3 Chapter Review

Chapter 3 Review

Key Words

For #1 to #5, use the clues to unscramble the letters.

1. T F N F E E I C C O I
a number that multiplies a power

2. N N T O E I P A X L E M O R F
the form for writing a number so that it is made up of a base and an exponent (two words)

3. E A S B
the number in a power that is multiplied repeatedly

4. W R O E P
an expression made up of a base and an exponent

5. T O X E N P N E
the number in a power that indicates how many times to repeatedly multiply the base by itself

3.1 Using Exponents to Describe Numbers, pages 92–98

6. Write each expression as a power.
a) $2 \times 2 \times 2$
b) $(-3) \times (-3) \times (-3) \times (-3)$

7. Write each power in repeated multiplication form.
a) 4^6
b) 6^4
c) $(-5)^7$
d) -5^7

8. The area of a square on grid paper is 5^2. Evaluate the area. Draw the square and label its area and side length.

9. A cube has an edge length of 4 cm. Express its volume in repeated multiplication form and in exponential form. Then, evaluate.

10. Arrange the following numbers in ascending order:
$4^3 \quad 7^2 \quad -3^4 \quad 9 \quad 2^5$

3.2 Exponent Laws, pages 99–107

11. Rewrite each power in the following products in repeated multiplication form.
a) $3^2 \times 5^4$
b) $(-3)^3 \times 2^6$

12. Write each expression in parentheses as a power. Then, write the entire expression as a single power.
a) $(2 \times 2 \times 2) \times (2 \times 2)$
b) $\dfrac{(4 \times 4)(4 \times 4 \times 4 \times 4)}{(4 \times 4 \times 4)}$

13. Write each expression in repeated multiplication form, and then as a single power.
a) $(-5)^2 \times (-5)^5$
b) $(3^2)^4$

14. Write each expression as the multiplication of two powers.
a) $(6 \times 4)^3$
b) $[(7 \times (-2)]^5$

15. Write each expression as the division of two powers.
a) $\left(\frac{4}{5}\right)^2$
b) $\left(\frac{2}{7}\right)^4$

16. Evaluate.
a) -4^2
b) $(-10)^0$
c) $3^2 \times 3^3$

3.3 Order of Operations, pages 108–113

17. Write the calculator key sequence you would use to evaluate each expression.
a) $(-2)^2 + (-2)^3$
b) $(2^3)^2 - 4 \times 6^0$
c) $(-3)^4 - (-3)^3 + (2 \times 4)^2$

18. Evaluate.
a) $7^2 + (-2)^3 \div (-2)^2$
b) $(2 - 5)^3 + 6^2$
c) $\dfrac{(2)^6(2)^2 - 13 \times 2^0}{(-1 + 2^2)^5}$
d) $(-1)^{10} + (-22)^0 - \left(\frac{3}{5}\right)^2$

19. Explain the mistake in Ang's solution. Determine the correct answer.
$(-5)^6 + 7 \times 2^5$
$= 81 + 7 \times 8$
$= 88 \times 8$
$= 704$

3.4 Using Exponents to Solve Problems, pages 114–119

20. What is the surface area of a cube with an edge length of 5 m?

21. A population of ten bacteria doubles every hour. This growth can be represented by $N = 10(2)^t$, where N is the number of bacteria, and t is the amount of time, in hours. How many bacteria will there be after each number of hours?
a) 3
b) 6

22. A formula that approximates the distance an object falls through air in relation to time is $d = 4.9t^2$. The distance, d, is measured in metres, and the time, t, in seconds. A pebble breaks loose from a cliff. What distance would it fall in each number of seconds?
a) 1
b) 2
c) 6

***MathLinks 9*, pages 120–121**

Suggested Timing
40–50 minutes

Materials
• calculator

Blackline Masters
BLM 3–5 Section 3.1 Extra Practice
BLM 3–7 Section 3.2 Extra Practice
BLM 3–8 Section 3.3 Extra Practice
BLM 3–10 Section 3.4 Extra Practice

Planning Notes

Have students work individually or in pairs. If they encounter difficulties, remind them to refer to their Foldable, their worked exercises for the section, their spider map, their Math Learning Log, or the modelled examples in the appropriate section of the student resource.

The Key Words should be relatively straightforward, given that there are few new terms in the chapter. Where possible, students should try and solve questions and then verify their answers with a calculator.

Meeting Student Needs

- Students who require more practice on a particular topic may refer to **BLM 3–5 Section 3.1 Extra Practice**, **BLM 3–7 Section 3.2 Extra Practice**, **BLM 3–8 Section 3.3 Extra Practice**, and **BLM 3–10 Section 3.4 Extra Practice**.

ELL

- Ensure that English language learners understand what is meant by the introductory statements in the questions. They may know how to do the work, but they may not understand what the question is asking.

Gifted and Enrichment

- Some students may already be familiar with the skills handled in this review. To provide enrichment and extra challenge for gifted students, go to www.mathlinks9.ca and follow the links.

Common Errors

- Some students may apply the exponent to the negative sign in -3^4 when attempting #10.

R_x Remind students that the power is 3^4 and the coefficient is -1.

- Some students may struggle with the order of operations in #17 and 18.

R_x Some students may benefit from identifying the operations in each question and then ordering them, according to BEDMAS, prior to starting.

Assessment	Supporting Learning
Assessment *for* Learning	
Chapter 3 Review The Chapter 3 Review is an opportunity for students to assess themselves by completing selected questions in each section and checking their answers against the answers in the back of the student resource.	• Have students check the contents of the What I Need to Work On section of their Foldable and do at least one question related to each listed item. • Have students revisit any section that they are having difficulty with prior to working on the chapter test. • You may wish to suggest to students that they pair up and compare their spider maps.