

LESSON

1-3**Ready to Go On? Problem Solving Intervention****Order of Operations**

When you write an expression to solve a problem, keep in mind the order of operations.

Tickets for a show cost \$3 for children, \$9 for adults, and \$5 for senior citizens. Two groups of people are buying tickets. There are 6 children, 4 adults, and 3 senior citizens in each group. Write and solve an expression to find the total ticket cost for both groups.

Understand the Problem

1. What is the problem asking you to find?

2. Underline the information in the problem that you will use to write an expression for the total.

Make a Plan

3. How can you find the cost for 6 children? _____

4. If you know the cost for one group, how can you find the cost for both groups?

Solve

5. Write an expression for the cost in dollars for one group. Why don't you need parentheses?

6. Write an expression for the cost in dollars for both groups.

7. What is the total cost for the two groups? _____

Look Back

8. Find the total cost another way. Find the sum of the cost for all 12 children, all 8 adults, and all 6 senior citizens.

LESSON 1-3 Ready to Go On? Problem Solving Intervention

Order of Operations

When you write an expression to solve a problem, keep in mind the order of operations. Tickets for a show cost \$3 for children, \$9 for adults, and \$5 for senior citizens. Two groups of people are buying tickets. There are 6 children, 4 adults, and 3 senior citizens in each group. Write and solve an expression to find the total ticket cost for both groups.

Understand the Problem

1. What is the problem asking you to find?

the total cost for tickets for the two groups

2. Underline the information in the problem that you will use to write an expression for the total. **Check students' work.**

Make a Plan

3. How can you find the cost for 6 children? Multiply 6 • \$3.
4. If you know the cost for one group, how can you find the cost for both groups?

Multiply the cost for one group by 2.

Solve

5. Write an expression for the cost in dollars for one group. Why don't you need parentheses?

6 • 3 + 4 • 9 + 3 • 5; using the order of operations you multiply before adding.

6. Write an expression for the cost in dollars for both groups.

2 (6 • 3 + 4 • 9 + 3 • 5)

7. What is the total cost for the two groups? \$138

Look Back

8. Find the total cost another way. Find the sum of the cost for all 12 children, all 8 adults, and all 6 senior citizens.

12 • 3 + 8 • 9 + 6 • 5 = 138

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LESSON 1-4 Ready to Go On? Skills Intervention

Properties and Mental Math

You use mental math when you solve a math problem in your head. Some mental math strategies use number properties that you already know.

Vocabulary
Commutative Property
Associative Property
Distributive Property

The **Commutative Property** (ordering) states that you can add or multiply numbers in any order. The **Associative Property** (grouping) states that while you are only adding or only multiplying, you can group any of the numbers together.

Using Properties to Add Whole Numbers

Find the sum.
13 + 6 + 17 + 54
13 + 6 + 17 + 54

Which numbers can you group together to find sums that are multiples of 10? 13 and 17; 6 and 54

13 + 17 + 6 + 54

Rewrite the problem using the Commutative Property to change the order.

(13 + 17) + (6 + 54)

Use the Associative Property to make groups of compatible numbers.

The sum is 90.

Use mental math to add.

The **Distributive Property** states that when you multiply a number times a sum, you can find the sum first and then multiply, or multiply by each number in the sum and then add. When multiplying two numbers, you can "break apart" one of the numbers into a sum. Then, use the Distributive Property to find the answer mentally.

Using the Distributive Property to Multiply

Use the Distributive Property to find the product.
8 × 35

8 × (30 + 5)

Break apart 35.

(8 × 30) + (8 × 5)

Which property can you use to multiply each number in the sum? the Distributive Property

240 + 40

Use mental math to multiply.

The product is 280.

Use mental math to add.

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LESSON 1-5 Ready to Go On? Skills Intervention

Choosing a Method of Computation

When solving a problem you need to choose a method of computation: mental math, pencil and paper, or a calculator.

Agricultural Application

- A. Adrian is planning her garden. She wants to plant several different types of flowers. How many plants does Adrian want in her garden?

Will you add the numbers in the table mentally or will you use paper and pencil? Explain.

I will use paper and pencil because it is difficult to keep track of all of the numbers.

Adrian's Garden

Plant Type	Number
Snapdragon	18
Cornflower	20
Cosmos	12
Dahlia	8
Petunia	36
Pansy	50

Add.

18
20
12
8
36
50
+
144

Adrian wants to plant 144 plants in her garden.

- B. How many more petunias than snapdragons will Adrian plant?

36 - 18 Setup the subtraction problem.
petunias snapdragons

(36 + 2) - (18 + 2) Which number will you add to 18 and 36 to use mental math?

38 - 20 = 18 Use mental math to subtract.

Adrian will plant 18 more petunias than snapdragons.

- C. Adrian is going to plant 36 plants in one day. How many days will it take her to plant her garden?

144 ÷ 36 Write out the division problem.

total plants plants per day

Are these numbers compatible? no

Will it take you awhile to find the quotient using pencil and paper? yes

Which method of computation will you use? calculator

It will take Adrian 4 days to plant her garden.

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LESSON 1-5 Ready to Go On? Problem Solving Intervention

Choosing a Method of Computation

Some computations that look hard can still be done with mental math.

A small arena has 484 sections, each with 25 seats. How many seats are in the arena?

Understand the Problem

1. Do you need an exact answer? yes
2. What computation can you do to solve the problem? Multiply 484 • 25

Make a Plan

3. How many sections of 25 seats does it take to provide 100 seats? 4
4. How can you use that idea to compute 484 • 25?

Possible answer: Find how many sets of four 25-seat sections there are and multiply that by 100.

Solve

5. Use mental math. How many sets of 4 sections are in 484 sections? (In other words, how many 4's in 484?) 121
6. Fill in the blank to make the statement true. 484 • 25 = 121 hundreds
7. How many seats are in the arena? 12,100

Look Back

8. Your answer for 484 • 25 should be between 500 • 20 and 500 • 30. Show that it is.

500 • 20 = 10,000 and 500 • 30 = 15,000.

The answer 12,100 is between 10,000 and 15,000.

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