



Math Connects²

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STANDARDS	PAGE REFERENCES
<p>STANDARD 4.1 (NUMBER AND NUMERICAL OPERATIONS) ALL STUDENTS WILL DEVELOP NUMBER SENSE AND WILL PERFORM STANDARD NUMERICAL OPERATIONS AND ESTIMATIONS ON ALL TYPES OF NUMBERS IN A VARIETY OF WAYS.</p>	
<p>By the end of Grade 2, students will:</p>	
<p>Number Sense</p>	
<ul style="list-style-type: none"> Use real-life experiences, physical materials, and technology to construct meanings for numbers 	<p>Student Edition: 59-60 <i>Math at Home</i> 209-210 <i>Problem-Solving Investigation</i> 427-428 <i>Problem Solving Projects</i> P3-P18 <i>Smart Start</i> 2-12</p> <p>Teacher Edition: ATS 58; CP 209, 311; ELL 329B; FMB 211A, 313A; GT 21B; H 309H; MP 13; P 19; R 427; Re 207G; SS 207H; T 29, 57, 427; UMTC 213; WU P6, P14, P18</p>
<ul style="list-style-type: none"> Identify number sense based on patterns to 1000 	<p>Student Edition: 39-40, 43-44, 333-334</p> <p>Teacher Edition: A 309G; DI 43B, 211B, 319B; E 40; FMB 43A; HP 44, 334; I 333; LU 313A; PSP 333B; RMV 315A; SP 43; T 39, 43, 333</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Read and write and order numbers words to 20 	<p>Student Edition: 27-28 <i>Get Ready</i> 323</p> <p>Teacher Edition: ELL 33B; T 27</p>
<ul style="list-style-type: none"> Read a number line to 100 	<p>Student Edition: <i>Get Ready</i> 323</p> <p>Teacher Edition: FMB 33A</p>
<ul style="list-style-type: none"> Compare and order numbers to 100 	<p>Student Edition: 33-36 <i>Are You Ready?</i> 14 <i>Data File</i> 34 <i>Get Ready</i> 33, 35</p> <p>Teacher Edition: As 332; BL 33B; BMV 33A; HP 34, 36; LU 331A; RMV 329A, 331A; SP 35; T 33</p>
<ul style="list-style-type: none"> Understand the base ten system: 10 ones = 1ten; 10 tens =1 hundred; 10 hundreds = 1000 	<p>Student Edition: 18-20, 313-316, 319-320 <i>Get Ready</i> 17, 313, 315</p> <p>Teacher Edition: As 316; ATS 19, 320; BL 315B, 319B; BMV 323A; DI 17B, 21B; ELL 319B; FMB 315A; FPC 13A; HP 314, 316; I 17, 313, 315, 319; PSP 315B, 319B; R 17, 313, 315; SP 313, 319; T 313, 315</p>
<ul style="list-style-type: none"> Recognize the meaning of zero in the place value system 	<p>Teacher Edition: As 44; ATS 316; FMB 323A</p>
<ul style="list-style-type: none"> Determine even and odd numbers 	<p>Teacher Edition: FMB 43A</p>
<ul style="list-style-type: none"> Skip count to 100 by 2,5,10 	<p>Student Edition: 43-44</p> <p>Teacher Edition: ATS 44, 225; BMV 43A; DI 43B; FMB 43A; I 43; LU 217A, 491A; RL 227; RMV 217A, 315A; T 43</p>
<ul style="list-style-type: none"> Count backward from 100 by 1,5,10 	<p>Teacher Edition: FMB 43A; T 43</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Name the number before, after and between a given number 	<p>Student Edition: 33-34</p> <p>Teacher Edition: As 34; BL 33B; E 34; EF 331B; ELL 33B; HP 34; I 33, 331; PSP 33B; R 33; SP 33; T 33, 331</p>
<ul style="list-style-type: none"> Skip count by 3 to 36 for multiplication readiness 	<p>Student Edition: 59-60, CS11 <i>Are You Ready?</i> 470</p> <p>Teacher Edition: ATS 33; ELL 475B; GT 475B; R 43; SP 43</p>
<ul style="list-style-type: none"> Skip count by 4 to 48 for multiplication readiness 	<p>Student Edition: 44, CS12</p> <p>Teacher Edition: ELL 475B; HP 44; R 43</p>
<ul style="list-style-type: none"> Join and separate numbers 	<p>Student Edition: 97-98, 147-149, 179-180, 315-316, 319-320 <i>Get Ready</i> 147, 153, 179, 319</p> <p>Teacher Edition: ATS 104; BL 147B, 195B; ELL 153B; HP 316, 320; R 103, 147, 153, 315; SP 179, 319; T 97, 103, 179, 315</p>
<ul style="list-style-type: none"> Recognize the value of a dollar in relation to other coins 	<p>Student Edition: 223-224 <i>Math at Home</i> 209-210</p> <p>Teacher Edition: BMV 215A; DI 215B; EF 223B; EL 214; FMB 215A; I 215; IC 207; GT 22B; LA 207G; MTC 213; Re 207G; T 215</p>
<ul style="list-style-type: none"> Count money using coins and bills 	<p>Student Edition: 211-213, 217-218, 221, 224-226 <i>Chapter Review/Text</i> 237-238 <i>Problem Solving Strategy</i> 219-220</p> <p>Teacher Edition: As 218; ATS 218; CP 209; DI 211B, 217B, 219B, 223B, 317B; FMB 211A, 217A; GS 213; I 211, 223; R 211, 223; SP 211, 224; T 211, 219, 224; UMTC 213</p>
<ul style="list-style-type: none"> Identify and order ordinals positions first to twentieth 	<p>Teacher Edition: FMB 33A</p>

STANDARDS	PAGE REFERENCES
Addition and Subtraction	
<ul style="list-style-type: none"> By playing with numbers determine sums and differences of number sentences: Number families; related facts, inverse operations, addition doubles, doubles plus one 	<p>Student Edition: 3-4, 55-58, 63-64, 67-68, 87-88, 91-92, 97-98, 102-103, 109-110 <i>Are You Ready?</i> 52, 84 <i>Extra Practice</i> 99 <i>Get Ready</i> 55, 63, 67, 87, 89, 91, 103 <i>Problem Solving 2</i></p> <p>Teacher Edition: 5MC 89A, 91A; Ar 51H; As 58, 64; ATS 56, 64, 68; BL 55B, 67B; ELL 67B, 89B, 91B; GT 91B; HP 56, 64, 68, 92; I 55, 57, 63, 67, 87, 89; IC 51, 83; PSP 55B, 57B, 67B, 87B, 89B, 91B; R 55, 57, 63, 67; Re 51H; RMV 67A; S 51G; SP 63, 67; SS 51G; T 55, 63, 67, 89, 91, 103</p>
<ul style="list-style-type: none"> Know with accuracy and fluency addition and subtraction facts up to and including 18 	<p>Student Edition: 55-58, 65, 69-70, 71-72, 109-110 <i>Extra Practice</i> 99 <i>Get Ready</i> 57, 87, 89</p> <p>Teacher Edition: ATS 72; EF 57B; ELL 57B; HP 56, 58, 72; I 57, 71, 87, 89; R 57; SP 55, 57, 71, 87, 89; T 71</p>
<ul style="list-style-type: none"> Do lots and lots of mental math 	<p>Student Edition: 65, 163-164 <i>Explore</i> 143 <i>Game Time</i> 100, 194 <i>Get Ready</i> 163 <i>Problem-Solving Investigation</i> 167-168, 363-364 <i>Problem-Solving Strategy</i> 93-94</p> <p>Teacher Edition: 5MC 41A, 89A, 165A; ATS 168; As 72, 94; BL 41B, 163B; E 58; EF 41B; ELL 41B, 57B, 163B; EG 100, 194; GT 57B; LU 55A, 57A 165A; SP 167; R 93, 163, 167, 363; SP 167; T 93, 163, 167, 363</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Develop readiness for division by using repeated subtraction, dividing objects into groups 	<p>Student Edition: 487-490, LA3-LA4 <i>Get Ready</i> 487, 489, LA3 <i>H.O.T. Problem</i> 489 <i>Problem Solving</i> LA4 <i>Writing in Math</i> 488</p> <p>Teacher Edition: 5MC 489A; As 480; ATS 488, 490; BL 489B; BMV 487A; E 488, 490, 492; EF 487B; ELL 487B; GT 487B; HP 488; I 487, LA3; LU 487A, 489A; PD 487A, 489A; PSP 487B; R 487, 489; SP 487, 489; T 487, LA3</p>
Multiplication and Division	
<ul style="list-style-type: none"> Demonstrate multiplication as repeated addition 	<p>Student Edition: 479-480, 485, CS11-CS12 <i>Get Ready</i> 479 <i>Extra Practice</i> 483 <i>Problem Solving</i> 480</p> <p>Teacher Edition: 5MC 481A; As 480; ATS 480; BL 479B; BMV 479A; E 480; EF 479B; ELL 479B; FMB 479A; HP 480; I 479; LU 479A; PD 481A; PSP 479B; R 479; SP 479; T 479</p>
<ul style="list-style-type: none"> Explore multiplication 2,3,4,5 using real objects 	<p>Student Edition: 475-476, 479 <i>Get Ready</i> 473, 475 <i>Problem Solving</i> 476 <i>Problem-Solving Strategy</i> 477-478</p> <p>Teacher Edition: ATE 474, 476, 478, 480; BL 473B; CP 471; E 474; ELL 473B; GT 475B; I 473, 475; R 473, 477, 479; T 475, 477, 479</p>
Fractions	
<ul style="list-style-type: none"> Use real objects to see $\frac{1}{3}, \frac{2}{3}, \frac{3}{4}$ of a unite; $\frac{1}{3}, \frac{1}{5}, \frac{1}{6}, \frac{1}{8}$ 	<p>Student Edition: <i>Explore</i> 279 <i>Extra Practice</i> 295 <i>Writing in Math</i> 284</p> <p>Teacher Edition: DI 289B; I 283, 289, 297</p>

STANDARDS	PAGE REFERENCES
NUMERICAL OPERATIONS	
ADDITION AND SUBTRACTION	
<ul style="list-style-type: none"> Develop the meanings of addition and subtraction by concretely modeling and discussing a large variety of problems 	<p>Student Edition: 57-58, 87-88, 91-92, 97-98, 109-110 <i>Activity 85</i> <i>Get Ready 57, 89</i> <i>Explore 83</i></p> <p>Teacher Edition: ATS 88; BL 87B; BMV 55A, 87A; ELL 89B, 91B; GT 89B, 91B; HP 87; I 87, 89, 97; IC 51; LU 87A; PSP 89B, 91B; R 57; Re 83H; RMV 89A; SP 87, 91, 97; SS 83G; T 57, 87, 89, 91, 97</p>
<ul style="list-style-type: none"> In the context of real word problems solve: 	<p>Student Edition: <i>Activity 145</i> <i>Data File 92</i> <i>H.O.T. Problem 102</i> <i>Problem Solving 110</i> <i>Problem Solving Investigations 41-42</i> <i>Problem Solving Strategy 93-94, 151-152</i> <i>Smart Start 2-12</i></p> <p>Teacher Edition: As 152, 168; ELL 167B; EF 151B; GT 151B, 167B; HP 42, 94; R 41, 93, 151; SP 41, 93; T 41, 93, 151</p>
<ul style="list-style-type: none"> Adding two digit numbers without regrouping 	<p>Student Edition: 149-150 <i>Get Ready 149</i> <i>Problem Solving 150</i></p> <p>Teacher Edition: 5MC 151A; As 150; EF 159B; HP 150; R 149; SP 149; T 149</p>
<ul style="list-style-type: none"> Adding two digit numbers with regrouping 	<p>Student Edition: 159-160, 229-230 <i>Extra Practice 161</i> <i>Get Ready 159</i> <i>Problem Solving 160</i></p> <p>Teacher Edition: ATS 160, 230; As 160; E 160; EF 159B; ELL 159B; HP 160, 230; I 159; R 159, 229; SP 159; T 159, 229</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Subtracting two digit numbers without regrouping 	<p>Student Edition: 179-180 <i>Extra Practice</i> 193 <i>Get Ready</i> 179 <i>Problem Solving</i> 180</p> <p>Teacher Edition: ATS 180; E 180; HP 180; I 179; R 179; SP 179, 183; T 179</p>
<ul style="list-style-type: none"> Subtracting two digit numbers with regrouping 	<p>Student Edition: 191-192, 231-232 <i>Extra Practice</i> 193 <i>Get Ready</i> 191, 231 <i>Problem Solving</i> 232</p> <p>Teacher Edition: ATS 192, 232; EF 231B; ELL 191B; GT 191B; HP 192, 232; I 191, 231; PSP 191B, 231B; R 191, 231; RMV 231A; SP 191, 231; T 191, 231; WM 232</p>
<ul style="list-style-type: none"> Understand and use the inverse relationship between addition and subtraction 	<p>Student Edition: 97-98, 101-102, 195-196 <i>Get Ready</i> 97, 101, 195</p> <p>Teacher Edition: As 98, 102; ATS 184; BL 195B; ELL 97B, 195B; FMB 97A; HP 98, 102, 196; I 97; LU 97A; PSP 97B; R 97; SP 97, 101, 195; T 97, 195</p>
<ul style="list-style-type: none"> Check the reasonableness of results of computations 	<p>Student Edition: 195-196 <i>Data File</i> 196 <i>Get Ready</i> 195 <i>Problem-Solving Investigations</i> 105-106 <i>Problem-Solving Strategy</i> 61, 185-186, 219-220, 233-234, 255-256</p> <p>Teacher Edition: HP 196; R 185, 219, 233, 255; SP 105, 195; T 61, 105, 233, 255</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Construct, use and explain procedures for performing addition and subtraction calculations with pencil and paper. Do lots of mental math 	<p>Student Edition: 103-104, 238 <i>Problem Solving</i> 238 <i>Problem-Solving Investigations</i> 105-106 <i>Problem-Solving Strategy</i> 185-186, 197-198, 219-220, 233-234, 255-256</p> <p>Teacher Edition: E 104; HP 104; R 105, 185, 197, 219; SP 103, 105; T 105, 197, 219, 233</p>
<ul style="list-style-type: none"> Use dollar sign and cent sign correctly 	<p>Student Edition: 225-226 <i>Extra Practice</i> 227 <i>Problem Solving</i> 214</p> <p>Teacher Edition: 5MC 215A, 217A; I 219</p>
Multiplication and Division	
<ul style="list-style-type: none"> Explore the meanings of multiplication and division by modeling and discussing problems from the children's world 	<p>Student Edition: 473, 487-488 <i>Activity</i> 471 <i>Explore</i> 469 <i>Get Ready</i> 473, 487 <i>Problem-Solving Investigations</i> 491-492 <i>Problem-Solving Strategy</i> 477-478</p> <p>Teacher Edition: ATS 474; E 488; EF 491B; GT 487B, 491B; HP 474, 492; I 473, 477; IC 469; PSP 473B; R 473, 477, 491; SP 473, 491; T 473, 487, 491</p>
Estimation	
<ul style="list-style-type: none"> Judge without counting whether a set of objects has less than, more than, or the same number of objects as a reference set. 	<p>Student Edition: 29-30 <i>Get Ready</i> 29</p> <p>Teacher Edition: BL 41B; GT 29B; HP 30; I 29, 417; PSP 29B; R 29; S 13H; SP 29; T 29</p>
<ul style="list-style-type: none"> Determine the reasonableness of an answer by estimating the result of computations (e.g. $15+16$ is not 211) 	<p>Student Edition: 447-449, 459-460 <i>Get Ready</i> 447, 449 <i>Writing in Math</i> 460</p> <p>Teacher Edition: ATS 164; BL 163B; E 460; FMB 163A; HP 164; SP 163; T 163, 199</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Explore a variety of strategies for estimating both quantities (e.g. the number of marbles in a jar?) and results of computation jar and results of computation 	<p>Student Edition: 29-30, 163-164, 199-200 <i>Get Ready</i> 163, 199 <i>Problem Solving</i> 164 <i>Writing in Math</i> 460</p> <p>Teacher Edition: ATS 164, 448; BMV 29A; HP 164, 200; I 29; R 29, 199; SP 29, 163; T 163</p>
<ul style="list-style-type: none"> Use concrete objects to estimate quantities of 10 and 100 using mental math 	<p>Student Edition: 29-30 <i>Activity</i> 145 <i>Explore</i> 143 <i>Get Ready</i> 29 <i>H.O.T. Problem</i> 30</p> <p>Teacher Edition: As 30; ATS 30, 200; BL 41B; EF 29B; ELL 29B; GT 29B; HP 30; I 29; R 29; SP 29; T 29</p>
<ul style="list-style-type: none"> Determine when estimation is appropriate and understand the usefulness of an estimate as distinct from an exact answer 	<p>Student Edition: <i>Get Ready</i> 163 <i>H.O.T. Problem</i> 30 <i>Writing in Math</i> 448, 460</p> <p>Teacher Edition: As 30, 448, 460; E 30; ELL 381B; FMB 163A; HP 30; R 163</p>
<ul style="list-style-type: none"> Estimate the reasonable amount of time needed to complete real world activities in hours and half-hours 	<p>Student Edition: 250-251 <i>Get Ready</i> 249 <i>Writing in Math</i> 252</p> <p>Teacher Edition: As 252; ATS 251; BL 249B; E 251; EF 249B; HP 252; PSP 249B; R 249; SP 250; T 250</p>
<p>STANDARD 4.2 (GEOMETRY AND MEASUREMENT) ALL STUDENTS WILL DEVELOP SPATIAL SENSE AND THE ABILITY TO USE GEOMETRIC PROPERTIES, RELATIONSHIPS, AND MEASUREMENT TO MODEL, DESCRIBE AND ANALYZE PHENOMENA.</p>	
<p>Geometric Properties</p>	
<ul style="list-style-type: none"> Identify and describe spatial relationships among object in space and their relative shapes and sizes. Inside/outside, left/right, above/below, between 	<p>Student Edition: <i>Problem Solving</i> 201-202</p> <p>Teacher Edition: APK 201</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Study objects that have congruence (e.g. same size and shape) 	<p>Student Edition: 9, LA11-LA12 <i>Get Ready</i> LA11 <i>Writing in Math</i> LA12</p> <p>Teacher Edition: 5MC LA13A; As LA12; ATS LA12; BL LA11B; EF LA11B; ELL LA11B; FMB LA11A; I LA11; T LA11</p>
<ul style="list-style-type: none"> Use concrete objects, drawings and computer graphics to identify, classify and describe standard 3D and 2D shapers: 	<p>Student Edition: 341</p> <p>Teacher Edition: BMV 351A; CP 343; EF 351B, 359B; ELL 351B, 359B; GT 359B; I 345; S 341H</p>
<ul style="list-style-type: none"> 3D figures – cube, rectangular prism, sphere, cone, cylinder and pyramid 	<p>Student Edition: 345-346 <i>Activity</i> 343 <i>Get Ready</i> 345</p> <p>Teacher Edition: As 346; ATS 346; BL 347B; BMV 345A; CP 343; E 346; ELL 363B; FMB 345A; GT 345B; HP 346; LU 345A; PSP 345B; R 345; SP 345; T 345</p>
<ul style="list-style-type: none"> 2D figures – square, rectangle, circle, triangle 	<p>Student Edition: 351-352 <i>Get Ready</i> 351</p> <p>Teacher Edition: As 352; ATS 352; BL 351B, 357B; BMV 351A; CP 343; FMB 351A; GT 353B; HP 352; I 351, 357; LU 351A; PSP 351B; R 351; SP 351; T 351</p>
<ul style="list-style-type: none"> Find on objects and name the parts: Vertex, edge, face, side 	<p>Student Edition: 347-348, 357-358 <i>Extra Practice</i> 349 <i>Game Time</i> 350 <i>Get Ready</i> 347, 357 <i>Math at Home</i> 343-344</p> <p>Teacher Edition: As 348, 358; ATS 348, 358; BL 347B; BMV 347A, 357A; CP 343; E 348; ELL 345B, 357B; EG 350; FMB 347A, 357A; HP 348, 358; LU 357A; PSP 357B; R 357; RMV 359A; SP 347, 357; T 347, 357</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Study the relationships between 3D and 2D shapes (e.g. the face of a 3D shape is a 2D shape) 	<p>Teacher Edition: ELL 345B; I 353; LA 341G; PSP 359B; RMV 361A</p>
<ul style="list-style-type: none"> Describe, identify and create instances of line symmetry 	<p>Student Edition: LA13-LA14 <i>Get Ready</i> LA13 <i>H.O.T. Problem</i> LA14</p> <p>Teacher Edition: As LA14; ATS LA14; BL LA13B; BMV LA13A; EF LA13B; ELL LA13B; I LA13; T LA13</p>
<ul style="list-style-type: none"> Identify, describe, match the name and classify solid/space geometric figures (sphere, cone, cylinder, cube, rectangular, prism and pyramid) 	<p>Student Edition: 345-346 <i>Activity</i> 343</p> <p>Teacher Edition: BMV 345A; CP 343; E 346; FMB 345A; GT 345B; HP 346; PSP 345B, 347B; R 345; SP 345; T 345</p>
Geometry	
<ul style="list-style-type: none"> Compare symmetry and congruence 	<p>The following references can be used to introduce this objective.</p> <p>Student Edition: LA11-LA14</p>
<ul style="list-style-type: none"> Identify flip images 	<p>Student Edition: CS6</p> <p>Teacher Edition: AC CS6; APK CS6</p>
<ul style="list-style-type: none"> Draw congruent shapes 	<p>The following references can be used to introduce this objective.</p> <p>Student Edition: LA11-LA14</p>
Transforming Shapes	
<ul style="list-style-type: none"> Use simple shapes to make designs, patterns and pictures 	<p>Student Edition: 361 <i>Get Ready</i> 361</p> <p>Teacher Edition: Ar 341G; As 362; ATS 362; BL 361B; EF361B; FMB 361A; R 361; Re 341G; SP 361</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Combine and subdivide simple shapes to make other shapes 	<p>Student Edition: 361-362</p> <p>Teacher Edition: 5MC 363A; As 362; ATS 362; BL 361B; GT 363B; PD 363A; PSP 361B; R 361; Re 341G; T 361</p>
<ul style="list-style-type: none"> Create two congruent figures 	<p>The following references can be used to introduce this objective.</p> <p>Student Edition: LA11-LA14</p>
<ul style="list-style-type: none"> Subdivide given shapes into other shapes 	<p>Student Edition: 362</p> <p>Teacher Edition: 5MC 363A; E 352; HD 362; PD 363A; PSP 361B; Re 341G</p>
<ul style="list-style-type: none"> Identify and extend a pattern as a flip, a slide or a turn 	<p>The following references can be used to introduce this objective.</p> <p>Student Edition: CS6; LA11-LA14</p>
Coordinate Geometry	
<ul style="list-style-type: none"> Give and follow directions for getting from one point to another on a map or grid 	<p>Student Edition: <i>Get Ready</i> 367</p> <p>Teacher Edition: 5MC 379A; BMV 367A; ELL 367B; GT 353B; LU 367A</p>
<ul style="list-style-type: none"> Identify location and direction using a map grid 	<p>Student Edition: 367-368 <i>Problem Solving</i> 372</p> <p>Teacher Edition: E 368; EF 367B; ELL 367B; GT 367B; HP 368; I 367; LU 367A; PSP 367B; R 367; SP 367; T 367</p>
<ul style="list-style-type: none"> Create a number path by following dots to a specific location 	<p>Teacher Edition: ELL 367B; GT 353B</p>

STANDARDS	PAGE REFERENCES
Units of Measurement	
<ul style="list-style-type: none"> Directly compare and order objects according to measurable attributes 	<p>Student Edition: CS7 <i>Activity 407</i> <i>Problem Solving 392</i></p> <p>Teacher Edition: ATS 418; BL 411B; CP 377; ELL 381B, 411B, 417B; H 13H, 375G; IC 375; LA 405G; M 375H; S 405G; T 266</p>
<ul style="list-style-type: none"> Attributes – length, weight, capacity, time, temperature 	<p>Student Edition: 381-382, 387-388, 409-410 <i>Get Ready 387, 409</i></p> <p>Teacher Edition: BL 381B; CP 377; EF 387B, 425B; ELL 387B; GT 387B; H 405G; HP 410; I 265, 387; PSP 425B; T 266</p>
<ul style="list-style-type: none"> Recognize the need for a uniform unit of measure 	<p>Teacher Edition: As 382; EF 379B, 409B; ELL 379B; FMB 379A</p>
<ul style="list-style-type: none"> Select and use appropriate standard and non-standard units of measure and standard measurement tools to solve real-life problems 	<p>Student Edition: <i>Explore 375</i> <i>Problem-Solving Investigation 397-398</i> <i>Start Smart 7-8</i> <i>Writing in Math 8</i></p> <p>Teacher Edition: A 377; ATS 398; BMV 379A; CP 377; GT 387B; LA 375G; R 397; T 397</p>
Units of Measurements: Lengths	
<ul style="list-style-type: none"> Use customary and metric units to measure length to the nearest inch, half-inch, foot, centimeter and meter 	<p>Student Edition: 381-382, 391-394, CS7 <i>Get Ready 387</i></p> <p>Teacher Edition: Ar 375G; BL 393B; ELL 387B; GT 387B; H 375H; HP 392; I 391; M 375H; PSP 387B; R 381; SP 387, 391, 393; T 393</p>
<ul style="list-style-type: none"> Compare measurement (in length of objects using non-standard units to measurement of same objects using standard units 	<p>Teacher Edition: BL 381B; EF 381B; I 381; LA 375G; T 381, 391</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Use personal body referents (baby steps/giant steps) to determine the larger the unit, the smaller the measure, the smaller the unit, the larger the measure 	This concept could be introduced with classroom activities using non-standard measurements of objects.
Units of Measurement: Weight	
<ul style="list-style-type: none"> Use a balance scale to measure grams, kilograms, pounds and ounces 	Student Edition: 424, 426 <i>Get Ready</i> 423 Teacher Edition: ATS 424, 426; BL 425B; E 424, 426; EF 423B; ELL 423B, 425B; HP 424, 426; I 423; PSP 423B, 425B; S 207H; PSP 423B, 425B; SP 423, 425; T 423
Units of Measurements: Capacity	
<ul style="list-style-type: none"> Measure capacity in cups, pints, quarts, gallons and liters 	Student Edition: 411-412, 418-419 <i>Get Ready</i> 411, 417 Teacher Edition: BL 417B; E 418; HP 412, 418; I 411; PSP 417B; SP 411, 417
<ul style="list-style-type: none"> Measure in pounds, ounces, kilograms and grams 	Student Edition: 424, 426 <i>Get Ready</i> 423 Teacher Edition: ATS 424, 426; BL 425B; E 424, 426; EF 423B; ELL 423B, 425B; HP 424, 426; I 423; PSP 423B, 425B; S 207H; PSP 423B, 425B; SP 423, 425; T 423
<ul style="list-style-type: none"> Convert cups to pints and quarts 	Teacher Edition: BMV 411A
<ul style="list-style-type: none"> Convert cups to pints, pints to quarts, quarts to gallons 	Teacher Edition: BMV 411A
Units of Measurements: Temperature	
<ul style="list-style-type: none"> Read temperature on a thermometer in both Fahrenheit and Celsius degrees within a five day range 	Teacher Edition: CP 243; PSP 265B

STANDARDS	PAGE REFERENCES
Units of Measurements: Money	
<ul style="list-style-type: none"> Convert money: Pennies to nickel; nickel to dime; dime to $\frac{1}{2}$ dollar... 	<p>Student Edition:</p> <p>Teacher Edition: BMV 211A; EF 211B; EL 214; FMB 211A; I 211, 215; MTC 213</p>
Units of Measurements: Time	
<ul style="list-style-type: none"> Show time to the hour, half hour, quarter hour and five minute intervals on both digital and analog clocks. 	<p>Student Edition: 253-254, 257, 259-260, 261-262 <i>Data File 254</i> <i>Extra Practice 263</i> <i>Get Ready 253, 259</i></p> <p>Teacher Edition: 5MC 255A; ATS 254; BL 259B; E 254, 262; EF 253B 261B; ELL 253B, 259B; GT 253B; HP 254, 260, 262; PSP 253B, 261B; R 253, 259, 261; SP 253, 259, 261; R 253, 259, 261</p>
Measuring Geometric Objects	
<ul style="list-style-type: none"> Directly measure the perimeter and area of simple two-dimensional objects. Use tiles for area 	<p>Student Edition: 395-396, 402 <i>Get Ready 395</i> <i>Problem Solving 396</i></p> <p>Teacher Edition: 5MC 397A; ATS 396; BL 395B; EF 395B; ELL 395B; HP 396; I 395; PSP 395B; R 395; SP 395; T 395</p>
<ul style="list-style-type: none"> Describe different ways to measure two and three dimensional objects 	<p>Teacher Edition: ELL 359B, 395B; GT 387B</p>
<ul style="list-style-type: none"> Find area of two and three dimensional objects 	<p>Student Edition: <i>Problem Solving 396</i></p> <p>Teacher Edition: BL 395B; EF 395B; Re 375G</p>
<ul style="list-style-type: none"> Estimate answers to computational type problems to determine reasonableness of answer 	<p>This concept can be introduced in Chapter 11.</p>
<ul style="list-style-type: none"> Estimate length, width and height using informal measurements 	<p>Student Edition: <i>Extra Practice 383</i></p> <p>Teacher Edition: E 380; ELL 379B; GT 379B; HP 380; I 379; R 379; SP 379; T 381</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Estimate volume of containers using informal measurements 	Teacher Edition: GT 413B
<ul style="list-style-type: none"> Estimate length in feet and meters; capacity in pints, quarts, gallons, liter; weight in pounds and kilograms 	Student Edition: 411-412, 417-418, 423, 425 Teacher Edition: ATS 426; I 411, 423; R 411, 417, 423, 425; T 417
<ul style="list-style-type: none"> Estimate and measure the capacity of a larger container in terms of a smaller container 	Student Edition: 418, 424, 426 Teacher Edition: E 412, 418, 426; EF 413B; HP 412, 418, 423, 426; PSP 425B; SP 411, 417, 423, 425; T 411
<ul style="list-style-type: none"> Use the guess and check strategy to estimate the number of one inch squares to fill an area, the number of one inch cubes to fill a container, the number of edges of one inch squares to measure perimeter 	The following references can be used to introduce this objective through classroom discussion. Student Edition: 395-396
STANDARD 4.3 (PATTERNS AND ALGEBRA) ALL STUDENTS WILL REPRESENT AND ANALYZE RELATIONSHIPS AMONG VARIABLE QUANTITIES AND SOLVE PROBLEMS INVOLVING PATTERNS, FUNCTIONS, AND ALGEBRAIC CONCEPTS AND PROCESSES.	
Patterns	
<ul style="list-style-type: none"> Recognize, describe, extend and create patterns 	Student Edition: 39-40, 333-334 <i>Explore 13</i> <i>Get Ready 39, 333</i> <i>Problem Solving 40</i> <i>Problem-Solving Strategy 255-256, 353-354</i> Teacher Edition: 5MC 41A; As 334; ATS 334; BL 39B; BMV 43A; E 40, 334, 354; EF 39B, 353B; ELL 39B, 43B, 353B; HP 40, 256, 354; I 39, 333; IC 13; LU 353A; PD 43A; PSP 39B; R 39, 255, 333; RMV 333A; SP 39, 255, 334, 353; T 39, 43, 255, 333
<ul style="list-style-type: none"> Use concrete materials (manipulatives), pictures, rhythms and whole numbers create patterns 	Student Edition: 43 <i>Explore 13</i> <i>Problem-Solving Strategy 353-354</i> Teacher Edition: Ar 13G; As 354; ATS 40, 42, 256, 334; BL 39B; E 354; EF 39B, 353B; ELL 353B; HP 354; I 39, 41; IC 13; PD 43A; R 41, 353; SP 353; T 39, 333

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Use words and symbols (e.g., “add two” or +2) to create patterns 	<p>Student Edition: 333-334 <i>Get Ready</i> 39, 333 <i>Problem-Solving Strategy</i> 255-256</p> <p>Teacher Edition: As 334; ATS 334; ELL 333B; HP 334; PSP 333B; R 333; SP 333</p>
<ul style="list-style-type: none"> Make repeating patterns 	<p>Student Edition: 43-44 <i>Explore</i> 13 <i>Get Ready</i> 43 <i>Problem-Solving Strategy</i> 353-354</p> <p>Teacher Edition: As 354; ATS 40, 44, 334, 354; BL 39B; E 354; EF 353B; ELL 353B; HP 40, 44, 354; I 43, 333; IC 13; LU 353A; R 39, 43, 353; SP 39, 43, 353; T 39, 43, 353</p>
<ul style="list-style-type: none"> Explore whole number patterns that grow or shrink as a result of repeatedly adding or subtracting a fixed number (e.g. skip counting forward or backward) 	<p>Student Edition: 39-40, 43, 333-334 <i>Get Ready</i> 39, 333 <i>Problem-Solving Strategy</i> 255-256</p> <p>Teacher Edition: As 40; ATS 334; BL 43B; E 40; ELL 43B; HP 256; I 255; PSP 333B; R 255; SP 39, 255; T 39, 255</p>
<ul style="list-style-type: none"> Find and describe patterns in real life 	<p>Student Edition: <i>Explore</i> 13 <i>Problem-Solving Investigation</i> 135-136 <i>Problem-Solving Strategy</i> 255-256 <i>Writing in Math</i> 40</p> <p>Teacher Edition: As 136; HP 136, 256; IC 13; MTT 241A; R 135, 255; SP 135, 255; T 255</p>
<ul style="list-style-type: none"> Copy simple patterns using concrete materials 	<p>Student Edition: <i>Explore</i> 13 <i>Problem Solving</i> 40</p> <p>Teacher Edition: ATS 256; BL 39B; E 354</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Continue given patterns using concrete materials 	<p>Student Edition: 43 <i>Get Ready</i> 43</p> <p>Teacher Edition: ATS 40, 42; BL 39B; EF 39B, 353B; ELL 43B, 353B; HP 44; I 41; R 41, 43; SP 43; T 43, 333</p>
<ul style="list-style-type: none"> Discover number patterns using the 100 chart counting by 2,5,20 	<p>Student Edition: 43-44 <i>Get Ready</i> 43</p> <p>Teacher Edition: ATS 44; BL 43B; EF 43B; HP 44; PSP 43B; SP 43; R 43; T 43</p>
<ul style="list-style-type: none"> Identify, complete and create number patterns in addition and subtraction 	<p>Student Edition: 39-40 <i>Get Ready</i> 39, 333 <i>Problem-Solving Investigation</i> 105-106</p> <p>Teacher Edition: ATS 334; E 334; HP 106, 334; I 333; R 333; SP 105, 333; T 39, 105, 333</p>
<ul style="list-style-type: none"> Identify missing numbers in sequences to 100 (mentally) and to 500 using a chart 	<p>Student Edition: 43, 48, 333-334 <i>Get Ready</i> 333</p> <p>Teacher Edition: E 334; HP 334; PD 43A; PSP 43B; R 333; SP 333; T 43, 333</p>
<ul style="list-style-type: none"> Create patterns with two attributes using concrete patterns 	<p>Student Edition: <i>Problem-Solving Strategy</i> 353</p> <p>Teacher Edition: E 354; ELL 353B; R 353; T 353</p>
<ul style="list-style-type: none"> Classify objects and continue patterns using two patterns 	<p>Teacher Edition: EF 353B</p>
<ul style="list-style-type: none"> Record data collected on patterns observed over periods of time 	<p>Student Edition: <i>Problem-Solving Strategy</i> 255-256</p> <p>Teacher Edition: As 256; CP 243; HP 256; P 255; R 255; T 255</p>

STANDARDS	PAGE REFERENCES
Functions and Relationships	
<ul style="list-style-type: none"> Use concrete and pictorial models of function machines to explore the basic concept of a function (In/Out) 	<p>See <i>Math Connects 3</i> © 2009.</p> <p>Student Edition: 348-351, 356-359 <i>Big Idea</i> 330 <i>Extra Practice</i> R23 <i>H.O.T. Problems</i> 351 <i>Mid-Chapter Check</i> 353 #11 <i>Real-World Example</i> 348, 349, 356, 357 <i>Study Guide and Review</i> 365 #15, 366 #19, #22 <i>Test Practice</i> 368 #1, #9</p> <p>Teacher Edition: AE 349, 357; ATS 350, 358; I 348, 356; IWO 356B; SGO 348B, 356B; T 348</p>
Modeling	
<ul style="list-style-type: none"> Recognize and describe changes over time (e.g. temperature, height) 	<p>Student Edition: 266-270, 272 <i>Activity</i> 243 <i>Get Ready</i> 265</p> <p>Teacher Edition: CP 243; GT 265B; HP 268; I 265; PSP 265B; R 265, 271; SP 265; T 266; UMTC 269</p>
<ul style="list-style-type: none"> Construct and solve simple open sentences involving addition or subtraction ($16-n=7$; $18-9=n$) 	<p>Student Edition: 91-92, 101-102 <i>Get Ready</i> 101 <i>H.O.T. Problem</i> 90, 102, 104 <i>Problem-Solving Investigation</i> 167-168</p> <p>Teacher Edition: 5MC 103A; ATS 102; EF 101B; GT 101B; HP 102, 168; LU 101A; PSP 101B, 103B; R 101, 167; SP 101, 103, 167; T 167</p>
Procedures	
<ul style="list-style-type: none"> Understand and apply (but don't name) the following properties of addition: 	<p>Student Edition: 55-56, 73-74 <i>Get Ready</i> 55, 73 <i>Problem-Solving Strategy</i> 75-76</p> <p>Teacher Edition: ATS 56; BL 73B; ELL 73B; HP 56; SP 55; T 55, 75</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Commutative (e.g. $5+3=3+5$) 	<p>Student Edition: 55-56 <i>Get Ready</i> 55</p> <p>Teacher Edition: As 56; E 56; HP 56; I 56; R 55; SP 55; T 56</p>
<ul style="list-style-type: none"> Zero as the identity element (e.g. $7+0=7$) 	<p>Student Edition: 55 <i>Get Ready</i> 55</p> <p>Teacher Edition: R 55</p>
<ul style="list-style-type: none"> Associative (e.g. $7+3+2$ can be found by first adding either $7+3$ or $3+2$) 	<p>Student Edition: 73-74, 165-166 <i>Get Ready</i> 73, 165</p> <p>Teacher Edition: 5MC 75A; As 74, 166; ATS 74, 76, 166; BL 73B; E 74, 166; ELL 73B; HP 74, 166; I 73; PSP 73B; R 73, 165; SP 73, 165; T 73, 165; WM 166</p>
<ul style="list-style-type: none"> Use symbols $>$, $<$ and $=$ when comparing given numbers to 100 	<p>Student Edition: 35-36, 329-330 <i>Extra Practice</i> 37 <i>Get Ready</i> 35, 329 <i>Problem Solving</i> 36</p> <p>Teacher Edition: 5MC 39A, 331A; As 330; ATS 36, 330; E 330; EF 329B; ELL 329B; H 13H; HP 36, 330; I 35, 329; PSP 329B; R 35; SP 35, 329; T 35, 329</p>
<ul style="list-style-type: none"> Use commutative property for addition 	<p>Student Edition: 55-56</p> <p>Teacher Edition: ATS 56; E 56; HP 56; I 55; R 55; SP 55; T 55</p>

STANDARDS	PAGE REFERENCES
<p>STANDARD 4.4 (DATA ANALYSIS, PROBABILITY, AND DISCRETE MATHEMATICS) ALL STUDENTS WILL DEVELOP AN UNDERSTANDING OF THE CONCEPTS AND TECHNIQUES OF DATA ANALYSIS, PROBABILITY, AND DISCRETE MATHEMATICS, AND WILL USE THEM TO MODEL SITUATIONS, SOLVE PROBLEMS, AND ANALYZE AND DRAW APPROPRIATE INFERENCES FROM DATA.</p>	
<p>Date Analysis</p>	
<ul style="list-style-type: none"> Collect, generate and organize data in response to questions, claims, or curiosity 	<p>Student Edition: 117-120, 137-138 <i>Activity</i> 115 <i>Explore</i> 113 <i>Extra Practice</i> 131 <i>Get Ready</i> 117, 119 <i>Problem-Solving Projects</i> P3-P4 <i>Start Smart</i> 12</p> <p>Teacher Edition: ATS 122; BL 119B; EF 121B, 129B; ELL 117B, 127B; H 113G; HP 118; I 117; PSP 117B; Re 113G; SP 117; T 117, 119</p>
<ul style="list-style-type: none"> Date collected from student’s everyday experiences 	<p>Student Edition: 117-118, 138 <i>Activity</i> 115 <i>Explore</i> 113 <i>Extra Practice</i> 131 <i>Problem-Solving Projects</i> P3-P18</p> <p>Teacher Edition: ATS 122; BL 119B, 127B; EF 129B; H 113G; HP 118; I 117, 121; R 117; Re 113G; S 113H; SP 117; T 117</p>
<ul style="list-style-type: none"> Data generated from chance devices, such as spinners and dice 	<p>Teacher Edition: A 115; EF 129B; ELL 129B; I 129; PSP 133B</p>
<ul style="list-style-type: none"> Read, interpret, construct, and analyze displays of data 	<p>Student Edition: 119-120 <i>Problem Solving</i> 118, 120</p> <p>Teacher Edition: Ar 113H; BL 127B; E 128; EF 119B, 121B; ELL 127B; H 113G; HP 120; LA 113G; PSP 117B, 119B; R 119; SP 119</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Pictures, tally chart, pictograph, bar graph, Venn diagram 	<p>Student Edition: 117-118, 127-130 <i>Activity</i> 115 <i>Data File</i> 130 <i>Explore</i> 113 <i>Get Ready</i> 117, 119, 127, 129 <i>Problem Solving</i> 118, 120 <i>Problem Solving Investigation</i> 75 <i>Problem Solving Strategy</i> 287-288, 477-478</p> <p>Teacher Edition: ATS 118, 128; BL 119B, 127B, 477B; E 118, 120, EF 119B, 121B; ELL 127B; H 113G; HP 118, 120, 130; I 127, 129; LA 113G; PSP 117B, 119B; R 75, 117, 119, 129, 287, 477; Re 113G; SP 117, 119, 129; T 119, 127, 129, 477</p>
<ul style="list-style-type: none"> Smallest to largest, most frequent (mode) 	<p>Teacher Edition: EF 129B; ELL 129B; I 129; IC 113; T 129</p>
<ul style="list-style-type: none"> Take a survey, tally and graph the results using familiar topics 	<p>Student Edition: 120 <i>Start Smart</i> 12</p> <p>Teacher Edition: Ar 113H; BMV 117A; CT 113H; EF 121B; GT 117B; H 113G; S 113H</p>
<ul style="list-style-type: none"> Interpret compile pictographs, horizontal and vertical bar graphs from the survey 	<p>Student Edition: 121-122, 127-128, 129-130 <i>Data File</i> 130 <i>Get Ready</i> 121, 127, 129 <i>Start Smart</i> 12 <i>Problem-Solving Projects</i> P14</p> <p>Teacher Edition: BL 119B, 127B; E 122, 128, 130; EF 121B, 127B; H 113G; HP 122, 130; I 127; PSP 121B, 127B; R 121, 127, 129; SP 121, 127, 129; T 121, 127, 128, 129</p>
<ul style="list-style-type: none"> Create tables to describe patterns, record data on the patterns observed over a period of time 	<p>Teacher Edition: Ar 113H; CT 113H; EF 127B; S 113H</p>

STANDARDS	PAGE REFERENCES
Probability	
<ul style="list-style-type: none"> Use chance devices like spinners and dice to explore concepts of probability: Certain, impossible more likely, less likely, equally likely 	<p>This concept can be introduced using the following reference.</p> <p>Student Edition: <i>Describing Events</i> Lesson 4-7</p>
<ul style="list-style-type: none"> Provide probability of specific outcomes 	<p>Student Edition: 133-134 <i>Get Ready</i> 133 <i>Problem Solving</i> 134</p> <p>Teacher Edition: EF 133B; ELL 133B; GT 133B; I 133; PD 135A; PSP 133B; SP 133; T 133</p>
<ul style="list-style-type: none"> Probability of getting specific outcome when coin is tossed, when die is rolled, when spinner is spun (e.g. if spinner has five equal sectors, then probability of getting a particular sector is one out of five) 	<p>Student Edition: 133-134 <i>Get Ready</i> 133</p> <p>Teacher Edition: I 133; T 133</p>
<ul style="list-style-type: none"> When picking a marble from a bag with three red marbles and four blue marbles, the probability of getting a red marble is three out of seven 	<p>The following references can be used in class games and discussions to meet this objective.</p> <p>Student Edition: 133-134</p>
<ul style="list-style-type: none"> Use real-life situations to make predictions and draw conclusions 	<p>Student Edition: 137-138</p> <p>Teacher Edition: T 266; USP 138</p>
<ul style="list-style-type: none"> Collect and organize data, tally results and make a bar graph. Use the information to make predictions 	<p>Student Edition: 137-138, 140</p> <p>Teacher Edition: USP 138</p>
<ul style="list-style-type: none"> Perform simple probability activities and discuss possible number of times a particular result might occur 	<p>Student Edition: <i>Problem Solving</i> 134</p> <p>Teacher Edition: ELL 133B; PSP 133B</p>
<ul style="list-style-type: none"> Make predictions of the outcomes of simple probability activities, experiments, tally results and compare with predictions 	<p>Student Edition: 133 <i>Get Ready</i> 133</p> <p>Teacher Edition: ELL 133B; PSP 133B</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Predict outcome of putting several shapes together 	Teacher Edition: P 362
Discrete Mathematics—Systematic Listing and Counting	
<ul style="list-style-type: none"> Sort and classify objects according to attributes 	Student Edition: CS4 <i>Activity 209</i> <i>Explore 207</i> Teacher Edition: AC CS4; APK CS4; ATS 212; T 211
<ul style="list-style-type: none"> Use Venn diagrams to show number facts and families 	Using the example Venn Diagram on CS4, the teacher could introduce facts and families with the following references. Student Edition: 103-104
<ul style="list-style-type: none"> Generate all possibilities in simple counting situation (e.g. all outfits involving two shirts and three pants) 	Student Edition: <i>Problem-Solving Investigation</i> 135-136 Teacher Edition: As 136; ATS 136; I 135; R 135; SP 135; T 135
Discrete Mathematics—Vertex-Edge Graphs and Algorithms	
<ul style="list-style-type: none"> Follow simple sets of directions (e.g. from one location to another or from a recipe) 	Student Edition: <i>Problem-Solving Project</i> P6, P17 Teacher Edition: D3 P17; D4 P6
<ul style="list-style-type: none"> Color simple maps with a small number of colors 	Student Edition: <i>Problem-Solving Project</i> P17 Teacher Edition: D3 P17
<ul style="list-style-type: none"> Play simple two-person games (e.g. tic-tac-toe) and informally explore the idea of what the outcome should be 	See <i>Math Connects 1</i> © 2009. Student Edition: <i>Game Time</i> 38, 58, 94, 136, 160, 202, 230, 266, 284, 322, 374, 394, 426, 466, 494
<ul style="list-style-type: none"> Explore concrete models of vertex-edge graphs (e.g. vertices as “island” and edges as “bridges”) 	The following references discuss coordinate graphs and can be used to meet this objective. Student Edition: 367-368 Teacher Edition: 367B

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Paths from one vertex to another 	<p>The following references discuss coordinate graphs and can be used to meet this objective.</p> <p>Student Edition: 367-368</p> <p>Teacher Edition: 367B</p>
<p>STANDARD 4.5 (MATHEMATICAL PROCESSES) ALL STUDENTS WILL USE MATHEMATICAL PROCESSES OF PROBLEM SOLVING, COMMUNICATION, CONNECTIONS, REASONING, REPRESENTATIONS, AND TECHNOLOGY TO SOLVE PROBLEMS AND COMMUNICATE MATHEMATICAL IDEAS</p>	
<p>At each grade level, with respect to content appropriate for that grade level, students will:</p>	
<p>PROBLEM SOLVING</p>	
<ul style="list-style-type: none"> Learn mathematics through problem solving, inquiry, and discovery. 	<p>Student Edition: 35-36, 71-72, 391-392 <i>Problem Solving</i> 248, 270 <i>Problem-Solving Investigations</i> 41-42, 397-398 <i>Problem-Solving Projects</i> P3-P18</p> <p>Teacher Edition: As 26; ATS 41, 72, 94; BL 87B; D1 P3, P7, P15; D2 P8, P12, P16; D3 P5, P9, P13, P17; D4 P10, P14, P18; E 42; EF 61B, 75B, 105B, 387B; ELL 105B; GT 61B, 387B; HP 392; I 35, 41, 61, 71; P 398; R 41, 391; T 71, 397</p>
<ul style="list-style-type: none"> Solve problems that arise in mathematics and in other contexts (cf. workplace readiness standard 8.3). <ul style="list-style-type: none"> Open-ended problems Non-routine problems Problems with multiple solutions Problems that can be solved in several ways 	<p>Student Edition: <i>Problem Solving</i> 192, 248, 330 <i>Problem-Solving Investigation</i> 41-42, 75-76, 397-398 <i>Problem-Solving Projects</i> P3-P18 <i>Problem-Solving Strategy</i> 25-26, 93-94</p> <p>Teacher Edition: As 26; E 62; EF 75B, 397B; GT 61B, 75B, 397B; HP 76, 398; I 41; P 398; R 25, 41, 75, 93; T 25, 41, 75, 93, 397</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Select and apply a variety of appropriate problem-solving strategies (e.g., “try a simpler problem” or “make a diagram”) to solve problems. 	<p>Student Edition: <i>Problem Solving</i> 64, 330, 334 <i>Problem-Solving Investigation</i> 41-42, 75-76, 135-136, 167-168, 197-198, 233-234, 271-272, 301-302, 397-398, 461-462 <i>Problem-Solving Strategy</i> 25-26, 61-62, 93-94, 123-124, 219-220, 287-288, 413-414, 477-478</p> <p>Teacher Edition: As 26; ATS 62, 72; BL 287B; E 42; EF 75B, 105B; ELL 61B, 105B; GT 61B, 75B, 397B; HP 76; I 41; R 41, 61, 75, 93, 287, 397, 413, 461; T 61, 75, 397, 461</p>
<ul style="list-style-type: none"> Pose problems of various types and levels of difficulty. 	<p>Student Edition: <i>Problem Solving</i> 107-108, 410 <i>Problem-Solving Investigation</i> 41-42, 397-398, 461-462</p> <p>Teacher Edition: ATS 76, 398, 462; BL 105B; E 42, 62, 106, 398, 462; EF 61B, 75B, 105B, 387B; ELL 61B, 397B; GT 61B, 75B, 387B; HP 106; T 41, 397</p>
<ul style="list-style-type: none"> Monitor their progress and reflect on the process of their problem solving activity. 	<p>Student Edition: <i>Problem-Solving Investigation</i> 41-42, 61-62, 75-76, 105-106, 167-168, 197-198, 233-234, 271-272, 301-302, 397-398, 461-462 <i>Problem-Solving Projects</i> P3-P18 <i>Problem-Solving Strategy</i> 25-26, 61-62, 93-94, 123-124, 219-220, 287-288, 413-414, 477-478</p> <p>Teacher Edition: ELL 61B; HP 76, 106, 462; P 76; R 25, 41, 61, 75, 105, 167, 197, 233, 271, 301, 397, 461; T 25, 41, 61, 75, 93, 105, 123, 219, 287, 397, 461; USP 108</p>
COMMUNICATION	
<ul style="list-style-type: none"> Use communication to organize and clarify their mathematical thinking. <ul style="list-style-type: none"> Reading and writing, discussions, listening, and questioning 	<p>Student Edition: <i>Problem Solving</i> 214, 396 <i>Problem-Solving Investigation</i> 271, 491 <i>Problem-Solving Strategy</i> 317-318 <i>Talk About It</i> 33, 55, 387</p> <p>Teacher Edition: As 318, 488, 492; ATS 56; BL 217B; EF 487B; GT 167B, 487B; I 157, 317; R 271, 317; SP 487; T 317, 491; WM 56, 90, 158, 216, 442</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Communicate their mathematical thinking coherently and clearly to peers, teachers, and others, both orally and in writing. 	<p>Student Edition: <i>H.O.T. Problem</i> 158 <i>Problem Solving</i> 214, 270, 396 <i>Problem-Solving Investigation</i> 271, 491 <i>Problem-Solving Strategy</i> 317-318 <i>Talk About It</i> 33, 55, 87, 89, 215, 441, 487 <i>Writing in Math</i> 88</p> <p>Teacher Edition: As 318, 440, 492; BL 217B; E 56; EF 87B, 441B, 487B; GT 167B; HP 488; R 271, 317, 491; T 317; WM 56, 88, 90, 158, 396</p>
<ul style="list-style-type: none"> Analyze and evaluate the mathematical thinking and strategies of others. 	<p>Student Edition: <i>H.O.T. Problem</i> 158, 216 <i>Problem Solving</i> 192</p> <p>Teacher Edition: BL 217B, 461B, LA3B; EF 55B, 185B, 191B, 441B, 487B; GT 167B, 439B; I 157</p>
<ul style="list-style-type: none"> Use the language of mathematics to express mathematical ideas precisely. 	<p>Student Edition: <i>Problem Solving</i> 270, 396 <i>Problem-Solving Strategy</i> 317-318 <i>Talk About It</i> 33, 55, 89, 215, 487 <i>Writing in Math</i> 88</p> <p>Teacher Edition: As 56, 318, 488, 492; ATS 318; BL 217B; E 272, 488; EF 487B; ELL 87B; GT 487B; R 317; SP 487; WM 56, 90, 158, 396, 442</p>
CONNECTIONS	
<ul style="list-style-type: none"> Recognize recurring themes across mathematical domains (e.g., patterns in number, algebra, and geometry). 	<p>Student Edition: 43-44, 71-73, 97-98, 165-166, 195-196, 443-444 <i>Get Ready</i> 43, 55, 71, 97, 101, 165, 195, 443 <i>H.O.T. Problems</i> 56, 72, 102, 490 <i>Problem Solving</i> 44 <i>Talk About It</i> 195</p> <p>Teacher Edition: As 98, 102, 166, 196; ATS 102, 196; ELL 97B; GT 101B; HP 44, 102, 444; I 43, 55, 71; PSP 97B, 101B; R 43, 55, 71, 73, 101, 165, 443; SP 97, 101; T 71, 73, 97, 101, 165, 195, 443</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Use connections among mathematical ideas to explain concepts (e.g., two linear equations have a unique solution because the lines they represent intersect at a single point). 	<p>Student Edition: 103-104, 153-154, 157-158, 189-190, 479-480, LA3-LA4 <i>Get Ready</i> 103, 153, 157, 189, 479, LA3 <i>Problem Solving</i> 480, LA4</p> <p>Teacher Edition: As 104, 190, 480; EF 103B, 479B; ELL 153B, 479B; HP 104, 154, 158, 190, 480; PSP 103B, 153B; R 153, 157; SP 103, 189, 479; T 153, 157, 189, 479, LA3; WM 104, 480</p>
<ul style="list-style-type: none"> Recognize that mathematics is used in a variety of contexts outside of mathematics. 	<p>Student Edition: 261-262, 266-270 <i>Activity</i> 243 <i>Get Ready</i> 261, 265 <i>Problem Solving</i> 45-46, 107-108 <i>Problem-Solving Projects</i> P3-P6, P11-P14 <i>Problem-Solving Strategy</i> 151-152, 219-220</p> <p>Teacher Edition: Ar 13G, 207G, 279G; As 152, 268; CP 209; ELL 211B; H 241H; HP 261; M 83G, 279G; PSP 211B; R 211, 215, 219, 261; Re 143H, 207G; S 113H, 207H; SS 83G, 241G; T 219; WU P6, P14</p>
<ul style="list-style-type: none"> Apply mathematics in practical situations and in other disciplines. 	<p>Student Edition: 261-262, 266-270 <i>Activity</i> 243 <i>Get Ready</i> 261, 265 <i>Problem Solving</i> 45-46, 107-108 <i>Problem-Solving Projects</i> P3-P6, P11-P14 <i>Problem-Solving Strategy</i> 151-152, 219-220</p> <p>Teacher Edition: Ar 13G, 207G, 279G; As 152, 268; CP 209; ELL 211B; H 241H; HP 261; M 83G, 279G; PSP 211B; R 211, 215, 219, 261; Re 143H, 207G; S 113H, 207H; SS 83G, 241G; T 219; WU P6, P14</p>
<ul style="list-style-type: none"> Trace the development of mathematical concepts over time and across cultures (cf. world languages and social studies standards). 	<p>This objective can be met through classroom discussion and activities. Also see Scope and Sequence for references (ie.) Pythagorean Theorem, Course #2.</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Understand how mathematical ideas interconnect and build on one another to produce a coherent whole. 	<p>Student Edition: 103-104, 153-154, 157-158, 189-190, 479-480, LA3-LA4 <i>Get Ready</i> 103, 153, 157, 189, 479, LA3 <i>Problem Solving</i> 480, LA4</p> <p>Teacher Edition: As 104, 190, 480; EF 103B, 479B; ELL 153B, 479B; HP 104, 154, 158, 190, 480; PSP 103B, 153B; R 153, 157; SP 103, 189, 479; T 153, 157, 189, 479, LA3; WM 104, 480</p>
REASONING	
<ul style="list-style-type: none"> Recognize that mathematical facts, procedures, and claims must be justified. 	<p>Student Edition: <i>Problem-Solving Investigation</i> 41-42, 75-76, 105-106, 135-136, 167-168, 197-198, 233-234, 271-272, 301-302, 327-328, 397-398, 425-426, 461-462, 491-492 <i>Problem-Solving Projects</i> P3-P18 <i>Problem-Solving Strategy</i> 25-26, 39-40, 93-94, 123-124, 151-152, 185-186, 219-220, 255-256, 353-354, 445-446</p> <p>Teacher Edition: R 25, 39, 41, 75, 93, 105, 123, 135, 154, 167, 185, 197, 219, 233, 255, 271, 301, 327, 353, 397, 425, 445, 461, 491; T 25, 39, 41, 75, 93, 105, 123, 135, 154, 167, 185, 197, 219, 233, 255, 271, 301, 327, 353, 397, 425, 445, 461, 491</p>
<ul style="list-style-type: none"> Use reasoning to support their mathematical conclusions and problem solutions. 	<p>Student Edition: <i>Problem-Solving Investigation</i> 41-42, 75-76, 105-106, 135-136, 167-168, 197-198, 233-234, 271-272, 301-302, 327-328, 397-398, 425-426, 461-462, 491-492 <i>Problem-Solving Projects</i> P3-P18 <i>Problem-Solving Strategy</i> 25-26, 39-40, 93-94, 123-124, 151-152, 185-186, 219-220, 255-256, 353-354, 445-446</p> <p>Teacher Edition: R 25, 39, 41, 75, 93, 105, 123, 135, 154, 167, 185, 197, 219, 233, 255, 271, 301, 327, 353, 397, 425, 445, 461, 491; T 25, 39, 41, 75, 93, 105, 123, 135, 154, 167, 185, 197, 219, 233, 255, 271, 301, 327, 353, 397, 425, 445, 461, 491</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Select and use various types of reasoning and methods of proof. 	<p>Student Edition: <i>Problem-Solving Investigation</i> 41-42, 75-76, 105-106, 135-136, 167-168, 197-198, 233-234, 271-272, 301-302, 327-328, 397-398, 425-426, 461-462, 491-492 <i>Problem-Solving Projects</i> P3-P18 <i>Problem-Solving Strategy</i> 25-26, 39-40, 93-94, 123-124, 151-152, 185-186, 219-220, 255-256, 353-354, 445-446</p> <p>Teacher Edition: R 25, 39, 41, 75, 93, 105, 123, 135, 154, 167, 185, 197, 219, 233, 255, 271, 301, 327, 353, 397, 425, 445, 461, 491; T 25, 39, 41, 75, 93, 105, 123, 135, 154, 167, 185, 197, 219, 233, 255, 271, 301, 327, 353, 397, 425, 445, 461, 491</p>
<ul style="list-style-type: none"> Rely on reasoning, rather than answer keys, teachers, or peers, to check the correctness of their problem solutions. 	<p>Student Edition: <i>Problem-Solving Investigation</i> 41-42, 75-76, 105-106, 135-136, 167-168, 197-198, 233-234, 271-272, 301-302, 327-328, 397-398, 425-426, 461-462, 491-492 <i>Problem-Solving Projects</i> P3-P18 <i>Problem-Solving Strategy</i> 25-26, 39-40, 93-94, 123-124, 151-152, 185-186, 219-220, 255-256, 353-354, 445-446</p> <p>Teacher Edition: R 25, 39, 41, 75, 93, 105, 123, 135, 154, 167, 185, 197, 219, 233, 255, 271, 301, 327, 353, 397, 425, 445, 461, 491; T 25, 39, 41, 75, 93, 105, 123, 135, 154, 167, 185, 197, 219, 233, 255, 271, 301, 327, 353, 397, 425, 445, 461, 491</p>
<ul style="list-style-type: none"> Make and investigate mathematical conjectures. 	<p>Student Edition: 55-56, 101-102, 195-196 <i>Get Ready</i> 55, 89, 101, 195 <i>H.O.T. Problems</i> 56, 90</p> <p>Teacher Edition: As 56, 90; ATS 56; HP 56, 90, 196; I 55, 89; R 55, 89; T 55, 89, 195</p>
<ul style="list-style-type: none"> Counterexamples as a means of disproving conjectures. 	<p>See <i>Math Connects 3</i> © 2009.</p> <p>Teacher Edition: SGO 124B, 184B, 234B</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Verifying conjectures using informal reasoning or proofs. 	<p>Student Edition: 55-56, 101-102, 195-196 <i>Get Ready</i> 55, 101, 195 <i>H.O.T. Problems</i> 56, 102 <i>Talk About It</i> 101, 195</p> <p>Teacher Edition: As 56; ATS 56; HP 102, 196; I 55; R 101; SP 101; T 101, 195; WM 56</p>
<ul style="list-style-type: none"> Evaluate examples of mathematical reasoning and determine whether they are valid. 	<p>Student Edition: <i>Problem-Solving Strategies</i> 25-26, 93-94, 385-386</p> <p>Teacher Edition: BL 461B; R 25, 93, 385; T 25, 93, 385</p>
REPRESENTATIONS	
<ul style="list-style-type: none"> Create and use representations to organize, record, and communicate mathematical ideas. 	<p>Student Edition: 119-120, 127-128, 266-268 <i>Get Ready</i> 119 <i>Problem-Solving Project</i> P3-P4, P13-P14, P17-P18 <i>Problem-Solving Strategy</i> 123-124</p> <p>Teacher Edition: Ar 113H; BL 119B; CP 115; EF 121B, 127B, 265B; ELL 127B, 129B, 265B; GT 265B; HP 120, 128, 268; PSP 265B; R 119, 123, 127; S 113H; SP 119, 127, 266; T 123, 127, 266</p>
<ul style="list-style-type: none"> Concrete representations (e.g., base-ten blocks or algebra tiles) 	<p>Student Edition: 18-20, 21-22, 35, 67-68, 71-72, 91-92, 97, 147-148, 149-150, 379-380, 395-396, 402 <i>Get Ready</i> 17, 21, 35, 67, 71, 91, 97, 147, 379, 395 <i>Problem Solving</i> 396</p> <p>Teacher Edition: ATS 22, 120, 380, 396; BL 17B, 129B, 153B, 195B; E 19; EF 17B, 21B, 167B; ELL 153B; GT 21B, 167B; HP 396; I 147; R 17, 21, 35, 71, 395; SP 67; T 18, 149, 195; WM 20</p>
<ul style="list-style-type: none"> Pictorial representations (e.g., diagrams, charts, or tables) 	<p>Student Edition: 119-120, 266-268, 367-368 <i>Get Ready</i> 119 <i>Problem-Solving</i> 137-138 <i>Problem-Solving Project</i> P3-P8, P17-P18</p> <p>Teacher Edition: Ar 113H; ATS 368; BL 119B; CP 115; E 368; EF 119B; HP 120, 268, 368; R 119, 367; SP 119, 367; T 119, 367</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Symbolic representations (e.g., a formula) 	<p>Student Edition: 266 <i>Problem Solving</i> 137-138</p> <p>Teacher Edition: Ar 113H, SP 266</p>
<ul style="list-style-type: none"> Graphical representations (e.g., a line graph) 	<p>Student Edition: 127-128, 266-268, 367-368 <i>Problem Solving</i> 138 <i>Problem-Solving Projects</i> P3-P4, P13-P14, P18</p> <p>Teacher Edition: Ar 113H; ATS 368; BL 127B; CP 115; EF 127B, 265B; ELL 127B, 129B; GT 265B; HP 128, 268, 368; PSP 265B; R 127, 367; SP 127, 266, 367; T 127, 368</p>
<ul style="list-style-type: none"> Select, apply, and translate among mathematical representations to solve problems. 	<p>Student Edition: 119-120, 121-122, 129-130, 266-268, 367-368 <i>Problem Solving</i> 120, 137-138 <i>Problem-Solving Projects</i> P3-P6, P13-P14, P17-P18 <i>Problem-Solving Strategy</i> 123-124</p> <p>Teacher Edition: ATS 128, 368; CP 115; E 120; EF 121B; HP 120, 122, 130, 268, 368; PSP 119B, 121B, 127B; R 119, 121, 123, 129, 367; SP 119, 129, 266, 367; T 119, 121, 123, 129, 367</p>
<ul style="list-style-type: none"> Use representations to model and interpret physical, social, and mathematical phenomena. 	<p>Student Edition: <i>Problem-Solving Projects</i> P3-P4, P13-P14, P17-P18</p> <p>Teacher Edition: BL 119B; CP 115; EF 119B, 121B; ELL 129B; S 113H</p>
TECHNOLOGY	
<ul style="list-style-type: none"> Use technology to gather, analyze, and communicate mathematical information. 	<p>Student Edition: 23-24, 213-214, 269-270</p> <p>Teacher Edition: EL 24, 214, 270; I 165; UMTC 23, 213, 269</p>
<ul style="list-style-type: none"> Use computer spreadsheets, software, and graphing utilities to organize and display quantitative information (cf. workplace readiness standard 8.4-D). 	<p>Student Edition: 23-24, 269-270</p> <p>Teacher Edition: EL 24, 270; UMTC 23, 269</p>

STANDARDS	PAGE REFERENCES
<ul style="list-style-type: none"> Use graphing calculators and computer software to investigate properties of functions and their graphs. 	This objective can be met through classroom activities and assignments.
<ul style="list-style-type: none"> Use calculators as problem-solving tools (e.g., to explore patterns, to validate solutions). 	Student Edition: 59-60 Teacher Edition: EL 60; UMTC 59
<ul style="list-style-type: none"> Use computer software to make and verify conjectures about geometric objects. 	Teacher introduced computer program could be used with Chapter 11
<ul style="list-style-type: none"> Use computer-based laboratory technology for mathematical applications in the sciences (cf. science standards) 	Student Edition: 269-270 Teacher Edition: EL 270; UMTC 269