Name: _____ **Date:** _____

Mrs van der Vossen **Math 9**

ADDING & SUBTRACTING Polynomials Review

Multiple Choice

1. In the term $4s^2t^2$, the number 4 is best described as being the
   A) coefficient C) polynomial
   B) exponent D) variable

2. In the term $7p^3q^4$, the letter p is best described as being a(n)
   A) binomial C) exponent
   B) coefficient D) variable

3. The term $4z^3$ represents the
   A) difference between 4 and z^3 C) quotient of 4 and z^3
   B) product of 4 and z^3 D) sum of 4 and z^3

4. The term $-x^3y^2z$ represents the
   A) sum of -1 and x^3 and y^2 and z C) product of -1 and x^3 and y^2 and z
   B) product of x^3 and y^2 and z D) -1 times the sum of x^3 and y^2 and z

5. The expression $s^3 + 3s^2 - 4s + 2$ can be described as a(n)
   A) binomial C) polynomial
   B) equation D) term

6. The expression $3a^3 - 3a$ can be described as a(n)
   A) binomial C) term
   B) equation D) trinomial

7. In the expression $3h^2 + 5h - 7$, the 2 is a(n)
   A) coefficient C) term
   B) exponent D) variable

8. In the expression $2y^3 + 4y - 5$, the 2 is a(n)
   A) coefficient C) term
   B) exponent D) variable

9. How many terms are there in the polynomial $4x^2 + 3x - 5$?
   A) 2 B) 3 C) 4 D) 5

10. How many terms are there in the polynomial $2c^2 + 3cd - 2d^2 + 5$?
    A) 2 B) 3 C) 4 D) 12

11. What is the degree of the term $3p^2$?
    A) 1 B) 2 C) 3 D) 5

12. What is the degree of the term $9s^4t^3$?
A) 3 B) 4 C) 7 D) 9

13. Identify the like terms in the following list of terms. $3c^2$, $5c^2d$, $2d^2$, $4c^2$, $2cd^2$
A) $3c^2$ and $4c^2$ C) $3c^2$ and $5c^2d$
B) $5c^2d$ and $2cd^2$ D) $2d^2$ and $2cd^2$

14. Combine the like terms in $4g^2 - 2g^2 + 2g - 3g + 7$. The answer is
A) $2g^2 - 3g + 7$ C) $2g^2 + 5g - 7$
B) $2g^2 - g + 7$ D) $6g^2 - g + 7$

15. When you combine the like terms in $3a^2 - 2a - 4a^2 - 3 + 5 - 3a$, the result is
A) $3a^2 - 3a + 2$ C) $a^2 - 7a + 2$
B) $-a^2 - 5a + 2$ D) $7a^2 - 5a + 3$

16. Simplify the following expression by grouping like terms. $2m - 3m^2 + 3m - 6 - m + 5m^2 + 4$
A) $2m^2 + 4m - 2$ C) $-3m^2 + 6m - 8$
B) $2m^2 - 4m - 2$ D) $-8m^2 + 5m - 4$

17. The opposite expression for $2x^2 - 4x + 3$ is
A) $-2x^2 + 4x - 3$ C) $-2x^2 - 4x - 3$
B) $2x^2 + 4x + 3$ D) $2x^2 - 4x + 3$

18. Simplify $(3a^2 + 2ab - 4) + (2a^2 - 5ab - 6)$. The answer is
A) $5a^2 + 7ab + 10$ C) $5a^2 - 3ab + 10$
B) $5a^2 + 3ab + 10$ D) $5a^2 - 3ab - 10$

19. Simplify by combining like terms. $(4gh - g^2 - 7) + (12 - 6gh + 3g^2)$
A) $10gh - 3g^2 + 12$ C) $2g^2 - 2gh + 5$
B) $-2gh + 4g^2 + 5$ D) $-2g^2 - 2gh + 5$

20. Add the following polynomials. $(3k^4 - 2k^3 + k) + (3k^3 - k^2 + 3k) + (6 + 3k^2 - 2k^4)$
A) $k^4 + k^3 + 2k^2 + 4k + 6$ C) $-2k^4 - 2k^3 - 2k^2 + k + 6$
B) $3k^4 + 3k^3 + 3k^2 + 3k + 6$ D) $k^4 - k^3 - 2k^2 + 4k - 6$

21. Subtract the following polynomials. $(7j^2 - 2j) - (-4j + 5)$
A) $7j^2 + 4j - 5$ C) $7j^2 - 2j - 5$
B) $7j^2 + 2j - 5$ D) $7j^2 + 6j + 5$

22. Subtract the following polynomials and combine like terms. $(3m^2 - 4mn + 5) - (m^2 - 7mn - 2)$
A) $2m^2 + 3mn + 3$ C) $2m^2 - 11mn + 3$
B) $2m^2 + 3mn + 7$ D) $2m^2 - 11mn + 7$

23. Subtract the following polynomials. $(3s^2 + 2s^3 + 4s) - (-4s^2 + 5) - (2s + 2s^2 - s^3 - 7)$

A) $s^3 + 5s^2 + 6s + 12$
C) $3s^3 + 5s^2 + 2s + 2$
B) $3s^3 + 5s^2 + 2s + 12$
D) $3s^3 + 9s^2 + 2s - 2$

24. Simplify $(4z^2 + 2z + 2) - (3z - 2z^2 - 3) + (2 + 5z + 3z^2)$. The answer is

A) $3z^2 + 4z + 1$
C) $9z^2 + 6z + 7$
B) $6z^2 + 4z + 5$
D) $9z^2 + 4z + 7$

Use this information to answer the following THREE question(s)

Your school band has decided to sell coupon books to raise money. The COST of the coupon book is found by squaring the profit, p. The SALE PRICE of the book is found by multiplying 4 to the profit, p.

25. The term or polynomial that best shows the cost of a coupon book would be

A) p^2
C) $p^2 + 4p$
B) $4p$
D) $4p - p^2$

26. The term or polynomial that best shows the sale price of a coupon book would be

A) p^2
C) $p^2 + 4p$
B) $4p$
D) $4p - p^2$

27. The term or polynomial that best shows the profit from selling a coupon book would be

A) p^2
C) $p^2 + 4p$
B) $4p$
D) $4p - p^2$

Completion *Complete each statement. (1 mark each)*

28. Simplify the following by combining like terms. (1 mark)
$4y - 3y^2 + y - 3y^2 + 2y^2 + 2y$

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29. Add the following polynomials. (1 mark)
$(4a^2 - 5a + 2) + (-3a^2 + 2a - 3)$

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30. Subtract the following polynomials by adding the opposite. (1 mark)
$(2n + 5) - (-3n - 2)$

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31. Perform the indicated operations and simplify by combining like terms. (2 marks)
$(2c^2+4)+(-c^2-2)-(-3c^2+4c-4)-(2c^2+c+3)$

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Word Problems *Show all steps leading to a solution.*

32. A rectangle's length is 15 cm greater than its width, *w*.
a) Draw the rectangle and label its dimensions.
b) Write and simplify an expression for its perimeter.

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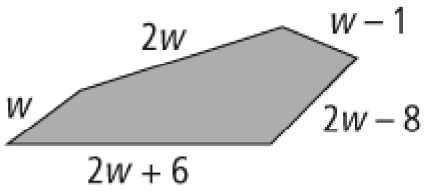
33. a) Write a simplified expression to describe the perimeter of the figure shown below.



b) If w = 5m, then what is the perimeter?

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34. Create a model to represent the addition and subtraction of the following polynomials.
SHOW ALL STEPS and final answer in its simplifiifed form: $(2x^2-5)+(3x^2-2x+4)-(2x^2+4x+2)$

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35. Helen is fencing off two areas for her rabbits and her chickens. The length of one area is 2 m more than double its width. The length of the other area is 3 m less than its width. Use *w* as width.
a) If the width of both areas is the same, write an expression to describe how much fencing she will require to fence both areas.

b) If the width of both areas is 6 m, how much fencing will she need?