

CHAPTER 13 - EXPONENTS

13.1 POSITIVE EXPONENTS

A. Express each in exponential form.

1. $3 \times 3 \times 3 \times 3$ 3^4

2. $2 \times 2 \times 2 \times 2 \times 2$ 2^5

3. $5 \times 5 \times 5 \times 5 \times 5 \times 5$ 5^6

4. $10 \times 10 \times 10 \times 10 \times 10$ 10^5

5. $8 \times 8 \times 8$ 8^3

6. $\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}$ $(\frac{1}{4})^3$

7. $-6 \times -6 \times -6 \times -6$ $(-6)^4$

8. $3 \times 3 \times 3 \times 3 \times 3 \times 3$ 3^6

9. $-(7 \times 7 \times 7 \times 7)$ $-(7^4)$

10. $\frac{7}{8} \times \frac{7}{8} \times \frac{7}{8} \times \frac{7}{8} \times \frac{7}{8}$ $(\frac{7}{8})^5$

11. $4 \times 4 \times 4 \times 3 \times 3 \times 3 \times 4$
 $4^4 \cdot 3^3$

12. $15 \times 16 \times 17 \times 18 \times 19$ stays the same

D. Complete the following chart.

Exponential Form	Factored Form	Standard Form
1. 5^2	$(5)(5)$	25
2. 9^3	$9 \times 9 \times 9$	729
3. 9^2	$(9)(9)$	81
4. 3^4	$3 \times 3 \times 3 \times 3$	81
5. $(\frac{2}{3})^3$	$(\frac{2}{3})(\frac{2}{3})(\frac{2}{3})$	$\frac{8}{27}$
6. $(-7)^2$	$(-7)(-7)$	49
7. -7^2	$-(7)(7)$	-49
8. 4^2 or 2^4	$(4)(4)$ or $(2)(2)(2)(2)$	16
9. 0.4^3	$(0.4)(0.4)(0.4)$	0.064
10. 8^0	1	1
11. $(-\frac{2}{3})^3$	$(-\frac{2}{3})(-\frac{2}{3})(-\frac{2}{3})$	$-\frac{8}{27}$
12. $(\frac{4}{5})^2$	$(\frac{4}{5})(\frac{4}{5})$	$\frac{16}{25}$
13. 1.5^4	$(1.5)(1.5)(1.5)(1.5)$	5.0625
14. $(1)^2$	$(1)(1)$	1
15. $(-6)^4$	$(-6)(-6)(-6)(-6)$	1296

CANADIAN MATHEMATICS 8

E. Calculate the value of each (standard name) using the rules for order of operations (BEDMAS).

1. $3^3 - 2^4$ 11

2. $4^3 + 3^2$ 73

3. $8^2 - 5^2$ 39

4. $5^3 - 3^5$ -118

5. $10^3 \div (9 - 4)^2$ 40

6. $6^2 - (2^0 + 3^1)$ 32

7. $2^4 \times 2^4$ 256

8. $10^4 \times 10^3$ 10 000 000

9. $3^4 \div 3^3$ 3

10. $10^3 \div 10^3$ 1

11. $8^2 \div 4^3$ 1

12. $4^5 - 5^4$ 399

13. $2^4 + 5^0 - 1^3$ 16

14. $6^2 - (3^3 + 7^0)$ 8

15. $4^2 + 2^4 + 3^3$ 59

16. $3^4 \times 3^3$ 2187

17. $3^5 \times 3^3 \div 3^4$ 81

18. $2^8 \times 2^3 \div 2^{11}$ 1