

## GRADE 8

### **EALR 1: The student understands and applies the concepts and procedures of mathematics.**

<b>Component 1.1: Understand and apply concepts and procedures from number sense.</b>	
<b><i>Number and numeration</i></b>	
1.1.1 Understand the concept of rational numbers including whole number powers and square roots of square numbers. <span style="border: 1px solid black; padding: 0 2px;">W</span>	4-10, 11-15, 128-133, 154-159, 236-240, 241-246, 297-251, 524-529, 551-556
1.1.2 Understand the relative values of rational numbers including whole number powers and square roots of square numbers. <span style="border: 1px solid black; padding: 0 2px;">W</span>	6-10, 11-15, 134-138, 241-246, 247-251, 536-541, 551-556
1.1.3 Apply properties of addition, multiplication, and the distributive property to the rational number system. <span style="border: 1px solid black; padding: 0 2px;">W</span>	24-28, 36-41
1.1.4 Apply ratio, percent, and direct proportion in situations. <span style="border: 1px solid black; padding: 0 2px;">W</span>	294-298, 299-303, 307-308, 309-310, 338-339, 348-353, 354-359, 360-361, 367-371, 372-373, 374-380, 381-385, 386-387, 389-395, 599-602
<b><i>Computation</i></b>	
1.1.5 Understand the meaning of operations on rational numbers (including square roots of square numbers and whole number powers). <span style="border: 1px solid black; padding: 0 2px;">W</span>	140-145, 148-153, 154-159, 160-161, 162-167, 168-173, 174-175, 254-260, 261-265, 266-270, 530-534, 551-556
1.1.6 Apply computational procedures with fluency on rational numbers including whole number powers and square roots of square numbers. <span style="border: 1px solid black; padding: 0 2px;">W</span>	49-55, 140-145, 148-153, 154-159, 160-161, 162-167, 168-173, 174-175, 254-260, 261-265, 266-270, 530-534, 551-556, 557-562
1.1.7 Understand and apply strategies and tools to complete tasks involving computation on rational numbers.	49-55, 140-145, 148-153, 154-159, 160-161, 162-167, 168-173, 174-175, 254-260, 261-265, 266-270, 530-534, 551-556, 557-562

**Estimation**

1.1.8 Apply estimation strategies to predict or determine the reasonableness of answers in situations involving computation on rational numbers in any form including whole number powers and square roots of square numbers.

29-30, 42-47, 362-366, 551-556

W

**Component 1.2: Understand and apply concepts and procedures from measurement.****Attributes, units, and systems**

1.2.1 Analyze how a change in a linear dimension affects volume and surface area of rectangular prisms and right cylinders. $\boxed{W}$	650-656, 657-661, 664-670, 670-671
---	------------------------------------

1.2.2. Understand and apply derived units of measurement. $\boxed{W}$	543-548
---	---------

1.2.3 Understand why different situations require different levels of precision. $\boxed{W}$	Covered in <i>Algebra I, Mathematics in Context</i>
--	---

**Procedures, precision, and estimation**

1.2.5 Understand and apply formulas including the Pythagorean Theorem to right prisms, right cylinders, and triangles. $\boxed{W}$	557-562, 650-656, 657-661, 664-670, 678-679
--	---

1.2.6 Apply strategies to obtain reasonable estimates of volume and surface area measurements for right cylinders, right prisms, and of the lengths of sides of right triangles. $\boxed{W}$	557-562, 650-656, 657-661, 664-670, 678-679
--	---

**Component 1.3: Understand and apply concepts and procedures from geometric sense.**

***Properties and relationships***

1.3.1 Apply understanding of characteristics and relationships among one-dimensional, two-dimensional, and three-dimensional figures to solve problems. <input type="checkbox"/>	460-465, 466-472, 473-477, 478-479, 480-486, 488-493, 513-514, 584-589, 608-613, 615-621, 622-627, 642-648, 650-656, 657-661, 664-670, 671-677, 678-679
1.3.2 Apply understanding of similarity to two-dimensional figures. <input type="checkbox"/>	584-589, 615-621

***Locations and Transformations***

1.3.3 Understand and apply procedures to find distance between points in two-dimensional representations. <input type="checkbox"/>	402, 404
1.3.4 Understand and apply transformations to figures. <input type="checkbox"/>	495-500, 501-505, 506-510, 511-512, 518-519, 593-598

**Component 1.4: Understand and apply concepts and procedures from probability and statistics.**

***Probability***

1.4.1 Understand the concept of compound events. **W** 316-319, 320-321, 322-326, 336-337

1.4.2 Understand and apply the procedures for comparing theoretical probability and empirical results for independent or compound events. **W** 311-315, 322-326, 327-332, 336-337, 339-343

***Statistics***

1.4.3 Analyze how different samples of a population affect the data. **W** 333-335, 70-74, 76-79

1.4.4 Analyze variations in data to determine the effect on the measures of central tendency. **W** 70-74, 76-79

1.4.5 Understand and apply data techniques to interpret bivariate data. **W** 92, 95, 116

1.4.6 Evaluate how statistics and graphic displays can be used to support different points of view. **W** 108-113, 114-116

**Component 1.5: Understand and apply concepts and procedures from algebraic sense.**

***Patterns, functions, and other relations***

1.5.1 Apply understanding of linear and non-linear relationships to analyze patterns, sequences, and situations. <b>W</b>	405-409, 410-412, 413-418, 419-425, 439-446, 449-455, 578-582
---	---

1.5.2 Analyze a pattern, table, graph, or situation to develop a rule. <b>W</b>	419-425, 449-455
---	------------------

***Symbols and representations***

1.5.3 Understand relationships between quantities including whole number exponents, square roots, and absolute value. <b>W</b>	217-221, 413-418, 419-425, 439-446, 449-455
--	---

1.5.4 Apply understanding of concepts of algebra to represent situations involving single-variable relationships. <b>W</b>	16-21, 203-208
--	----------------

***Evaluating and solving***

1.5.5 Understand and apply the procedures for simplifying single-variable expressions. <b>W</b>	16-21, 203-208
---	----------------

1.5.6 Understand and apply a variety of strategies to solve multi-step equations and one-step inequalities with one variable. <b>W</b>	198-202, 211-216, 273-277, 278-282, 283-284
--	---

**EALR 2: The student uses mathematics to define and solve problems.**

<b>Component 2.1: Understand problems.</b>	
2.1.1 Analyze a situation to define a problem. <b>W</b>	21-23, 33-35, 49-55, 56-58, 84, 97-99, 103, 114-116, 146-148, 160-161, 165, 174-175, 196-197, 200, 208-210, 222-223, 252-253, 258, 271-272, 283-284, 304-308, 309-310, 320-321, 336-337, 360-361, 372-372, 377, 386-388, 410-412, 422, 426-427, 447-448, 476, 478-479, 494, 511-512, 535, 543, 549-550, 564-565, 591-592, 603-604, 609, 628-629, 652, 662-663, 678-679, 685-686
<b>Component 2.2: Apply strategies to construct solutions.</b>	
2.2.1 Apply strategies, concepts, and procedures to devise a plan to solve the problem. <b>W</b>	21-23, 33-35, 45-55, 56-58, 59-65, 84, 97-99, 103, 114-116, 117-121, 146-148, 160-161, 165, 174-175, 176-181, 196-197, 200, 208-210, 222-223, 224-231, 252-253, 258, 271-272, 283-284, 285-289, 304-308, 309-310, 320-321, 336-337, 338-343, 360-361, 372-372, 377, 386-388, 389-395, 410-412, 422, 426-427, 447-448, 449-455, 476, 478-479, 494, 511-512, 513-519, 535, 543, 549-550, 564-565, 566-573, 591-592, 603-604, 609, 628-629, 630-637, 652, 662-663, 678-679, 685-686, 687-692
2.2.2 Apply mathematical tools to solve the problem. <b>W</b>	59-65, 117-121, 176-181, 224-231, 285-289, 338-343, 389-395, 449-455, 513-519, 566-573, 630-637, 687-692

### **EALR 3: The student uses mathematical reasoning.**

<b>Component 3.1: Analyze information.</b>	
3.1.1 Analyze information from a variety of sources to interpret and compare information. <b>W</b>	21-23, 33-35, 45-55, 56-58, 59-65, 84, 97-99, 103, 114-116, 117-121, 146-148, 160-161, 165, 174-175, 176-181, 196-197, 200, 208-210, 222-223, 224-231, 252-253, 258, 271-272, 283-284, 285-289, 304-308, 309-310, 320-321, 336-337, 338-343, 360-361, 372-372, 377, 386-388, 389-395, 410-412, 422, 426-427, 447-448, 449-455, 476, 478-479, 494, 511-512, 513-519, 535, 543, 549-550, 564-565, 566-573, 591-592, 603-604, 609, 628-629, 630-637, 652, 662-663, 678-679, 685-686, 687-692
<b>Component 3.2: Make predictions, inferences, conjectures, and draw conclusions.</b>	
3.2.1 Apply prediction and inference skills to make or evaluate conjectures. <b>W</b>	24-28, 36-41, 186-191, 192-196, 273-277, 473-478, 480-486
3.2.2 Apply the skill of drawing conclusions and support those conclusions using evidence. <b>W</b>	59-65, 117-121, 176-181, 224-231, 285-289, 338-343, 389-395, 449-455, 513-519, 566-573, 630-637, 687-692
3.2.3 Analyze procedures and results in various situations. <b>W</b>	24-28, 36-41, 186-191, 192-196, 273-277, 473-478, 480-486
<b>Component 3.3: Verify results.</b>	
3.3.1 Analyze procedures and information used to justify results using evidence. <b>W</b>	59-65, 117-121, 176-181, 224-231, 285-289, 338-343, 389-395, 449-455, 513-519, 566-573, 630-637, 687-692
3.3.2 Analyze thinking and mathematical ideas using models, known facts, patterns, relationships, or counter examples. <b>W</b>	21-23, 33-35, 45-55, 56-58, 59-65, 84, 97-99, 103, 114-116, 117-121, 146-148, 160-161, 165, 174-175, 176-181, 196-197, 200, 208-210, 222-223, 224-231, 252-253, 258, 271-272, 283-284, 285-289, 304-308, 309-310, 320-321, 336-337, 338-343, 360-361, 372-372, 377, 386-388, 389-395, 410-412, 422, 426-427, 447-448, 449-455, 476, 478-479, 494, 511-512, 513-519, 535, 543, 549-550, 564-565, 566-573, 591-592, 603-604, 609, 628-629, 630-637, 652, 662-663, 678-679, 685-686, 687-692

**EALR 4: The student communicates knowledge and understanding in both everyday and mathematical language.**

<b>Component 4.1: Gather information.</b>	
4.1.1 Apply a planning process to collect information for a given purpose. <b>W</b>	49-55, 59-65, 103, 117-121, 165, 176-181, 200, 224-231, 258, 285-289, 304-308, 338-343, 377, 389-395, 422, 449-455, 476, 513-519, 543, 566-573, 609, 630-637, 652, 687-692
4.1.2 Synthesize information from multiple sources using reading, listening, and observation. <b>W</b>	49-55, 59-65, 103, 117-121, 165, 176-181, 200, 224-231, 258, 285-289, 304-308, 338-343, 377, 389-395, 422, 449-455, 476, 513-519, 543, 566-573, 609, 630-637, 652, 687-692
<b>Component 4.2: Organize, represent, and share information.</b>	
4.2.1 Apply organizational skills for a given purpose. <b>W</b>	21-23, 33-35, 56-58, 84, 97-99, 114-116, 146-148, 160-161, 174-175, 196-197, 208-210, 222-223, 252-253, 271-272, 283-284, 309-310, 320-321, 336-337, 360-361, 372-372, 386-388, 410-412, 426-427, 447-448, 478-479, 494, 511-512, 535, 549-550, 564-565, 591-592, 603-604, 628-629, 662-663, 678-679, 685-686
4.2.2 Apply communication skills to clearly and effectively express or present ideas and situations using mathematical language or notation. <b>W</b>	11-15, 16-21, 24-28, 36-41, 70-75, 76-79, 128-133, 236-240, 241-246, 247-251, 294-298, 311-315, 333-335, 348-353, 400-404, 405-409, 439-446, 460-464, 466-472, 473-478, 480-486, 524-529, 530-534, 536-541, 543-548, 551-556, 593-598, 650-656, 671-677

**EALR 5: The student understands how mathematical ideas connect within mathematics, to other subject areas, and to real-life situations.**

<b>Component 5.1: Relate concepts and procedures within mathematics.</b>	
5.1.1 Apply concepts and procedures from a variety of mathematical areas in a given problem or situation. <b>W</b>	21-23, 33-35, 56-58, 84, 97-99, 114-116, 146-148, 160-161, 174-175, 196-197, 208-210, 222-223, 252-253, 271-272, 283-284, 309-310, 320-321, 336-337, 360-361, 372-372, 386-388, 410-412, 426-427, 447-448, 478-479, 494, 511-512, 535, 549-550, 564-565, 591-592, 603-604, 628-629, 662-663, 678-679, 685-686
5.1.2 Apply different mathematical models and representations to the same situation. <b>W</b>	21-23, 33-35, 56-58, 84, 97-99, 114-116, 146-148, 160-161, 174-175, 196-197, 208-210, 222-223, 252-253, 271-272, 283-284, 309-310, 320-321, 336-337, 360-361, 372-372, 386-388, 410-412, 426-427, 447-448, 478-479, 494, 511-512, 535, 549-550, 564-565, 591-592, 603-604, 628-629, 662-663, 678-679, 685-686
<b>Component 5.2: Relate mathematical concepts procedures to other disciplines.</b>	
5.2.1 Analyze mathematical patterns and ideas to extend mathematical thinking and modeling to other disciplines. <b>W</b>	21-23, 33-35, 56-58, 84, 97-99, 114-116, 146-148, 160-161, 174-175, 196-197, 208-210, 222-223, 252-253, 271-272, 283-284, 309-310, 320-321, 336-337, 360-361, 372-372, 386-388, 410-412, 426-427, 447-448, 478-479, 494, 511-512, 535, 549-550, 564-565, 591-592, 603-604, 628-629, 662-663, 678-679, 685-686
5.2.2 Know the contributions of individuals and cultures to the development of mathematics.	45, 111, 171, 214, 244, 330, 351, 402, 484, 539, 580, 645

**Component 5.3: Relate mathematical concepts and procedures to real-world situations.**

5.3.1 Understand that mathematics is used in daily life and extensively outside the classroom.	21-23, 33-35, 56-58, 84, 97-99, 114-116, 146-148, 160-161, 174-175, 196-197, 208-210, 222-223, 252-253, 271-272, 283-284, 309-310, 320-321, 336-337, 360-361, 372-372, 386-388, 410-412, 426-427, 447-448, 478-479, 494, 511-512, 535, 549-550, 564-565, 591-592, 603-604, 628-629, 662-663, 678-679, 685-686
5.3.2 Understand that mathematics is used within many occupations or careers.	21-23, 33-35, 56-58, 84, 97-99, 114-116, 146-148, 160-161, 174-175, 196-197, 208-210, 222-223, 252-253, 271-272, 283-284, 309-310, 320-321, 336-337, 360-361, 372-372, 386-388, 410-412, 426-427, 447-448, 478-479, 494, 511-512, 535, 549-550, 564-565, 591-592, 603-604, 628-629, 662-663, 678-679, 685-686