

Math 9

Unit 5 Review

1) Practice Test: pg. 202/ 1 – 12, 14, 15

[key below]

2) Chapter Review: pg. 200/ 1 – 16, 19 – 22, 26 – 28

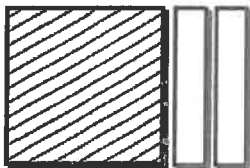
[key in text] *last page (469)*

Chapter 5 Practice Test KEY

1. A 2. B 3. C 4. C 5. D 6. B 7. $-6t^2 - 9$

8. -1

9.



10. Example: $6ab - 11$

11. $7x - 2$

12. $(x^2 - x - 3) - (-x^2 + 3x - 1) = 2x^2 - 4x - 2$

13. a) $(2x^2 + 9x^2) + (-8x + 4x) + (1 - 1) = 11x^2 - 4x$

b) $2w + 1$

14. a) $(4n + 7) + (5n - 1) = 9n + 6$

b) Example: It represents the difference in the number of peanuts each squirrel buried.

c) $n - 8$

15. a) $100 + 5n$, where n represents the number of children

b) $20 + 4n$

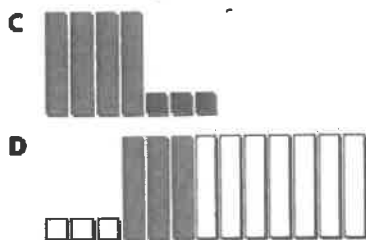
c) $120 + 9n$

d) \$201

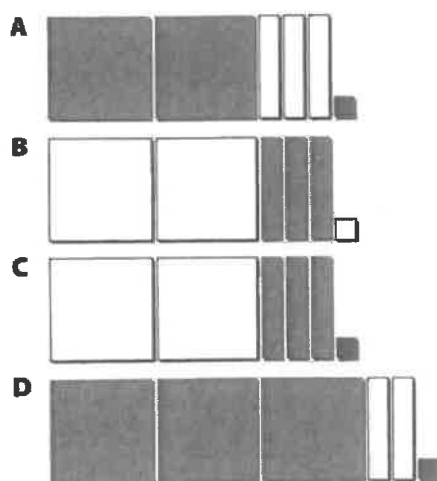
Chapter 5 Practice Test

For #1 to #6, select the best answer.

- Which polynomial is of degree 1?
 A $3 - 7x$ B $xy - 1$
 C $5x - 3xy$ D $x^2 - 5x + 2$
- Which expression does not have zero as a constant term?
 A $-5x$ B $k + 8$
 C $y^2 - 2y$ D $ab + b - c$
- Which of the following is not equivalent to $3x - 5 + 2 - 7x$?
 A $-4x - 3$
 B $3x - 7x - 5 + 2$



- Which set of diagrams represents $3x - 2x^2 + 1$?



- Which expression is a trinomial?

A abc^3
 B $3mn$
 C $ef + g^2$
 D $-1 - x + c$

- Which expression is the opposite of $-2k^2 + 3k - 1$?

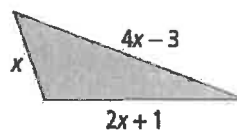
A $-1 - 3k + 2k^2$
 B $1 - 3k + 2k^2$
 C $1 - 3k - 2k^2$
 D $-1 - 3k - 2k^2$

Complete the statements in #7 and #8.

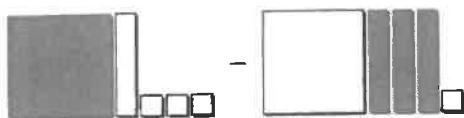
- When you combine like terms, the expression $2t^2 - 5 - 8t^2 - 4$ becomes .
- In the monomial $-q^2$, the value of the coefficient is .

Short Answer

- Draw a diagram to represent $x^2 - 2x$.
- Create a single polynomial with
 - two terms
 - two variables
 - degree 2
 - a constant term
- What is an expression, in simplest form, for the perimeter of the triangle?



12. Write an expression to represent what the diagrams show. Then, simplify.



13. Simplify. Use models for at least one of the expressions. Show your work.

- a) $(2x^2 - 8x + 1) + (9x^2 + 4x - 1)$
 b) $(4 - 6w) - (3 - 8w)$

Extended Response

14. The number of peanuts two squirrels bury can be represented by $4n + 7$ and $5n - 1$, respectively.

- a) Write and simplify an expression for the number of peanuts both squirrels bury.
 b) What could the expression $(5n - 1) - (4n + 7)$ represent?
 c) What is a simpler expression for $(5n - 1) - (4n + 7)$?

15. The cost for a birthday party at Big Fun Bowling is \$100 for up to ten children, plus \$5 per pair of bowling shoes. To rent the party room, the cost is \$20, plus \$4 per child for pizza.

- a) What is an expression for the cost of bowling for up to ten children?
 b) What is an expression for the cost of pizza in the party room for up to ten children?
 c) What is a simplified expression for the total cost of up to ten children going bowling and having pizza in the party room?
 d) Estimate, then calculate, the cost of nine children going bowling and having pizza in the party room.

M.E



Math Link: Wrap It Up!

You are an illusionist who is about to amaze your audience with a number trick. However, before you try the trick, you need to know how it works.

- a) Try the trick, Guess a Number, several times. What do you notice about the middle digit of the number in step 4?
 b) What do you notice about the other two digits?
 c) How does the information from parts a) and b) help you to understand this number trick?
 d) Make up a number-guessing trick. Show how algebra can help explain your number trick.

Guess a Number

Step 1 Tell someone to write down a three-digit number with no repeating digits. During the entire trick, do not look at what the person writes.

Step 2 Have the person arrange the digits in decreasing order.

Step 3 Ask the person to arrange the same three digits in increasing order.

Step 4 Tell the person to subtract the number in step 3 from the number in step 2.

Step 5 Ask the person to circle one number in the difference.

Step 6 Ask what the other two digits are. Identify the digit that was circled.

Chapter 5 Review

Key Words

For #1 to #6, choose the letter that best matches each description. You may use each letter more than once or not at all.

- | | |
|------------------------------------|----------------|
| 1. $3w$ is a like term | A $-3x + 1$ |
| 2. has three terms | B $-4d + 3$ |
| 3. monomial | C $1 - 3x^2$ |
| 4. opposite polynomial to $3x - 1$ | D $-w$ |
| 5. polynomial of degree 2 | E $x - 6y + 2$ |
| 6. contains the constant term 3 | F $-3x - 1$ |
| | G $3f - 1$ |

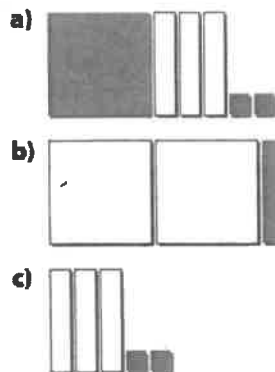
5.1 The Language of Mathematics, pages 174–182

7. For each expression, identify the number of terms and whether the expression is a monomial, binomial, trinomial, or polynomial.
- $5 - p + px - p^2$
 - $3f - q$
 - $-2a$
 - $5xy - 27x^2 + 2$
8. What is the degree of each polynomial? Explain how you found your answers.
- $6x^2$
 - $ab - 7a + 3$
 - $3 - y$
9. Provide an example of each of the following.
- binomial
 - polynomial with three terms
 - polynomial of degree 2
 - monomial that is a constant term

10. Model each expression.

- $1 - v$
- $3x^2 - 2x + 1$

11. What expression is shown by each model?



12. You are selling used video games for \$10 and used books for \$4. The expression $10x + 4y$ provides a general statement of the value of your sales before tax.



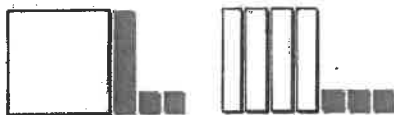
- What do the variables x and y represent?
- How much money do you receive if you sell 6 video games and 11 books?
- Write a new expression for selling DVDs at \$7.25 and CDs at \$5.

5.2 Equivalent Expressions, pages 182–189

13. Tom claims that 4 and $4x$ are like terms since they both contain 4. Do you agree? Explain.
14. For each expression, identify the coefficient, variables, and exponent for each variable.
- $8xy^2$
 - $-c^2$
 - -4
15. Identify the like terms in each group.
- $7r$ $3s$ $-s^2$ 7 $4rs$ $-8s$
 - $-2x^2$ $3xy$ x^2 $5.3y$ 2 $3xy$

16. Explain how you can tell like terms by looking at them. Give four different sets of examples with at least three like terms in each set.

17. The following diagrams represent terms in an expression. Draw a new diagram with like terms together and write an expression for the simplified answer.



18. Use materials or diagrams to model each expression and show how to combine like terms. What is the simplified expression?

- a) $3 - 2x + 1 + 5x$
b) $2x^2 - x + 4 - x^2 + 5x - 1$

19. Combine like terms.

- a) $4a + 3 + 9a + 1$
b) $2b^2 - 5b - 4b^2 + 8b$
c) $1 - c + 4 + 2c - 3 + 6c$

20. Draw a shape with a perimeter represented by $(4x) + (3x - 1) + (x + 3) + (x - 2)$, where each quantity in parentheses represents the length of a side. Find a simpler expression for the perimeter by combining like terms.

21. Kara and Jasmine go to Splash-o-mania water park. The entrance fee is \$20.00. Kara rents a locker for \$1.50 per hour. Jasmine rents a tube for \$3.00 per hour.



- a) What is an expression that represents the cost for Kara?
b) What is an expression that represents the cost for Jasmine?
c) What is a simplified expression for the total cost for both Kara and Jasmine to stay at the water park together for any number of hours?

5.3 Adding and Subtracting Polynomials, pages 190–199

22. a) Simplify each of the algebraic expressions.
 $(4x - 3) + (x - 1)$ $(4x - 3) \div (x - 1)$
b) How are the processes similar? How are they different?

23. Is $2x^2 - 3x$ the opposite of $3x - 2x^2$? Show how you know.

24. For each of the following expressions, what is the opposite?

- a) -3 b) $7 - a$ c) $x^2 - 2x + 4$

25. a) Show how to simplify the following addition. Use two different methods.

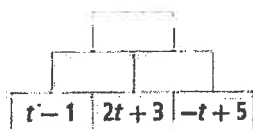
$$(3p + 4q - 9) + (2 - 5q - p)$$

- b) Which method do you prefer? Why?

26. Combine like terms.

- a) $(-p + 7) + (4p - 5)$
b) $(a^2 - a - 2) \div (5 - 3a^2 + 6a)$

27. Complete the subtraction pyramid. Find the value in any box by subtracting the two expressions in the boxes immediately below it. Subtract in order from left to right.



28. An end-of-year class party has a fixed cost of \$140 to cover printing, decorations, and awards. In addition, it costs \$12 to feed each person who attends.

- a) What is an expression for the total cost of the party? What does your variable represent?
b) Create a short scenario to generate an addition or subtraction question with polynomials. Simplify by combining like terms.

17.



18. a) $399d + 160$; d represents the number of days the backhoe is rented. b) $550d + 160$ c) $949d + 160$ d) $151d$

19. a) $-x + 5 + 3x + 1$ b) A: $(-x + 5) - (4x - 3) = -5x + 8$; B: $(3x + 1) - (4x - 3) = -x + 4$

20. a) $17n + 2150$ b) \$12 350 c) The expression represents the difference in the cost of printing and the cost of shipping; $13n + 1850$

21. The second line should be $4p^2 - p + 3 - p^2 - 3p + 2$, and the result of $(-p - 3p)$ is not $-3p$, so the answer should be $3p^2 - 4p + 5$.

22. a) $10x - 12$ b) $2a^2 - a - 4$ c) $5t^2 - 6t + 9$

d) $-0.3x + 0.4$

23. a) $3x^2 + 5x - 3$



b) $x^2 - 5x - 3$



24. $4x^2 + 2x$

25. a) Example: Assume you also pay \$0.12 for punctuation. For St. Mary's High School, $C = (25)(0.12)(31) + (25)(0.12)(19)$

b) Example: For St. Mary's High School, $C = (25)(0.12)(31) + (25)(0.12)(19) + (25)(17.95)$

c) Example: $C = (25)(17.95) + (25)(0.12)(n)$, where n represents the number of letters.

d) $(3n + 448.75) + (3n + 448.75) = 6n + 897.5$

26. a) \$37 b) \$35 c) $7l + 5s + 38$, assuming at least one large print and at least one small print.

27. $w + 23 + w + 8 + w + 23 + w + 8 = 4w + 62$

28. a) $(-n^2 + 3600n) - (-3n^2 + 8600) = 2n^2 + 3600n - 8600$ b) profit; Example: Replacing n with 20 in the expression $2n^2 + 3600n - 8600$ yields a positive answer of \$64 200.

29. $1004x$

30. $8w + 142$

Chapter 5 Review, pages 200–201

1. D

2. E

3. D

4. A

5. C

6. B

7. a) 4 terms, polynomial b) 2 terms, binomial

c) 1 term, monomial d) 3 terms, trinomial

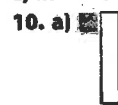
8. a) This is a degree 2 polynomial because the term with the highest degree ($6x^2$) has a degree of 2.

b) This is a degree 2 polynomial because the term with the highest degree (ab) has a degree of 2.

c) This is a degree 1 polynomial because the term with the highest degree (y) has a degree of 1.

9. a) Example: $3y - 11$ b) Example: $a + 2b - 7c$

c) $m^2 - 4$ d) 18



11. a) $x^2 - 3x + 2$ b) $-2x^2 + x$ c) $-3x + 2$

12. a) x represents the number of video games sold and y represents the number of books sold. b) \$104

c) $7.25d + 5c$, where d represents the number of DVDs and c represents the number of CDs

13. One term has the variable x ; the other does not have the variable x . So, the two terms cannot be like terms.

14. a) coefficient: 8, variables: x and y , exponent: 2

b) coefficient: -1 , variable: c , exponent: 2

c) There are no coefficients or variables because this term is a constant.

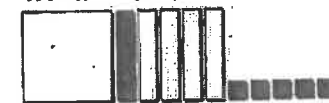
15. a) $3s$ and $-8s$ b) $-2x^2$ and x^2 , $3xy$ and $3xy$

16. Example: Like terms must be identical except for the coefficients. Four sets of examples that contain at least three like terms are:

a) $16z$, x , $2z$, $-z$, y b) $-ab$, a , $4b$, $6ab$, $-2ba$

c) m , m^2 , $-m$, m^3 , $6m$ d) xy , $4yx$, $-11yx$, $10s^2$, $-4yx$

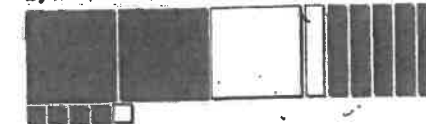
17. $-x^2 - 3x + 5$



18. a) $4 + 3x$

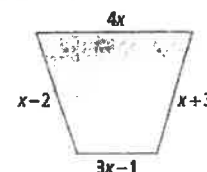


b) $x^2 + 4x + 3$



19. a) $13a + 4$ b) $-2b^2 + 3b$ c) $7c + 2$

20. Perimeter = $9x$



21. a) $20 + 1.50n$, where n represents the number of hours renting the locker b) $20 + 3n$, where n represents the number of hours renting the tube c) $40 + 4.5n$