

## LESSON

## 3

**Exponents and Roots****Practice A: Scientific Notation**

**Write each number in standard notation.**

1.  $1.76 \times 10^{-1}$

2.  $8.9 \times 10^3$

3.  $6.2 \times 10^{-2}$

4.  $1.01 \times 10^2$

5.  $5.8 \times 10^4$

6.  $8.1 \times 10^5$

7.  $3.8 \times 10^{-4}$

8.  $2.03 \times 10^{-3}$

9.  $5.0 \times 10^3$

10.  $3.12 \times 10^5$

11.  $7.6 \times 10^{-2}$

12.  $8.54 \times 10^{-5}$

**Write each number in scientific notation.**

13. 376,000

14. 9,580,000

15. 650

16. 1006

17. 29

18. 0.0061

19. 0.0107

20. 0.0002008

21. 0.00053

22. 250,800

23. 0.000094

24. 0.00086

25. Earth is about 93,000,000 miles from the Sun. Write this number in scientific notation.

26. The diameter of Earth is about  $1.276 \times 10^4$  kilometers. The diameter of Venus is about  $1.21 \times 10^4$  kilometers. Which planet has the greater diameter, Earth or Venus?

**Problem Solving**

- |                         |                             |
|-------------------------|-----------------------------|
| 1. $2^{12}$ fruit flies | 2. $8^{11}$ bacteria        |
| 3. 13 hr                | 4. $3^{12}$ cm <sup>3</sup> |
| 5. D                    | 6. F                        |
| 7. D                    | 8. H                        |

**Reading Strategies**

- |  |          |
|--|----------|
| 1. 3   | 2. 3     |
| 3. yes   |          |
| 4. $(3 \cdot 3) \cdot (3 \cdot 3 \cdot 3 \cdot 3)$ |          |
| 5. $3^6$   | 6. yes   |
| 7. yes   | 8. $5^3$ |

**Puzzles, Twisters & Teasers**

E	G	R	O	U	P	O	W	E	R	A	C
V	X	E	R	T	Y	Z	F	G	H	J	O
A	Y	P	R	O	P	E	R	T	Y	A	M
L	W	E	O	C	V	R	V	B	N	P	B
U	U	I	O	N	P	O	O	L	P	P	I
A	D	F	G	B	E	L	L	Y	I	L	N
T	B	A	S	E	S	N	M	J	A	Y	E
E	P	L	M	F	A	C	T	O	R	Q	E
B	E	L	L	Y							

**Answers for Lesson 3**

**Practice A**

- |                           |                            |
|---------------------------|----------------------------|
| 1. 0.176                  | 2. 8,900                   |
| 3. 0.062                  | 4. 101                     |
| 5. 58,000                 | 6. 810,000                 |
| 7. 0.00038                | 8. 0.00203                 |
| 9. 5000                   | 10. 312,000                |
| 11. 0.076                 | 12. 0.0000854              |
| 13. $3.76 \times 10^5$    | 14. $9.58 \times 10^6$     |
| 15. $6.5 \times 10^2$     | 16. $1.006 \times 10^3$    |
| 17. $2.9 \times 10^1$     | 18. $6.1 \times 10^{-3}$   |
| 19. $1.07 \times 10^{-2}$ | 20. $2.008 \times 10^{-4}$ |
| 21. $5.3 \times 10^{-4}$  | 22. $2.508 \times 10^5$    |
| 23. $9.4 \times 10^{-5}$  | 24. $8.6 \times 10^{-4}$   |
| 25. $9.3 \times 10^7$     | 26. Earth                  |

**Practice B**

- |                            |                           |
|----------------------------|---------------------------|
| 1. 254                     | 2. 0.067                  |
| 3. 1140                    | 4. 0.38                   |
| 5. 0.00753                 | 6. 56,000                 |
| 7. 910,000                 | 8. 0.000608               |
| 9. 859,000                 | 10. 3,331,000             |
| 11. 0.00721                | 12. 0.000588              |
| 13. $7.5 \times 10^7$      | 14. $2.08 \times 10^2$    |
| 15. $9.071 \times 10^5$    | 16. $5.6 \times 10^1$     |
| 17. $9.3 \times 10^{-2}$   | 18. $6.0 \times 10^{-5}$  |
| 19. $8.52 \times 10^{-3}$  | 20. $5.05 \times 10^{-2}$ |
| 21. $3.007 \times 10^{-3}$ | 22. $5.226 \times 10^3$   |
| 23. $4.0 \times 10^{-2}$   | 24. $9.8856 \times 10^4$  |
| 25. $7.7812 \times 10^8$   | 26. the hair              |

**Practice C**

- |  |                              |
|--|------------------------------|
| 1. 634,000                               | 2. 0.000071                  |
| 3. 4,230,000                             | 4. 0.0000008235              |
| 5. 0.000000060089                        | 6. 5,200,000,000             |
| 7. 2,054,700,000                         | 8. 0.0000008394              |
| 9. 968,800,000,000                       | 10. $9.7406 \times 10^{10}$  |
| 11. $6.7 \times 10^{-11}$                | 12. $5.28 \times 10^9$       |
| 13. $8.4 \times 10^{-8}$                 | 14. $6.521 \times 10^{11}$   |
| 15. $7.254 \times 10^{-10}$              | 16. $2.0509 \times 10^{13}$  |
| 17. $6.6 \times 10^{-14}$                | 18. $3.05 \times 10^{13}$    |
| 19. $2.6 \times 10^{11}$ mi <sup>3</sup> | 20. $3.3 \times 10^{-9}$ sec |
| 21. $1.8 \times 10^{-4}$                 |                              |

**Review for Mastery**

- |                        |                          |
|------------------------|--------------------------|
| 1. positive;           | 2. negative;             |
| right 6;               | left 5;                  |
| 4,120,000              | 0.000034                 |
| 3. 800,000             | 4. 0.00071               |
| 5. 314,000,000         |                          |
| 6. 3.2;                | 7. 7.12;                 |
| right 7;               | left 8;                  |
| $3.2 \times 10^7$      | $7.12 \times 10^{-8}$    |
| 8. $4.1 \times 10^7$   | 9. $6.43 \times 10^{-8}$ |
| 10. $1.37 \times 10^9$ |                          |