Alabama Achievement Level Descriptors  
Grade 7 – Mathematics

The descriptions below provide a brief summary of typical performance for each level. The skills identified in each descriptor represent, but are not all-inclusive of, the skills a student should be able to demonstrate at each achievement level.

<table>
<thead>
<tr>
<th>Ratios and Proportional Relationships</th>
<th>Level 1: Emerging Learner</th>
<th>Level 2: Developing Learner</th>
<th>Level 3: Proficient Learner</th>
<th>Level 4: Distinguished Learner</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Recognizes that proportional relationships are relationships between two equal ratios.</td>
<td>Solves simple problems in context, given the equation of the proportional relationship that models the situation.</td>
<td>Computes unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units.</td>
<td>Uses proportional relationships to solve problems, including those involving rates, discounts, and finding percentages and justifies conclusions.</td>
</tr>
<tr>
<td></td>
<td>Computes simple unit rates.</td>
<td>Determines whether two quantities are in a proportional relationship from a graph.</td>
<td>Determines whether two quantities are in a proportional relationship from a graph or equation.</td>
<td>Makes sense of quantities and their relationships.</td>
</tr>
<tr>
<td></td>
<td>Determines the unit rate for data presented in a table.</td>
<td>Determines the constant of proportionality from tables, diagrams, and/or graphs.</td>
<td>Determines the constant of proportionality in tables, graphs, diagrams, and descriptions of scenarios.</td>
<td>Creates equivalent proportional equations that could be used to solve the same ratio/percent problem in context.</td>
</tr>
</tbody>
</table>

|                                       | Explains what a point \((x, y)\) on the graph of a proportional relationship means in terms of the situation, with special attention to the points \((0, 0)\) and \((1, r)\) where \(r\) is the unit rate. | | | |
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<td></td>
<td></td>
<td></td>
<td>▪ Solves multi-step problems in contexts that require creating an equation to model the situation, including those involving proportions, ratios, and percentages.</td>
<td>▪ Makes sense of problems and perseveres in solving multi-step problems and justifies conclusions.</td>
</tr>
</tbody>
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</thead>
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<tr>
<td></td>
<td>▪ Uses a number line to model addition and subtraction with negative and positive whole numbers.</td>
<td>▪ Describes real-world situations that involve positive and negative rational quantities.</td>
<td>▪ Adds and subtracts rational numbers, using the standard algorithm representing addition and subtraction on number lines and justifying solutions.</td>
<td>▪ Uses the properties of rational numbers to explain and defend their mathematical thinking.</td>
</tr>
<tr>
<td></td>
<td>▪ Multiplies or divides rational numbers using a number line.</td>
<td>▪ Recognizes that the sum of a number and its opposite equals zero.</td>
<td>▪ Describes scenarios where opposites combine to make 0.</td>
<td>▪ Solves problems involving operations with rational numbers, including those requiring the use of algebraic formulas.</td>
</tr>
<tr>
<td></td>
<td>▪ Uses a number line to model addition and subtraction with negative and positive rational numbers.</td>
<td>▪ Interprets sums of rational numbers by describing real-world contexts.</td>
<td>▪ Recognizes subtraction of rational numbers as adding the additive inverse, ( p - q = p + (-q) ).</td>
<td>▪ Explains and demonstrates the steps involved to rewrite expressions using the properties of operations including the distributive property.</td>
</tr>
<tr>
<td></td>
<td>▪ Solves mathematical problems involving the four operations with rational numbers using a number line or other manipulatives.</td>
<td>▪ Solves multi-step real-world problems involving all four operations with rational numbers, including negative numbers.</td>
<td>▪ Creates a story problem that models a given expression or equation.</td>
<td></td>
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</table>
| The Number System         |                             | ▪ Explains that the distance between two rational numbers on the number line is the absolute value of their difference.  
▪ Recognizes that if \( p \) and \( q \) are integers, then \( -\frac{p}{q} = \frac{-p}{q} = \frac{p}{-q} \) and interprets quotients of rational numbers by describing real-world contexts.  
▪ Applies the properties of operations to problems involving all four operations with rational numbers in mathematical and real-world problems.  
▪ Interprets products and quotients of rational numbers in a real-world context and justifies conclusions. |
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<tr>
<td>▪ Recognizes and uses the structure of algebraic equations to solve simple equations using inverse operations.</td>
<td>▪ Rewrites some expressions in a different form.</td>
<td>▪ Recognizes that rewriting an expression in different forms can assist in solving the problem and shows how the quantities in it are related.</td>
<td>▪ Reasons quantitatively by making sense of quantities and considering the units involved.</td>
</tr>
<tr>
<td>▪ Identifies some equivalent expressions.</td>
<td>▪ Identifies equivalent expressions.</td>
<td>▪ Solves multi-step algebraic equations posed with integers, fractions, and decimals.</td>
<td>▪ Decontextualizes by selecting an inequality that represents a situation symbolically.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Uses variables to represent quantities in a real-world or mathematical problem, and constructs simple equations and inequalities to solve problems.</td>
<td>▪ Creates equivalent expressions and explains the key terms and factors of the problem for each expression.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Solves word problems leading to two-step equations and inequalities.</td>
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<td><strong>Geometry</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Identifies two-dimensional figures that result from slicing three-dimensional figures given a visual model.</td>
<td>- Recognizes some quadrilaterals from a description of their characteristics.</td>
<td>- Solves problems involving scale drawings.</td>
<td>- Uses properties of interior angles for polygons to determine unknown angle measures.</td>
</tr>
<tr>
<td>- Sets up simple proportions to solve problems involving scaled lengths and actual lengths.</td>
<td>- Recognizes the difference between area and perimeter/circumference.</td>
<td>- Draws geometric shapes with given conditions.</td>
<td>- Solves real-world and word problems involving the area and circumference of a circle, and area of irregular figures composed of rectangles in a scale drawing.</td>
</tr>
<tr>
<td>- Selects, sketches, or draws freehand, geometric figures with given conditions.</td>
<td>- Determines the volume of a rectangular prism.</td>
<td>- Constructs triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.</td>
<td>- Solves multi-step problems involving surface area and volume.</td>
</tr>
<tr>
<td>- Determines the area of a rectangle.</td>
<td>- Recognizes the structure of quadrilaterals.</td>
<td>- Describes the two-dimensional figures that result from slicing three-dimensional figures.</td>
<td>- Solves geometric problems involving area and volume when extraneous information is given.</td>
</tr>
<tr>
<td>- Identifies right prisms.</td>
<td>- Makes sense of characteristics of quadrilaterals and circles (area, circumference, and perimeter).</td>
<td>- Solves real-life and mathematical problems involving angle measure, area, surface area, and volume.</td>
<td></td>
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<td><strong>Geometry</strong></td>
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<td></td>
<td>▪ Solves problems involving the area and circumference of a circle and area of parallelograms, trapezoids, and triangles.</td>
<td>▪ Uses the properties of a rectangular prism to determine the length of a side, given its surface area.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>▪ Determines the surface area of a rectangular prism.</td>
<td>▪ Shows a range of ability in explaining or arguing how to determine the surface area and volume of any right prism.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>▪ Uses formulas to model area, circumference, surface area, and volume.</td>
<td>▪ Uses the structure of composite geometric shapes to see that they are composed of several shapes.</td>
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<td><strong>Level 1: Emerging Learner</strong></td>
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<tr>
<td>- Recognizes that the probability of a chance event is between 0 and 1, with larger numbers indicating greater likelihood.</td>
</tr>
<tr>
<td>- Approximates probabilities of simple events.</td>
</tr>
<tr>
<td>- Determines the sample space for compound events.</td>
</tr>
<tr>
<td>- Draws simple conclusions from data.</td>
</tr>
<tr>
<td>- Identifies the probability of a chance event as likely, equally likely, or unlikely.</td>
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<tr>
<td>Approximates the probability by collecting data and observing long-run frequencies.</td>
<td></td>
<td>▪ Compares the probabilities of two or more events.</td>
<td>▪ Compares the probabilities of two or more events and justifies the likelihood of each event.</td>
<td></td>
</tr>
<tr>
<td>Compares the probabilities of two or more events.</td>
<td></td>
<td>▪ Develops probability models and use to determine probabilities.</td>
<td>▪ Compares and connects the relative frequency of an event to the theoretical probability of the event.</td>
<td></td>
</tr>
<tr>
<td>Develops probability models and use to determine probabilities.</td>
<td></td>
<td>▪ Uses a tree diagram to find the probability of compound events.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uses a tree diagram to find the probability of compound events.</td>
<td></td>
<td>▪ Recognizes the difference between experimental and theoretical probability.</td>
<td></td>
<td></td>
</tr>
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