

Table of Contents

About the Author..... ii
 NCTM Standards..... iii
 About This Book vii
 How to Use This Book vii
 Teaching Suggestions vii
 General Commentsviii
 Answers.....405

NCTM Standards

Skills	Number and Operations	Algebra	Geometry	Measurement	Data Analysis and Probability
Absolute Value	237, 307, 334				
Angle		92, 93, 232	13, 25, 232, 233, 235, 271	26, 27, 92, 93, 232, 393, 394	
Area		79		51, 74, 75, 76, 180, 349, 350, 351, 352, 395, 402, 403	
Capacity <small>customary, metric</small>				268, 269, 270, 310, 311, 312	
Circles			38, 260, 261	177, 260, 261, 262, 263, 264, 265, 289, 348, 351, 402	
Combinations					67, 136, 191, 380
Congruence			171, 201		
Coordinate System			15, 158, 159, 160, 161, 162, 330, 331, 332		
Count	21, 83				
Critical Thinking	4, 94, 109, 403	12, 24, 37, 58, 79, 81, 82, 90, 91, 94, 102, 104, 112, 122, 133, 134, 139, 168, 174, 178, 179, 187, 200, 213, 238, 248, 252, 302, 306, 324, 336, 364, 375, 376, 378, 379, 381	61, 82, 201, 234, 271, 273, 392	79, 270	87
Data Analysis <small>bar graph, line graph, survey, table, picture</small>					53, 54, 87, 88, 89, 175, 274, 362, 363, 382, 384, 385

NCTM Standards (Cont.)

NCTM Standards

Skills	Number and Operations	Algebra	Geometry	Measurement	Data Analysis and Probability
Decimals concept, add, subtract, multiply, divide	124, 125, 126, 127, 141, 142, 143, 144, 145, 146, 147, 148, 149, 151, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 337, 338, 339, 340, 341, 370, 371, 372, 373, 404				
Draw			15, 38, 180, 181, 182, 346, 392	79, 180, 181, 182	
Equations Expression	69, 334	163, 333			
Equivalence	40, 95, 96, 123, 242, 335, 365	63, 215, 375			
Estimation addition, subtraction, multiplication, division	83, 86, 360, 361				
Exponents	72, 73, 388				
Factors	17, 39, 70, 71, 97, 276, 313, 320, 321, 366, 367	112, 378			
Fractions form/vocabulary, add, subtract, multiply, divide	40, 41, 44, 95, 96, 98, 99, 106, 107, 108, 110, 111, 114, 115, 116, 117, 118, 119, 120, 121, 123, 239, 242, 243, 244, 245, 246, 247, 250, 251, 253, 254, 255, 256, 257, 258, 259, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 365, 366, 367, 370, 404	288		45, 46, 342, 343	42, 43
Graph, Table, Chart, Figure analyze, represent	278	364	15, 159, 160, 161, 162, 180, 181, 182, 331, 332	180, 181, 182, 262	16, 42, 43, 53, 54, 87, 88, 175, 176, 274, 325, 362, 363
Inequalities	123, 335	200			
Integers	152, 153, 154, 155, 156, 157, 326, 327, 328, 329				
Length customary, metric				45, 46, 47, 48, 49, 103, 130, 177, 236, 342, 343, 344, 345, 403	
Likelihood, Probability					135, 136, 192, 193, 194, 377
Lines parallel, perpendicular, slope			100, 101, 103, 132, 161, 162, 332, 346, 403		

NCTM Standards (Cont.)



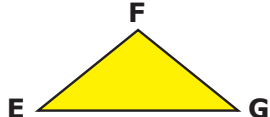
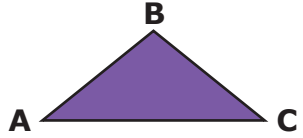
NCTM Standards

Skills	Number and Operations	Algebra	Geometry	Measurement	Data Analysis and Probability
Mean, Median, Mode					65, 66, 205, 383
Money add, subtract, multiply, divide	55, 56, 57, 137, 138, 139, 140, 150, 184, 198, 199, 281, 291, 301, 386	56, 87, 139, 200, 275			
Multiple	105, 113, 249, 315, 317, 322, 323	316			
Negative Numbers	152, 153, 154, 155, 156, 157, 326, 327, 328, 329				
Notation	69, 237, 307, 334				
Order	5, 126, 144, 335, 337				
Order of Operations	62, 63, 214, 215, 335, 389				
Patterns geometric, numeric	70, 313, 372, 373, 387	28, 59, 187, 213, 324, 336, 397			
Percent	195, 196, 197, 198, 199, 374, 386	375			
Perimeter		79		50, 77, 347, 352, 402	
Place Value expanded notation, number form, word form	1, 2, 3, 5, 124, 125, 206, 207, 337				
Polygons			13, 14, 52, 74, 75, 76, 77, 78, 234, 272, 273, 392	92, 93, 232, 347, 349, 350, 394, 395	
Prime/Composite	71, 97, 307, 314, 318, 319, 320, 321	112, 379			
Properties	17, 22, 23, 68, 70, 313, 319				
Reflection, Translation, Rotation			170, 305, 403		
Ratio rates, proportion	183, 184, 185, 186, 187, 188, 189, 190, 300	187, 188, 189, 190, 300			377
Rounding	84, 85, 358, 359				
Shapes 2 dimensional, 3 dimensional			131, 234, 303, 304		
Symmetry			171		

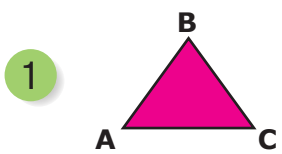
NCTM Standards (Cont.)

NCTM Standards

Skills	Number and Operations	Algebra	Geometry	Measurement	Data Analysis and Probability
Temperature <small>customary, metric</small>				64, 103, 266, 267, 403	
Time				21, 128, 129	
Variable as Unknown <small>in addition, in subtraction, in multiplication, in division</small>		122, 163, 164, 165, 166, 167, 168, 169, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 333, 398, 399, 400, 401			
Vocabulary	202, 307, 403	202, 203, 204, 258, 397	80, 103, 304	103	103
Volume				353, 396	
Weight <small>customary, metric</small>				172, 173, 308, 309	
Whole Numbers <small>addition, subtraction, multiplication, division</small>	6, 7, 8, 9, 10, 11, 17, 18, 19, 20, 21, 29, 30, 31, 32, 33, 34, 35, 36, 59, 60, 62, 63, 68, 69, 70, 71, 73, 109, 208, 209, 210, 211, 212, 214, 215, 277, 313, 354, 355, 360, 361, 368, 369, 387, 404				
Word Problems	7, 11, 21, 36, 109, 140, 150, 199, 338, 340, 356, 357, 390, 391	90, 178, 179, 189, 259, 275, 288, 381		236, 267, 311, 312, 344, 348, 352, 402	

<p>point A</p>  <p>denoted → \dot{A}</p>	<p>A point or location is denoted (labeled) by a capital letter.</p>
<p>line segment</p>  <p>denoted → \overline{CD}</p>	<p>A line segment connects two points.</p>
<p>polygon</p>  <p>denoted → triangle EFG or $\triangle EFG$</p>	<p>A polygon is a closed figure made from line segments.</p>
<p>vertices</p> 	<p>The points where the sides of a polygon meet are called the vertices. Polygons are named by their vertices. This triangle has vertices A, B, and C.</p>

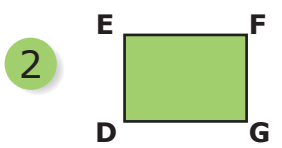
Name the sides and vertices.



sides: _____

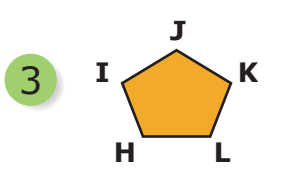
vertices: ___ _ _

4 Draw a triangle with sides **RS**, **TR**, and **ST**. Label all the vertices.



sides: _____

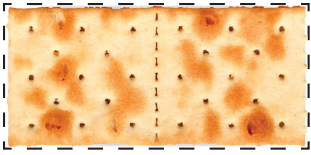
vertices: _____



sides: _____

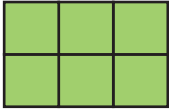
vertices: _____





Perimeter is the distance around a polygon. A polygon is a closed figure made with line segments.

- 1 Find the perimeter of each figure below. Each small square is 1 cm on each side.

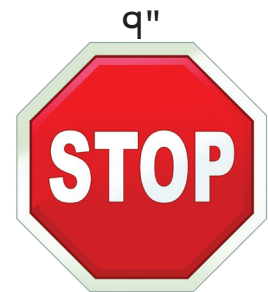
2 cm  3 cm perimeter = $2 + 3 + 2 + 3 = 10$ cm

2  perimeter = _____

3  perimeter = _____

4  perimeter = _____

- 5 What is the perimeter of the stop sign if each side is 9 inches long? _____




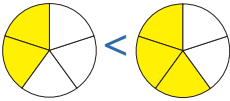
- 6 Using 6 small squares measuring 1 cm on each side, make a figure with a perimeter of 14 cm. Using the six small squares, make a figure with a perimeter of 12 cm.

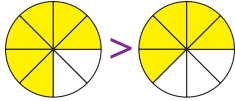


< is the symbol for **less than**
 > is the symbol for **greater than**

To compare fractions, start with like fractions (**same denominators**), then compare the numerators.



$$\frac{2}{5} < \frac{3}{5}$$


$$\frac{3}{4} > \frac{5}{8}$$


Place <, >, or = between the two amounts.

- | | | |
|------------------------------|---|----------------------------|
| 1 $\frac{7}{8}$ cup of sugar | <input style="width: 50px; height: 50px; border: 1px solid green; border-radius: 50%; outline: none;" type="text"/> | $\frac{3}{8}$ cup of sugar |
| 2 $\frac{5}{6}$ inch | <input style="width: 50px; height: 50px; border: 1px solid green; border-radius: 50%; outline: none;" type="text"/> | $\frac{3}{4}$ inch |
| 3 $\frac{2}{3}$ cup of milk | <input style="width: 50px; height: 50px; border: 1px solid green; border-radius: 50%; outline: none;" type="text"/> | $\frac{5}{8}$ cup of milk |
| 4 $\frac{1}{4}$ hour | <input style="width: 50px; height: 50px; border: 1px solid green; border-radius: 50%; outline: none;" type="text"/> | $\frac{1}{3}$ hour |
| 5 $\frac{5}{9}$ cm | <input style="width: 50px; height: 50px; border: 1px solid green; border-radius: 50%; outline: none;" type="text"/> | $\frac{5}{6}$ cm |
| 6 $\frac{4}{11}$ probability | <input style="width: 50px; height: 50px; border: 1px solid green; border-radius: 50%; outline: none;" type="text"/> | $\frac{1}{3}$ probability |



Bananas
\$.69 each



Tomatoes
\$1.25 each



Apples
\$.75 each



Carrots
\$.39 each



Red Peppers
\$1.17 each



Broccoli
\$2/bunch



Potatoes
\$.50 each



Onions
\$.29/bunch

1 What three items did Michael buy for \$2.44?

2 What three items did Ava buy for \$2.31?

3 What three items did Ethan buy for \$3.94?

4 What four items did Emily buy for \$1.93?

5 What four items did Leon buy for \$4.68?



Operations that undo each other are called **inverse operations**.

If 3 is added to 7 and then 3 is subtracted from the answer, we return to 7.

If 30 is divided by 6 and then multiplied by 6, we return to 30.

$3 + 7 = 10$	Subtraction is the inverse (opposite of) addition.	$30 \div 6 = 5$
$10 - 3 = 7$	Addition is the inverse (opposite of) subtraction.	$5 \times 6 = 30$
	Multiplication is the inverse (opposite of) division.	
	Division is the inverse (opposite of) multiplication.	

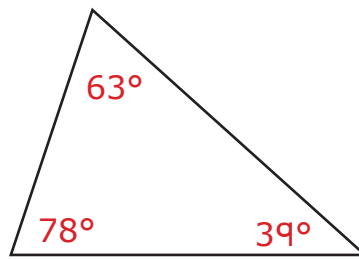
Use inverse operations to solve for the unknown number n ; then cross out the correct answers on the right to find the two false answers.

- 1 $n + 29 = 40$ $n = \underline{\hspace{2cm}}$
- 2 $n - 32 = 17$ $n = \underline{\hspace{2cm}}$
- 3 $n \times 3 = 30$ $n = \underline{\hspace{2cm}}$
- 4 $n \div 5 = 22$ $n = \underline{\hspace{2cm}}$
- 5 $n + 201 = 742$ $n = \underline{\hspace{2cm}}$
- 6 $n - 126 = 83$ $n = \underline{\hspace{2cm}}$
- 7 $n \times 6 = 78$ $n = \underline{\hspace{2cm}}$
- 8 $n \div 14 = 16$ $n = \underline{\hspace{2cm}}$
- 9 $n - 401 = 500$ $n = \underline{\hspace{2cm}}$
- 10 $n + 154 = 200$ $n = \underline{\hspace{2cm}}$

- 10
- 541
- 901
- 209
- 11
- 13
- 334
- 224
- 49
- 46
- 892
- 110

The sum of the three angles in a triangle always adds to 180° .

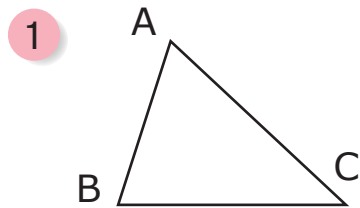
$$78^\circ + 63^\circ + 39^\circ = 180^\circ$$



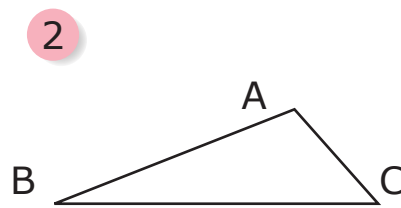
Polygon	Sum of the Angles
triangle	180°
quadrilateral	360°
pentagon	540°
hexagon	720°

adding a side adds 180° to the total

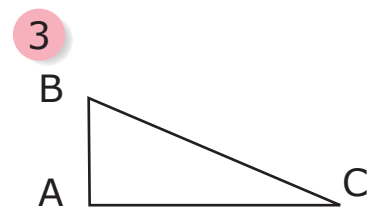
Find each missing angle using the given angles by adding the given angles and subtracting from the total for the polygon.



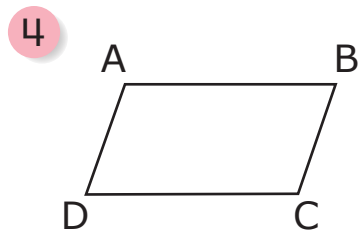
$$\begin{aligned} \angle A &= 70^\circ \\ \angle B &= 73^\circ \\ \angle C &= \underline{\hspace{1cm}} \end{aligned}$$



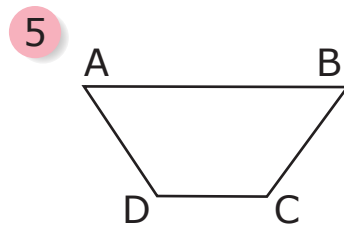
$$\begin{aligned} \angle A &= \underline{\hspace{1cm}} \\ \angle B &= 28^\circ \\ \angle C &= 46^\circ \end{aligned}$$



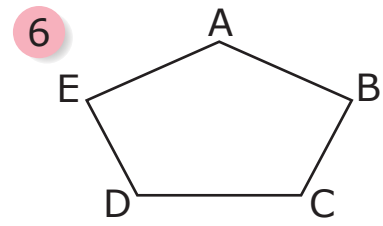
$$\begin{aligned} \angle A &= 90^\circ \\ \angle B &= 60^\circ \\ \angle C &= \underline{\hspace{1cm}} \end{aligned}$$



$$\begin{aligned} \angle A &= 115^\circ \\ \angle B &= \underline{\hspace{1cm}} \\ \angle C &= 115^\circ \\ \angle D &= 65^\circ \end{aligned}$$



$$\begin{aligned} \angle A &= 58^\circ \\ \angle B &= 58^\circ \\ \angle C &= \underline{\hspace{1cm}} \\ \angle D &= 122^\circ \end{aligned}$$



$$\begin{aligned} \angle A &= \underline{\hspace{1cm}} \\ \angle B &= 76^\circ \\ \angle C &= 118^\circ \\ \angle D &= 118^\circ \\ \angle E &= 76^\circ \end{aligned}$$