations, graphs, tables)	Routinely makes connections among various representations of patterns (equations, graphs, tables)	Sometimes makes connections among various representations of patterns (equations, graphs, tables)	Rarely makes connections among various representations of patterns (equations, graphs, tables)
	Consistently includes precise labels and headings in tables, graphs and other representations	Routinely includes appropriate labels and headings in tables, graphs and other representations	Sometimes includes appropriate labels and headings in tables, graphs and other representations	Rarely includes labels and headings in tables, graphs and other representations
	Consistently and independently explains relationships and reasoning with clarity, precision, and thoroughness	Routinely and clearly explains relationships and reasoning	Sometimes explains relationships and reasoning	Has difficulty explaining relationships and reasoning
	Consistently and independently represents a wide variety of situations and solves problems that involve linear relationships	Routinely represents situations and solves problems that involve linear relationships	Sometimes represents situations and solves problems that involve linear relationships	Rarely represents situations and solves problems that involve linear relationships
	Rarely makes minor errors	Few minor errors	Some major errors	Many major errors
Evidence: (following Statistics and Probability section) **Glossary of key words**: (following Evidence section at end of document)				

Shape and Space

Expectations included in all 4 strands

Excelling	Meeting	Approaching	Working Below
Consistently uses precise mathematical language	Routinely uses correct mathematical language	Sometimes uses correct mathematical language	Rarely uses correct mathematical language
Consistently and independently makes appropriate connections among concrete, pictorial and symbolic representations	Routinely makes effective connections among concrete, pictorial and symbolic representations	Sometimes makes connections among concrete, pictorial and symbolic representations with support	Rarely makes connections among concrete, pictorial and symbolic representations
Consistently and independently selects and applies appropriate strategies to solve a range of complex problems	Routinely selects and applies appropriate strategies to solve problems	Sometimes selects and applies appropriate strategies to solve problems	Rarely selects or applies appropriate strategies to solve problems
Consistently and independently makes insightful connections between and within the different strands of mathematics	Routinely makes effective connections between and within the different strands of mathematics	Sometimes makes connections between and within the different strands of mathematics	Rarely makes connections between and within the different strands of mathematics
Consistently and independently explains Pythagorean theorem and solves related problems	Routinely explains the Pythagorean theorem and solves related problems	Sometimes explains the Pythagorean theorem and solves related problems	Has difficulty explaining the Pythagorean theorem and solving related problems
Consistently identifies, explains and solves a wide range of problems involving surface area and volume	Routinely identifies, explains and solves problems involving surface area and volume	Sometimes identifies, explains and solves problems involving surface area and volume	Has difficulty identifying, explaining and solving problems involving surface area and volume
Consistently and independently draws views of, constructs, and rotates a wide range of 3-D objects	Routinely draws views of, constructs, and rotates 3-D objects	Sometimes draws views of, constructs, and rotates 3-D objects	Has difficulty drawing views of, constructing, and rotating 3-D objects
Consistently and independently estimates as appropriate	Routinely estimates when appropriate	Sometimes estimates when appropriate to ensure reasonableness	Has difficulty estimating
Consistently explains strategies and reasoning with clarity, precision, and thoroughness	Routinely and clearly explains strategies and reasoning	Sometimes explains strategies and reasoning, or explanations may be incomplete	Has difficulty explaining strategies and reasoning
Consistently and independently identifies, explains, and creates a wide range of tessellations	Routinely identifies, explains, and creates tessellations	Sometimes identifies, explains, and creates tessellations	Has difficulty identifying, explaining, and creating tessellations
Consistently and independently uses precise labels (including units) in diagrams; drawings are proportional	Routinely uses appropriate labels (including units) in diagrams; drawings are proportional	Sometimes uses appropriate labels (including units) in diagrams; drawings may not be proportional	Rarely uses appropriate labels (including units) in diagrams
Rarely makes minor errors	Few minor errors	Some major errors	Many major errors

Evidence: (following Statistics and Probability section)
Glossary of key words: (following Evidence section at end of document)

Statistics and Probability

	Excelling	Meeting	Approaching	Working Below
Expectations included in all 4 strands	Consistently uses precise mathematical language	Routinely uses correct mathematical language	Sometimes uses correct mathematical language	Rarely uses correct mathematical language
	Consistently and independently makes appropriate connections among concrete, pictorial and symbolic representations	Routinely makes effective connections among concrete, pictorial and symbolic representations	Sometimes makes connections among concrete, pictorial and symbolic representations with support	Rarely makes connections among concrete, pictorial and symbolic representations
	Consistently and independently selects and applies appropriate strategies to solve a range of complex problems	Routinely selects and applies appropriate strategies to solve problems	Sometimes selects and applies appropriate strategies to solve problems	Rarely selects or applies appropriate strategies to solve problems
	Consistently and independently makes insightful connections between and within the different strands of mathematics	Routinely makes effective connections between and within the different strands of mathematics	Sometimes makes connections between and within the different strands of mathematics	Rarely makes connections between and within the different strands of mathematics
	Consistently and independently organizes data in a format appropriate to a wide range of purposes and compares and critiques data display formats	Routinely organizes data in a format appropriate to purpose and compares and critiques data display formats	Sometimes organizes data in a format appropriate to purpose and compares and critiques data display formats	Rarely organizes data in a format appropriate to purpose and compares and critiques data display formats
	Consistently and independently includes precise labels in charts, tables and graphs	Routinely includes appropriate labels in charts, tables and graphs	Sometimes includes appropriate labels in charts, tables and graphs	Rarely includes labels in charts, tables and graphs
	Consistently and independently interprets data in a wide range of graphs appropriately	Routinely interprets data appropriately to answer questions and solve problems	Sometimes interprets data in graphs appropriately	Has difficulty interpreting data in graphs appropriately
	Consistently and independently explains and determines experimental and theoretical probability for a wide range of independent and dependent events	Routinely explains and determines experimental and theoretical probability for independent and dependent events	Sometimes explains and determines experimental and theoretical probability for independent and dependent events	Has difficulty explaining and determining experimental and theoretical probability for independent and dependent events
	Consistently explains strategies and reasoning with clarity, precision, and thoroughness	Routinely and clearly explains strategies and reasoning	Sometimes explains strategies and reasoning, or explanations may be incomplete	Has difficulty explaining strategies and reasoning
	Rarely makes minor errors	Few minor errors	Some major errors	Many major errors
	Evidence: (following Statistics and Probability section) **Glossary of key words**: (following Evidence section at end of document)			

Evidence of Learning: Suggested Sources

Observations:

- Observe students using models (materials and manipulatives) and diagrams
- Observe students playing games.
- Observe students completing tasks
- Observe student presentations and demonstrations
- Use listening checklist of mathematical language
- Notes from guided math sessions
- "Gallery" walks

Conversations (oral/written):

- Conferences
- Interviews
- Whole class and group discussions
- Guided tasks
- Math talks
- Math journal entry
- Exit slips (written responses)
- Self- and peer assessment and reflection

Products:

- Quizzes (oral/written)
- Projects
- Tests
- Graphs
- Song, poem, art
- Work samples
- Exit slips or other responses to questions
- Math journal entry
- Photos of student use of models
- Group problem solving records
- Portfolios

Glossary

Appropriate: is aligned with the expectations of the curriculum document (e.g., *Routinely selects and applies appropriate strategies to solve problems)*.

Benchmarks: numbers used to compare and order other numbers (e.g., 5, 10, 25, 50, 100).

Concrete representation: using materials/manipulatives (e.g., counters, pattern blocks) to show a mathematical concept or solve a problem

Consistently: always acting or behaving in the same way and of the same quality

Effective: approach used consistently provides an accurate solution

Efficient: approach used has minimal number of steps (based on the expectations of the curriculum) and consistently provides an accurate solution

Pictorial representation: using drawings/diagrams (e.g., drawings of the model, number lines) to show a mathematical concept or solve a problem

Rarely: not often; even with support

Referent: a concrete representation of a quantity or a unit of measurement (it is helpful if the representation is personally meaningful)

Routinely: done very often with no support

Sometimes: occasionally and/or with support

Subitizing: using familiar arrangements of objects to determine how many there are without counting (e.g., dice)

Symbolic representation: using numbers and mathematical symbols (e.g., 9, +, ÷) to show a mathematical concept or solve a problem