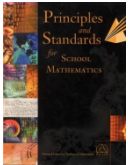

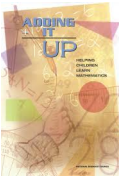


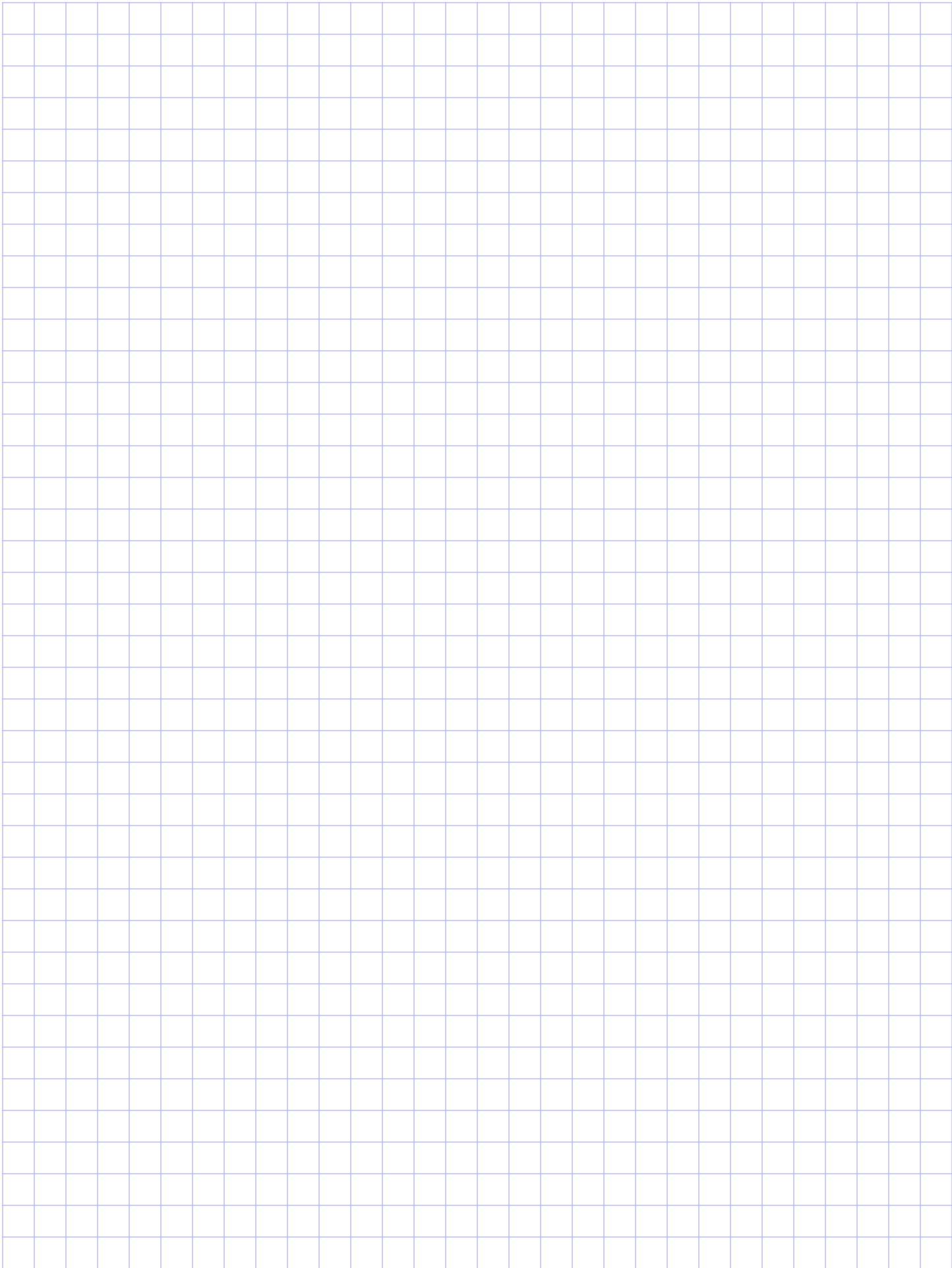


<p><b>5 NCTM Process Standards</b></p> 	<p><b>8 CCSS Mathematical Practices</b></p> 	<p><b>5 Strands of Mathematical Proficiency</b></p> 	<p><b>5 Practices for Effective Inquiry-Oriented Classrooms</b></p> 	<p><b>Guiding Principles for School Mathematics</b></p> 	
				<p><b>8 Mathematical TEACHING &amp; LEARNING Practices</b></p>	<p><b>5 Essential Elements of Mathematics Programs</b></p>
<p><b>Problem Solving</b></p> <ul style="list-style-type: none"> <li>(1) Make sense of problems and persevere in solving them.</li> <li>(5) Model with mathematics.</li> </ul> <p><b>Reasoning &amp; Proof</b></p> <ul style="list-style-type: none"> <li>(2) Reason abstractly and quantitatively.</li> <li>(3) Construct viable arguments and critique the reasoning of others.</li> <li>(8) Look for and express regularity in repeated reasoning.</li> </ul> <p><b>Communications</b></p> <ul style="list-style-type: none"> <li>(3) Construct viable arguments and critique the reasoning of others.</li> </ul> <p><b>Connections</b></p> <ul style="list-style-type: none"> <li>(6) Attend to precision.</li> <li>(7) Look for and make use of structure.</li> </ul> <p><b>Representations</b></p> <ul style="list-style-type: none"> <li>(4) Model with mathematics.</li> </ul>	<ol style="list-style-type: none"> <li><b>1. Make sense of problems and persevere in solving them.</b></li> <li><b>2. Reason abstractly and quantitatively.</b></li> <li><b>3. Construct viable arguments and critique the reasoning of others.</b></li> <li><b>4. Model with mathematics.</b></li> <li><b>5. Use appropriate tools strategically.</b></li> <li><b>6. Attend to precision.</b></li> <li><b>7. Look for and make use of structure.</b></li> <li><b>8. Look for and express regularity in repeated reasoning.</b></li> </ol>	<p><b>Conceptual Understanding</b> The comprehension &amp; connection of concepts, operations, &amp; relations</p> <p><b>Procedural Fluency</b> The meaningful &amp; flexible use of procedures to solve problems</p> <p><b>Strategic Competence</b> The ability to formulate, represent, and solve mathematical problems</p> <p><b>Adaptive Reasoning</b> The capacity to think logically and to justify one's thinking</p> <p><b>Productive Disposition</b> The tendency to see sense in mathematics, to perceive it as both useful and worthwhile, to believe that steady effort in learning mathematics pays off, and to see oneself as an effective learner and doer of mathematics</p>	<p><b>Anticipating</b> what students will do--what strategies they will use--in solving a problem</p> <p><b>Monitoring</b> their work as they approach the problem in class</p> <p><b>Selecting</b> students whose strategies are worth discussing in class</p> <p><b>Sequencing</b> those students' presentations to maximize their potential to increase students' learning</p> <p><b>Connecting</b> the strategies and ideas in a way that helps students understand the mathematics learned</p>	<p><b>Teaching &amp; Learning</b> Engages students in meaningful learning through individual and collaborative experiences</p> <ol style="list-style-type: none"> <li><b>1) Establish Mathematics Goals to Focus Learning</b></li> <li><b>2) Implement Tasks that Promote Reasoning &amp; Problem-Solving</b></li> <li><b>3) Use &amp; Connect Mathematical Representations</b></li> <li><b>4) Facilitate Meaningful Mathematical Discourse</b> (see also 5 Practices)</li> <li><b>5) Pose Purposeful Question</b></li> <li><b>6) Build Procedural Fluency from Conceptual Understanding</b></li> <li><b>7) Support Productive Struggle in Learning Mathematics</b></li> <li><b>8) Elicit &amp; Use Evidence of Student Thinking</b></li> </ol>	<ol style="list-style-type: none"> <li><b>1. Access &amp; Equity</b> Access to high-quality mathematics curriculum, effective teaching &amp; learning, high expectations, support &amp; resources</li> <li><b>2. Curriculum</b> Develops important mathematics along coherent learning progressions and develops connections to the real world</li> <li><b>3. Tools &amp; Technology</b> Integrates tools &amp; technology to help students learn and make sense of mathematical ideas</li> <li><b>4. Assessment</b> Provides evidence of proficiency with mathematical content, includes a variety of strategies and data, informs feedback to students &amp; instructional decisions</li> <li><b>5. Professionalism</b> Educators hold themselves accountable for the mathematical success of every student and for their collective personal &amp; professional growth</li> </ol>

# Monopoly Data

Property	Spaces from GO	\$ Cost
Mediterranean Avenue	1	60
Baltic Avenue	3	60
Reading Railroad	5	200
Oriental Avenue	6	100
Vermont Avenue	8	100
Connecticut Avenue	9	120
St. Charles Place	11	140
Electric Company	12	150
States Avenue	13	140
Virginia Avenue	14	160
Penn Railroad	15	200
St. James Place	16	180
Tennessee Avenue	18	180
New York Avenue	19	200
Kentucky Avenue	21	220
Indiana Avenue	23	220
Illinois Avenue	24	240
B & O Railroad	25	200
Atlantic Avenue	26	260
Ventnor Avenue	27	260
Water Works	28	150
Marvin Gardens	29	280
Pacific Avenue	31	300
North Carolina Avenue	32	300
Pennsylvania Avenue	34	320
Short Line Railroad	35	200
Park Place	37	350
Boardwalk	39	400



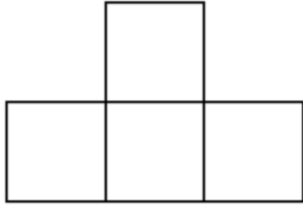
# Change: A Problem from Japan

In this figure as the step changes, the \_\_\_\_\_ also changes

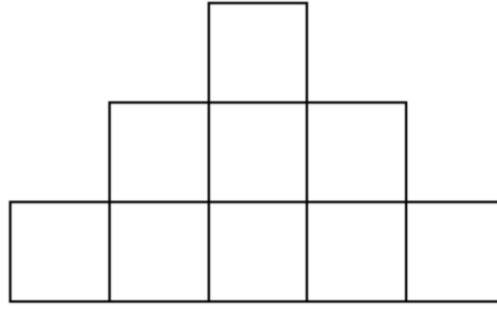
Generate 10+ ideas



Step 1



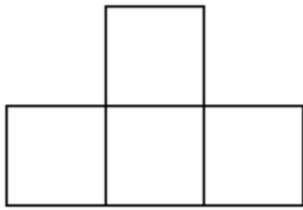
Step 2



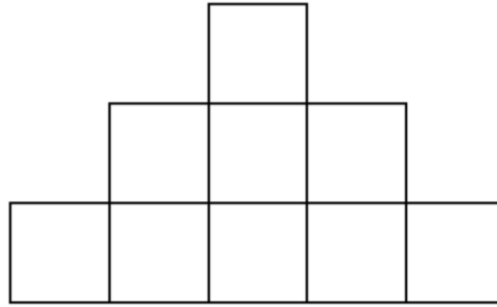
Step 3



Step 1



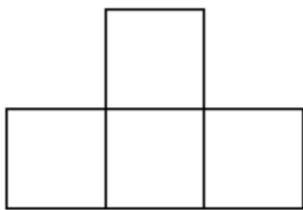
Step 2



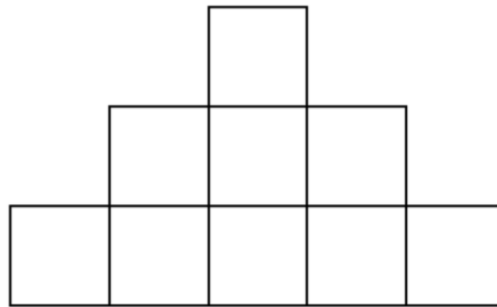
Step 3



Step 1



Step 2



Step 3