Maths curriculum map

Disciplinary knowledge (reasoning)

<table>
<tr><th></th><th>Question and notice</th><th>Explore; Find examples and counter-examples</th><th>Follow a line of inquiry</th><th>Conjecture</th><th>Interpret and infer</th></tr>
<tr><td>7</td><td>Notice and pose questions about the mathematical properties of an object 7(1).</td><td>Carry out a mathematical exploration by generating examples 7(2).</td><td rowspan="2">Understand and follow a line of inquiry provided by the teacher or a peer and draw conclusions 7(3); collaborate on the line of inquiry with other students when appropriate.</td><td>Test conjectures about patterns and relationships 7(3), 7(6).</td><td></td></tr>
<tr><td>8</td><td rowspan="3">Pose higher-order questions, including about changing the mathematical properties of an object.</td><td>Carry out a mathematical exploration by generating examples systematically.</td><td rowspan="3">Make and test conjectures about patterns and relationships using informal language.</td><td>Make inferences in statistical and probabilistic settings.</td></tr>
<tr><td>9</td><td rowspan="3">Identify and explain the significance of counter-examples during mathematical exploration.</td><td>Make mathematically-valid suggestions about the direction of the inquiry.</td><td rowspan="4">Interpret mathematical information accurately; make inferences and draw conclusions.</td></tr>
<tr><td>10</td><td rowspan="2">Identify and pose questions about the mathematical structure of an object.</td><td>Create a mathematically-valid line of inquiry independently.</td><td rowspan="3">Make conjectures about patterns and relationships using formal mathematical language and symbols.</td></tr>
<tr><td>11</td><td rowspan="3">Create and direct a mathematically-valid line of inquiry independently.</td></tr>
<tr><td>12</td><td></td><td></td><td></td></tr>
<tr><td>13</td><td></td><td></td><td></td><td></td></tr>
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<table>
<tr><th></th><th>Connect</th><th>Represent</th><th>Generalise</th><th>Argue and reason</th></tr>
<tr><td>7</td><td>Make connections between number relationships 7(2) and between algebraic and graphical representations 7(4).</td><td rowspan="3">Identify variables and express relations between variables algebraically and graphically.</td><td>Understand a generalisation 7(3), 7(6).</td><td>Develop, express and justify an argument using words and numbers 7(1), 7(5).</td></tr>
<tr><td>8</td><td>Make connections between algebraic and geometrical representations.</td><td>Explain a generalisation.</td><td rowspan="2">Begin to develop, express and justify an argument formally (using algebra).</td></tr>
<tr><td>9</td><td>Formulate proportional relations algebraically; make connections between algebraic and graphical representations.</td><td>Make a generalisation in words.</td></tr>
<tr><td>10</td><td rowspan="2">Make connections between algebraic, graphical and geometrical representations.</td><td rowspan="2">Represent mathematical situations in different ways (numerical, algebraic and geometrical)</td><td rowspan="2">Make a generalisation using mathematical symbols.</td><td rowspan="2">Construct and present chains of reasoning formally (including algebra) to achieve a given result.</td></tr>
<tr><td>11</td></tr>
<tr><td>12</td><td rowspan="2">Understand how different areas of maths are connected; Understand progression and coherence in the subject.</td><td rowspan="2">Draw diagrams and sketch graphs to help explore mathematical situations and interpret solutions; Construct and present mathematical arguments through appropriate use of diagrams and sketching graphs.</td><td rowspan="2">Make a logically coherent generalisation using mathematical symbols.</td><td rowspan="2">Construct rigorous mathematical arguments; Reason logically and recognise incorrect reasoning.</td></tr>
<tr><td>13</td></tr>
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<table>
<tr><th></th><th>Deduce</th><th>Analyse structure</th><th>Assess and evaluate</th><th>Prove</th><th>Communicate</th></tr>
<tr><td>7</td><td rowspan="3">Begin to reason deductively in geometry, number and algebra 7(5).</td><td></td><td></td><td>Understand a proof in words or algebra 7(3).</td><td rowspan="3">Communicate information accurately using mathematical terms 7(1), 7(6).</td></tr>
<tr><td>8</td><td></td><td></td><td>Begin to develop a proof in words or algebra.</td></tr>
<tr><td>9</td><td rowspan="3">Interpret when the structure of a mathematical object requires additive, multiplicative or proportional reasoning.</td><td></td><td>Develop a proof in words or algebra.</td></tr>
<tr><td>10</td><td rowspan="2">Make deductions from mathematical information.</td><td rowspan="2">Assess the validity of an argument and critically evaluate a given way of presenting information.</td><td rowspan="2">Understand and present a proof; Use algebra to support and construct a proof.</td><td rowspan="2">Communicate information accurately using formal mathematical language.</td></tr>
<tr><td>11</td></tr>
<tr><td>12</td><td rowspan="2">Construct and present logical deductions.</td><td></td><td rowspan="2">Read, comprehend and critique mathematical arguments, proofs and justifications of methods and formulae.</td><td rowspan="2">Construct a rigorous formal proof.</td><td rowspan="2">Use mathematical language and notation correctly; construct and present precise statements involving correct use of symbols and connecting language.</td></tr>
<tr><td>13</td><td></td></tr>
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