3 Develop the Concept

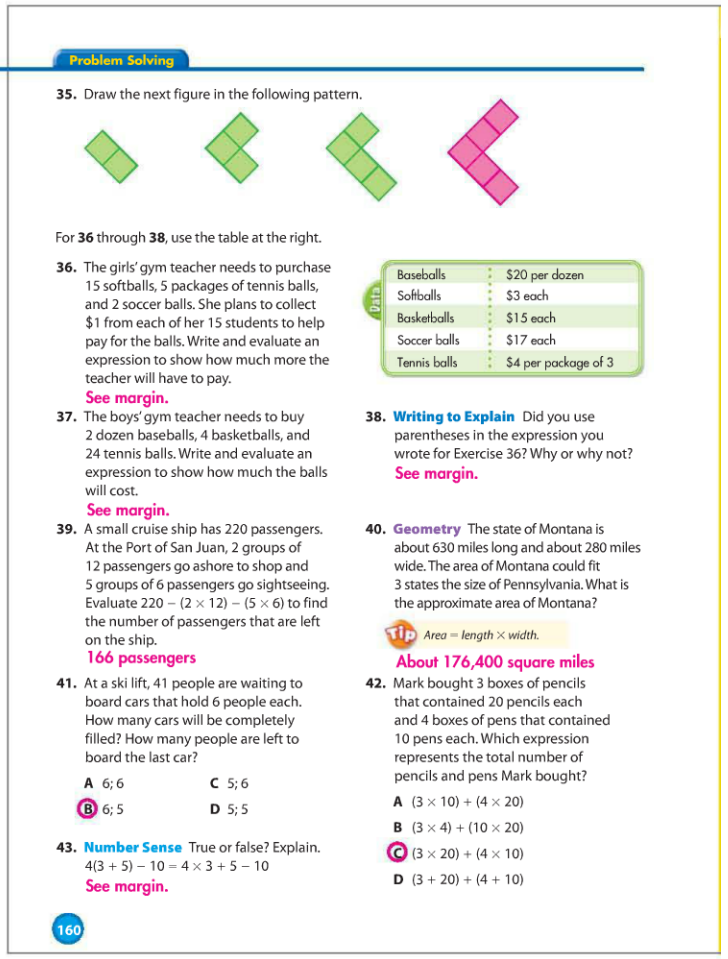
Problem Solving

Exercise	Content
35	Patterns with Geometric Figures
36	Numerical Expression $[(15 \times 3) + (4 \times 5) + (17 \times 2) - (15 \times 1)]$
37	Numerical Expression $[(2 \times 20) + (4 \times 15) + 4 \times (24 \div 3)]$
38	Communicate Math Understanding
39	Order of Operations $[220 - (2 \times 12) - (5 \times 6)]$
40	Extra Information Multiplication (630×280)
41	Division $(41 \div 6)$
42	Numerical Expression $(3 \times 20) + (4 \times 10)$
43	Distributive Property

Students use underlying processes and mathematical tools for Exercises 35–43. Remind students to check for reasonableness when solving each problem.

Exercise 37
Problem-Solving Skill: Using a Data Table Discuss how to gather information from the data table. *What is the price of a dozen baseballs?* [$20] *What is different about how the cost of the tennis balls is listed?* [Each package of 3 tennis balls costs $4.] *What do you need to do in order to find the cost of 24 tennis balls?* [Divide 24 by the number of balls in each pack.]

Exercise 42
Test-Taking Tip: Understand the Question Remind students to look for hidden questions. *What do you have to find first before you can find the total?* [The number of pens and the number of pencils]



Problem Solving

35. Draw the next figure in the following pattern.

For **36** through **38**, use the table at the right.

Data	
Baseballs	$20 per dozen
Softballs	$3 each
Basketballs	$15 each
Soccer balls	$17 each
Tennis balls	$4 per package of 3

36. The girls' gym teacher needs to purchase 15 softballs, 5 packages of tennis balls, and 2 soccer balls. She plans to collect $1 from each of her 15 students to help pay for the balls. Write and evaluate an expression to show how much more the teacher will have to pay.
See margin.

37. The boys' gym teacher needs to buy 2 dozen baseballs, 4 basketballs, and 24 tennis balls. Write and evaluate an expression to show how much the balls will cost.
See margin.

38. Writing to Explain Did you use parentheses in the expression you wrote for Exercise 36? Why or why not?
See margin.

39. A small cruise ship has 220 passengers. At the Port of San Juan, 2 groups of 12 passengers go ashore to shop and 5 groups of 6 passengers go sightseeing. Evaluate $220 - (2 \times 12) - (5 \times 6)$ to find the number of passengers that are left on the ship.
166 passengers

40. Geometry The state of Montana is about 630 miles long and about 280 miles wide. The area of Montana could fit 3 states the size of Pennsylvania. What is the approximate area of Montana?

Tip *Area = length × width.*

About 176,400 square miles

41. At a ski lift, 41 people are waiting to board cars that hold 6 people each. How many cars will be completely filled? How many people are left to board the last car?

A 6; 6 C 5; 6
B 6; 5 D 5; 5

42. Mark bought 3 boxes of pencils that contained 20 pencils each and 4 boxes of pens that contained 10 pens each. Which expression represents the total number of pencils and pens Mark bought?

A $(3 \times 10) + (4 \times 20)$
B $(3 \times 4) + (10 \times 20)$
C $(3 \times 20) + (4 \times 10)$
D $(3 + 20) + (4 + 10)$

43. Number Sense True or false? Explain.
$4(3 + 5) - 10 = 4 \times 3 + 5 - 10$
See margin.

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36. $(15 \times 3) + (4 \times 5) + (17 \times 2) - (15 \times 1)$; $84
37. $(2 \times 20) + (4 \times 15) + 4 \times (24 \div 3)$; $132
38. Sample answer: Parentheses are not needed, because when following order of operations, you multiply first.
43. False; The Distributive Property was not used correctly.