Name _____

Video Practice Tools Games

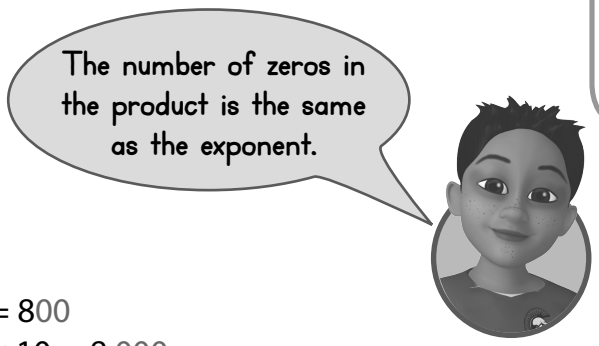
Additional Practice 1-1
Patterns with Exponents and Powers of 10

Another Look!

Patterns can help you multiply by powers of 10.

Find the product of 8×10^4.

Write the product in standard form.



$8 \times 10^1 = 8 \times 10 = 80$
$8 \times 10^2 = 8 \times 10 \times 10 = 800$
$8 \times 10^3 = 8 \times 10 \times 10 \times 10 = 8{,}000$
$8 \times 10^4 = 8 \times 10 \times 10 \times 10 \times 10 = 80{,}000$

So, 8×10^4 written in standard form is 80,000.

1. Write $10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10$ with an exponent. 10^7

2. Write $6 \times 10 \times 10 \times 10 \times 10$ with an exponent. 6×10^4

3. How many zeros are in the standard form of 10^7? Write this number in standard form.
7 zeros; 10,000,000

In **4–14**, find each product. Use patterns to help.

4. $4 \times 10^1 =$ 40
$4 \times 10^2 =$ 400
$4 \times 10^3 =$ 4,000
$4 \times 10^4 =$ 40,000

5. $7 \times 10 =$ 70
$7 \times 100 =$ 700
$7 \times 1{,}000 =$ 7,000
$7 \times 10{,}000 =$ 70,000

6. $5 \times 10^1 =$ 50
$5 \times 10^2 =$ 500
$5 \times 10^3 =$ 5,000
$5 \times 10^4 =$ 50,000

7. 3×10^1
30

8. 2×100
200

9. 3×10^4
30,000

10. $1{,}000 \times 9$
9,000

11. 6×10^2
600

12. 3×10^3
3,000

13. $10{,}000 \times 2$
20,000

14. 8×10^5
800,000

15. Explain how to find the number of zeros in the product for Exercise 14.
Sample answer: Since the exponent for 10 is 5, there are 5 zeros in the product.

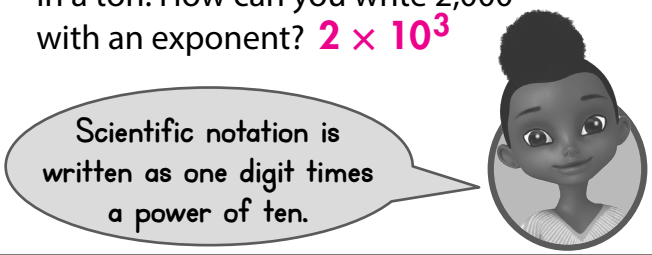
16. Maria saw 2×10^1 dogs in the park on Saturday. She saw twice as many dogs on Sunday as she saw on Saturday. How many dogs did she see over the two days?

60 dogs

17. **Number Sense** In which place is the digit in the number 5,341 that would be changed to form 5,841? How do the values of the two numbers compare?

The hundreds place; 5,841 is 500 greater than 5,341.

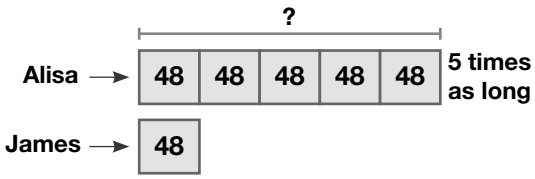
18. **enVision®** STEM There are 2,000 pounds in a ton. How can you write 2,000 with an exponent? **2×10^3**



19. Kay buys 12 pounds of apples. Each pound costs $3. If she gives the cashier two $20 bills, how much change should she receive?

$4

20. **Model with Math** James practiced piano for 48 minutes. Alisa practiced for 5 times as long as James. How many minutes did Alisa practice? How many minutes in all did James and Alisa practice? Write an equation to model your work.



240 minutes; 288 minutes; $240 + 48 = 288$

21. **Higher Order Thinking** George said that 6×10^3 is 180. Do you agree or disagree? If you disagree, explain the mistake that he made and find the correct answer.

Sample answer: George multiplied 6 by 10 by the exponent 3 to get 180 rather than multiplying 6 by the product ($10 \times 10 \times 10$). The correct answer is 6,000.

Assessment Practice

22. Choose all the equations that are true.

- [x] $10 \times 10 \times 10 \times 10 \times 10 = 100{,}000$
- [ ] $10 \times 10 \times 10 \times 10 \times 10 = 50$
- [ ] $10 \times 10 \times 10 \times 10 \times 10 = 50{,}000$
- [x] $10 \times 10 \times 10 \times 10 \times 10 = 10^5$
- [ ] $10 \times 10 \times 10 \times 10 \times 10 = 50{,}000$

23. Choose all the equations that are true.

- [ ] $90{,}000 = 9 \times 1{,}000$
- [x] $90{,}000 = 9 \times 10{,}000$
- [x] $90{,}000 = 9 \times 10^4$
- [ ] $90{,}000 = 9 \times 10^5$
- [ ] $90{,}000 = 9 \times 10^6$