Chapters 5-7 Review

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Chapter 5 Introduction to Polynomials

1. The following diagram of algebra tiles models a backyard.

a) What is an expression for the perimeter of the backyard?

b) What is an expression for the area of the backyard?

2. Use materials or diagrams to show the collection of like terms in each expression.

a) $8c + 3 - 5c + 1$

b) $-1 + x - 1 - x + 1$

c) $g^2 - g + 5 + 2g - 4g^2$

3. Write the following expressions in simplest form.

a) $(2m - 3) + (5m + 1)$

b) $(w^2 - 4w + 7) + (3w^2 + 5w - 3)$

c) $(9y^2 - 6.8) + (4.3 - 9y - 2y^2)$

4. Write a simpler expression.

a) $(-7z + 3) - (-4z + 5)$

b) $(3d - 2d - 7) - (d^2 - 5d + 6cd - 2)$

c) $(2x^2 + 3xy) - (-xy + 4x^2)$

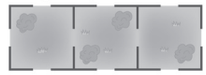
5. The Better Buys antique shop sells comic books for \$10, hardcover books for \$8, and paperback novels for \$3.

a) Write an algebraic expression for the antique shop's total income from the sale of comics, hardcover books, and paperbacks. Tell what each variable represents.

b) Use your expression to show the total income after the sale of 15 comics, 7 hardcover books, and 5 paperbacks.

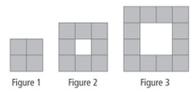
c) One day, the store sold \$100 worth of comics, hardcovers, and paperbacks. What number of each item did the store sell? Show that more than one answer is possible.

6. A park is divided equally into three square sections. Each section will have a side measurement of $2n + 4$. The park will have fencing built as shown. Each opening has length n and does not need any fencing. What is the total length of fencing needed to complete the job?



Chapter 6 Linear Relations

7. a) Describe the relationship between the figure number and the number of tiles.



b) Develop a linear equation to model the pattern.

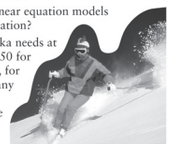
c) If the pattern were continued, how many squares would be in Figure 8?

8. Monika is saving money for a ski trip. She starts with \$112 in her bank account. She decides to deposit \$25 every week until she has enough money to pay for the trip.

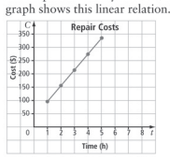
a) Create a table of values for the first five deposits.

b) What linear equation models this situation?

c) If Monika needs at least \$450 for her trip, for how many months does she need to deposit money into her bank account?



9. A car mechanic charges a \$35 base fee for labour plus an hourly rate of \$60. The graph shows this linear relation.



a) Approximately how much would the mechanic charge after working on a vehicle for 8 h?

b) Approximately how many hours would a mechanic work to charge \$225 in labour costs?

c) Another mechanic charges at the same rate, but in half-hour increments. What would be the cost of a repair that took 9.5 h to complete?

10. A computer salesperson earns a monthly salary plus a 10% commission on each sale. The sales, commission, and earnings are shown in the table.

Sales ($)	Commission ($)	Earnings ($)
0	0	2000
5 000	500	2500
10 000	1000	3000
15 000	1500	3500
20 000	2000	4000
25 000	2500	4500

a) Draw a graph showing the linear relation between sales and earnings.

b) The salesperson earns \$3750 in one month. What are the approximate total sales for that month?

c) The salesperson earns \$5500 the next month. What are the approximate total sales for that month?

d) Approximately how much would the salesperson have to sell in order to earn \$4250 in one month?

11. Draw the graph that represents this table of values.

Time (h)	0.25	0.50	0.75	1.00	1.25	1.50	1.75
Cost ($)	0.5	1.0	1.5	2.0	2.5	3.0	3.5

a) Describe a situation to represent the data on the graph.

b) Write an equation to model the data.

c) What is the cost for 3.25 h?

***MathLinks 9*, pages 284–286**

Suggested Timing

60–75 minutes

Materials

- algebra tiles
- grid paper
- ruler

Blackline Masters

Master 11 Algebra Tiles (Positive Tiles)
Master 12 Algebra Tiles (Negative Tiles)
Master 8 Centimetre Grid Paper
Master 9 0.5 Centimetre Grid Paper

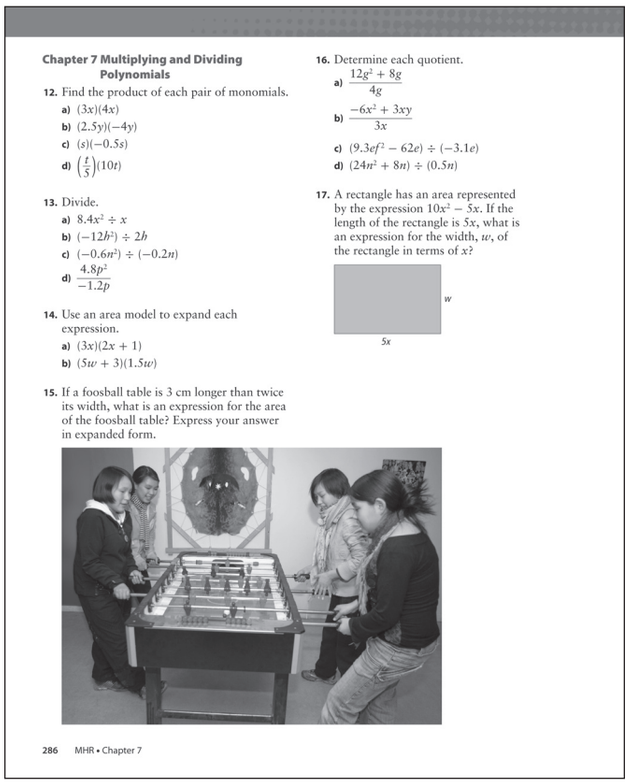
Planning Notes

Have students work individually to complete the review, then in pairs to compare solutions. Alternatively, assign the Chapters 5–7 Review to reinforce the concepts, skills, and processes learned so far. If students encounter difficulties, have them discuss strategies with a partner. Encourage them to refer to their notes in each Foldable and then to the specific section in the student resource and/or their notebooks. Once they have found a suitable strategy, students should include it in the appropriate section of their Foldable. Make copies of **Master 11 Algebra Tiles (Positive Tiles)**, **Master 12 Algebra Tiles (Negative Tiles)**, **Master 8 Centimetre Grid Paper**, and **Master 9 0.5 Centimetre Grid Paper** available for students to use during the review.

These are the minimum questions that will meet the curriculum requirements: #1–4, 7–11, and 12–16.

Study Guide

Question(s)	Section(s)	Refer to	The student can …
#1	5.1	Example 3	✓ write the expression for a given model of a polynomial
#2	5.2	Example 3	✓ write polynomial expressions in simplified form
#3, 5, 6	5.3	Example 1	✓ add polynomial expressions
#4, 6	5.3	Example 3	✓ subtract polynomials expressions
#7, 8	6.1	Examples 1, 2	✓ represent pictorial, oral, and written patterns with linear equations ✓ solve problems that involve pictorial, oral, and written patterns using a linear equation
#9	6.2	Examples 1, 2	✓ extend graphs to determine an unknown value ✓ estimate values between known values on a graph ✓ estimate values beyond known values on a graph
#10	6.3	Example 1	✓ graph linear equations ✓ solve problems by graphing a linear relation and analysing the graph
#11	6.3	Example 2	✓ match equations of linear relations with graphs
#12	7.1	Example 1	✓ multiply a monomial by a monomial
#13	7.1	Example 3	✓ divide a monomial by a monomial
#14	7.2	Example 1	✓ model multiplication of a polynomial by a monomial using models and record the process algebraically
#15	7.2	Example 3	✓ multiply a polynomial by a monomial
#16, 17	7.3	Example 2	✓ divide a polynomial by a monomial



Chapter 7 Multiplying and Dividing Polynomials

12. Find the product of each pair of monomials.
- **a)** $(3x)(4x)$
- **b)** $(2.5y)(-4y)$
- **c)** $(s)(-0.5s)$
- **d)** $\left(\frac{t}{5}\right)(10t)$

13. Divide.
- **a)** $8.4x^2 \div x$
- **b)** $(-12h^2) \div 2h$
- **c)** $(-0.6n^2) \div (-0.2n)$
- **d)** $\frac{4.8p^2}{-1.2p}$

14. Use an area model to expand each expression.
- **a)** $(3x)(2x + 1)$
- **b)** $(5w + 3)(1.5w)$

15. If a foosball table is 3 cm longer than twice its width, what is an expression for the area of the foosball table? Express your answer in expanded form.

16. Determine each quotient.
- **a)** $\frac{12g^2 + 8g}{4g}$
- **b)** $\frac{-6x^2 + 3xy}{3x}$
- **c)** $(9.3ef^2 - 62e) \div (-3.1e)$
- **d)** $(24n^2 + 8n) \div (0.5n)$

17. A rectangle has an area represented by the expression $10x^2 - 5x$. If the length of the rectangle is $5x$, what is an expression for the width, w, of the rectangle in terms of x?

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Meeting Student Needs

- Allow students to complete the review using any combination of oral or written answers, including diagrams.

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.

Assessment	Supporting Learning
Assessment *for* Learning	
Chapters 5–7 Review The cumulative review provides an opportunity for students to assess themselves by completing selected questions pertaining to each chapter and checking their answers against the answers in the back of the student resource.	• Have students review their notes from each Foldable, the graphic organizers from each chapter, the tests from each chapter and any challenges related to those chapters, identify items that they had problems with, and do the questions related to those items. Have students do at least one question that tests skills from each chapter. • Have students revisit any chapter section they are having difficulty with.
Assessment *as* Learning	
Math Learning Log Once students have completed the Chapters 5–7 Review, have them reflect on their progress and complete a journal entry for each statement: • I continue to have difficulty with … • Here's how I plan to address what I am having difficulty with …	• Encourage students to clear up any problems that they have had during the past three chapters. Work with them to provide the necessary coaching.