Module 1   **Number Sense**
Lesson 4   **Distributive Properties**

Solve the following products using the distributive property as shown.

1. $(5)(13) = 5(8 + 5)$
   $40 + 25 = 65$

2. $7(15) = 7(10 + 5)$
   $70 + 35 = 105$

3. $(14)(22) = (10 + 4)(20 + 2)$
   $200 + 20 + 80 + 8 = 308$

4. $16 \cdot 15 = (10 + 6)(10 + 5)$
   $100 + 50 + 60 + 30 = 240$

5. $(9)(28) = 9(30 - 2)$
   $270 - 18 = 252$

6. $12(19) = 12(20 - 1)$
   $240 - 12 = 228$

Use the Distributive Property to solve the following. Possible answers shown.

7. $8(13)$
   $8(10 + 3) = 80 + 24 = 104$

8. $(14)(15)$
   $(10 + 4)(10 + 5) = 100 + 50 + 40 + 20 = 210$

9. $5 \cdot 28$
   $5(30 - 2) = 150 - 10 = 140$

10. $9(14)$
    $9(10 + 4) = 90 + 36 = 126$

11. $(25)(24)$
    $25(20 + 4) = 500 + 100 = 600$

12. $11(48)$
    $11(50 - 2) = 550 - 22 = 528$

Use the Distributive Property to solve the following.

13. For the school play, Gabrielle set up 42 rows with 15 chairs in each row. How many chairs did she set up in all?
    Gabrielle set up 630 chairs.

14. The basketball team bought 19 jerseys for $34 each. How much did the jerseys cost in all?
    The jerseys cost $646.

15. Maria read 2 novels with 296 pages each and 7 short stories with 14 pages each. How many pages did she read altogether?
    Maria read 690 pages.

16. Jamal practices piano for 45 minutes each day. If he practices 24 days each month, how many minutes will he have practiced in 12 months?
    Jamal practiced 12,960 minutes.

Journal

1. Explain how to model the Distributive Property using areas of rectangles. Provide an example.

2. Explain how the Distributive Property can be used to simplify computations. Provide examples.

3. What is a partial product, and why is it important to the Distributive Property?

Cumulative Review

Using mental math, evaluate each of the following.

1. $21 + 54 + 79 + 19$
   173

2. $25 \times 17 \times 4 \times 3$
   5,100

3. $(40)(10)(5) + (27)(20)$
   2,540

4. $(50 \div 10)^2 \times [(2 \times 8) - (3 \times 4)]^2$
   400

5. $(7 \times 8) - [(72 \div 9) + (4 \times 7)]$
   20

6. $3(77 \div 11) + 8[4 + (35 \div 7)]$
   93

Determine if each number is divisible by 2, 3, 4, 5, 6, 9, or 10.

7. 279
   divisible by 3 and 9, not by 2, 4, 5, 6, or 10

8. 5,385
   divisible by 3 and 5, not by 2, 4, 6, 9, or 10

9. 24,912
   divisible by 2, 3, 4, 6, and 9, not by 5 or 10

10. 37,420
    divisible by 2, 4, 5, and 10, not by 3, 6, or 9

Independent Practice

Possible Answers

1. Take a 5 by 8 rectangle. The area is $5 \times 8 = 40$ square units. Split the 5 by 8 rectangle into a 5 by 2 rectangle and a 5 by 6 rectangle. The areas of the smaller rectangles are $5 \times 2 = 10$ square units and $5 \times 6 = 30$ square units. Add the areas of the smaller rectangles; 10 square units + 30 square units = 40 square units. This shows that $5 \times 8 = (5 \times 2) + (5 \times 6)$. Rewrite 5×8 as $5(2 + 6)$ to get $5(2 + 6) = (5 \times 2) + (5 \times 6)$.

2. The Distributive Property can be used to simplify computations by replacing a difficult multiplication with an easier multiplication or by reducing the number of computations required. For example, instead of solving 6×57, I can solve $(6 \times 50) + (6 \times 7)$. Instead of solving $(4 \times 7) + (4 \times 3) + (4 \times 15)$, I can solve $4 \times (7 + 3 + 15) = 4 \times 25$.

3. A partial product is the product of a number and part of a sum. For example, to solve 7×12, 12 can be split into the sum of 10 and 2. The products of 7×10 and 7×2 are partial products because they must be added to get the product of the original factors, 7 and 12. Partial products are important to the Distributive Property because they are the components that result when one factor is split into two parts, and then each part is multiplied by the other factor.