Name _____ Date _____ Class _____

SKILL 18: Multiplying Three Factors

When you need to multiply 3 or more factors together, you can sometimes simplify the problem by changing the grouping of the factors. According to the **associative property** for multiplication, regrouping the factors does not change their product.

Example 1

Find $9 \times 20 \times 5$ by grouping in two ways.

a. $(9 \times 20) \times 5 =$
$(180) \times 5 = 900$

b. $9 \times (20 \times 5) =$
$9 \times (100) = 900$

Notice the two products are the same, so $(9 \times 20) \times 5 = 9 \times (20 \times 5)$.

Remember, you can also change the order of the factors by using the commutative property for multiplication.

Example 2

Find $4 \times (7 \times 25)$. Change the order and the grouping of the factors to make multiplication easier.

$4 \times (7 \times 25)$
$= 4 \times (25 \times 7)$ The commutative property allows the order change.
$= (4 \times 25) \times 7$ The associative property allows the grouping change.
$= 100 \times 7 = 700$

Guided Practice

Write the property that allows each step of the multiplication problem.

1. $2 \times (13 \times 5) = 2 \times (5 \times 13)$ _____
$= (2 \times 5) \times 13$ _____

2. $4 \times (7 \times 25) = (7 \times 25) \times 4$ _____
$= 7 \times (25 \times 4)$ _____

Multiply.

3. $(7 \times 5) \times 40 =$
$7 \times (\_\_\_\_ \times \_\_\_\_) =$
$7 \times \_\_\_\_ = \_\_\_\_$

4. $100 \times (30 \times 7) =$
$(100 \times \_\_\_\_) \times \_\_\_\_ =$
$\_\_\_\_ \times 7 = \_\_\_\_$

5. $8 \times (10 \times 3) =$ _____

6. $30 \times (40 \times 5) =$ _____

7. $50 \times (4 \times 2) =$ _____

8. $(8 \times 70) \times 10 =$ _____

Name _____ Date _____ Class _____

SKILL 18: Practice

Find each product.

1. $(3 \times 9) \times 4 =$ _____
2. $60 \times (7 \times 8) =$ _____
3. $(12 \times 3) \times 7 =$ _____
4. $4 \times (80 \times 60) =$ _____
5. $7 \times (26 \times 4) =$ _____
6. $(13 \times 5) \times 2 =$ _____
7. $900 \times (7 \times 6) =$ _____
8. $40 \times (71 \times 3) =$ _____
9. $(25 \times 5) \times 30 =$ _____
10. $(7 \times 30) \times 90 =$ _____
11. $50 \times (15 \times 120) =$ _____
12. $(125 \times 4) \times 80 =$ _____

13. $13 \times 42 \times 7$ _____
14. $900 \times 8 \times 12$ _____
15. $40 \times 90 \times 70$ _____
16. $25 \times 14 \times 32$ _____
17. $21 \times 23 \times 15$ _____
18. $20 \times 36 \times 15$ _____
19. $2{,}000 \times 5 \times 18$ _____
20. $35 \times 60 \times 12$ _____
21. $750 \times 2 \times 30$ _____

Solve.

22. Greg made 23 of his super-sized pizzas each day for a week. He cut the pizzas into 24 slices. How many slices did he make in the week? _____

23. There are 25 pencils in one bag and 10 bags in one box. If there are 4 boxes, how many pencils are there in all? _____

24. Find the product: $20 \times 3 \times 50$. *Skill 18*

A 110 C 600
B 300 D 3,000

25. Find the product: 82×63. *Skill 16*

F 738 H 5,066
G 4,166 J 5,166