Name _____ Date _____

Algebra 1: 8A Period _____

Polynomials Test Review

Part I: **Write the CAPITAL LETTER of your choice on the available line. You may use your calculator.**

1. **Find the sum:** $(2x^3 + 5x^2 - 2x + 1) + (-4x^3 + x^2 + 7x - 17)$

   A) $(2x^3 + 4x^2 - 5x - 18)$

   B) $(6x^3 + 6x^2 + 5x + 16)$

   C) $(-2x^3 + 6x^2 + 5x - 16)$

   D) none of the above _____

2. **Add and simplify:** $(t + 4 + 3t^2) + (4t - 8)$

   A) $3t^2 + 3t + 4$

   B) $5t - 4$

   C) $3t^2 + 5t + 4$

   D) none of the above _____

3. **What is the difference when $-59x^2 + 32xy + 45y$ is subtracted from $-22x^2 + 15xy - 37y$?**

   _____

4. **Simplify:** $\left(\frac{1}{4}x^2 + \frac{2}{3}x + 4\right) + \left(-\frac{1}{2}x^2 - \frac{5}{3}x - 1\frac{1}{2}\right)$

   A) $\frac{1}{4}x^2 - \frac{2}{3}x + 5\frac{1}{2}$

   B) $-\frac{1}{2}x^2 + x + 3\frac{1}{2}$

   C) $-\frac{1}{4}x^2 - x + 2\frac{1}{2}$

   D) none of the above _____

5. Evaluate: $(16x^2y + 14xy - 5x) - (13x^2y - 7xy + 6x - 2)$

_____

6. Rewrite each of the following without zero or negative exponents.

A) 4^{-2} B) 4^0 C) $\frac{r^3t^{-2}}{t^{-4}}$ D) $2x^{-3}$ E) $\frac{x^{-3}y^6}{x^{-7}y^{-4}}$

7. Write the polynomial in standard form. $10x^5 + 3 - 2x^7 + 8x^8 - 4x^6$

_____

8. Simplify: $4xy + 3x^2 - 2y^2 - xy - 4x^2 + 5y^2$

A) $x^2 - 3xy + 2y^2$

B) $7x^2 + 5xy + 7y^2$

C) $-x^2 + 3xy + 3y^2$

D) none of the above

_____

9. The polynomial: $2x^2y + 5xy^2$ is equal to $7x^3y^3$.

A) *True*

B) *False*

_____

10. $\frac{4xy}{z}$ is an example of a monomial.

A) *True*

B) *False*

_____

11. Simplify: $5x^2(-2x^3 + 3x^2 + x - 4)$

A) $(10x^6 + 15x^4 + 5x^2 - 20)$

B) $(-10x^5 + 15x^4 + 5x^3 - 20x^2)$

C) $(3x^3 + 8x^2 + 6x + 1)$

D) none of the above

_____

12. Simplify $(6x^4)^5$

_____

13. Simplify: $4a^2b(3a^2b + 2ab^2 - 5abc)$

A) $7a^4b^2 + 6a^3b^3 - a^3b^2c$

B) $12a^4b^2 + 8a^3b^3 + 20a^3b^2c$

C) $12a^4b^2 + 8a^2b^2 - 20a^2bc$

D) none of the above

_____

14. When multiplying a monomial by a polynomial, the most commonly used property at the first step is the Distributive Property.

A) $True$

B) False

_____

15. Evaluate: $(4xy + y)(2x + 3)$

A) $8x^2y + 14xy + 3y$

B) $6x^2y + 9xy + 3y$

C) $8x^2y + 10xy + 3y$

D) none of the above

_____

16. Multiply: $(x - 6)(3x - 5)$

A) $3x^2 - 5x - 30$

B) $3x^2 - 23x + 30$

C) $x^2 + 18x - 11$

D) none of the above

_____

17. Find the solution: $(2x^2 + 1)(-4x^2 - 3)$

A) $-8x^4 - 10x^2 - 3$

B) $-2x^2 - 2$

C) $-6x^4 - 9x^2 - 3$

D) none of the above

_____

18. Simplify: $(8x^8y^5z^3)(4x^5y^2z)$

_____

19. The expression $3x^2y(6x^4y^3 - 7x^2y^5)$ is equal to $18x^8y^6 - 21x^4y^5$.

A) *True*

B) *False*

20. Simplify: $(x^2 + 2x + 1)(x^2 + 5x + 6)$

21a. Simplify: $\frac{18y^3 + 12y^2 - 24y}{3y}$

21b. Simplify: $\frac{y^2 - 16y}{y}$

22. Simplify: $(x + 6)^2$

23. Simplify: $\frac{4x^3 - 8x^2 + 4x}{4x}$

24. Simplify: $(x - 3)^2$

Part II: **Show all organized work for the following problems.**

25. A) **Draw a box diagram to represent $(x - 3)(x + 6)$.**

B) **Find the answer.**

26. A) **Find the area of a rectangle if the length is represented by $x^2 - 4x + 2$ and the width is represented by $x - 5$. Show all organized work.**

B) **What is the area of the rectangle if $x = 6$ units?**

27. From the sum of $6x^2 - 2x + 5$ and $-3x^2 + 6x + 2$, subtract $4x^2 + 3x - 6$.

28. Given: $12x^3 + 6x^2 - 2 + 7x^4 + 7 - 3x^2 + 4x^3 - 4x^2 + 8$

A) Simplify the expression and write in standard form. _____

B) How many different terms does the polynomial have? _____

C) What is the degree of the polynomial? _____

D) What the leading coefficient of the polynomial? _____

Exponent Rules: ① Add/sub → keep them the same
② multiply → ADD
③ Divide → subtract
④ power to power → multiply

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Polynomials Test Review

Part I: **Write the CAPITAL LETTER of your choice on the available line. You may use your calculator.**

1. **Find the sum:** $(2x^3 + 5x^2 - 2x + 1) + (-4x^3 + x^2 + 7x - 17)$

A) $(2x^3 + 4x^2 - 5x - 18)$

B) $(6x^3 + 6x^2 + 5x + 16)$

C) $(-2x^3 + 6x^2 + 5x - 16)$

D) none of the above

$$(2x^3+5x^2-2x+1) + (-4x^3+x^2+7x-17)$$
$$-2x^3+6x^2+5x-16$$

C

2. **Add and simplify:** $(t + 4 + 3t^2) + (4t - 8)$

A) $3t^2 + 3t + 4$

B) $5t - 4$

C) $3t^2 + 5t + 4$

D) none of the above

$$(t+4+3t^2) + (4t-8)$$
$$5t-4+3t^2$$
$$3t^2+5t-4$$

D

3. **What is the difference when $-59x^2 + 32xy + 45y$ is subtracted from $-22x^2 + 15xy - 37y$?** TYP

$$(-22x^2+15xy-37y) + (+59x^2-32xy-45y)$$
$$37x^2-17xy-82y$$

4. **Simplify:** $\left(\frac{1}{4}x^2 + \frac{2}{3}x + 4\right) + \left(-\frac{1}{2}x^2 - \frac{5}{3}x - 1\frac{1}{2}\right)$

A) $\frac{1}{4}x^2 - \frac{2}{3}x + 5\frac{1}{2}$

B) $-\frac{1}{2}x^2 + x + 3\frac{1}{2}$

C) $-\frac{1}{4}x^2 - x + 2\frac{1}{2}$

D) none of the above

$$\left(\frac{1}{4}x^2+\frac{2}{3}x+4\right) + \left(-\frac{1}{2}x^2-\frac{5}{3}x-1\frac{1}{2}\right)$$
$$-\frac{1}{4}x^2-1x+2\frac{1}{2}$$

5. Evaluate: $(16x^2y + 14xy - 5x) - (13x^2y - 7xy + 6x - 2)$

$(16x^2y + 14xy - 5x)$
$+ (-13x^2y + 7xy - 6x + 2)$

$3x^2y + 21xy - 11x + 2$

6. Rewrite each of the following without zero or negative exponents.

A) 4^{-2} $\frac{1}{4^2} = \frac{1}{16}$

B) 4^0 1

C) $\frac{r^3t^{-2}}{t^{-4}}$ $-2 - -4$ $-2+4$ r^3t^2

D) $2x^{-3}$ $2 \cdot x^3$ $\frac{2}{1} \to \frac{2}{x^3}$

E) $\frac{x^{-3}y^6}{x^{-7}y^{-4}}$ $-3 - -7$ $6 - -4$ x^4y^{10}

7. Write the polynomial in standard form. $10x^5 + 3 - 2x^7 + 8x^8 - 4x^6$

$8x^8 - 2x^7 - 4x^6 + 10x^5 + 3$

8. Simplify: $4xy + 3x^2 - 2y^2 - xy - 4x^2 + 5y^2$

A) $x^2 - 3xy + 2y^2$ $3x^2 - 4x^2 - 2y^2 + 5y^2 + 4xy - xy$

B) $7x^2 + 5xy + 7y^2$ $-x^2 + 3y^2 + 3xy$

C) $-x^2 + 3xy + 3y^2$

D) none of the above

9. The polynomial: $2x^2y + 5xy^2$ is equal to $7x^3y^3$.

A) *True*

B) *False*

Can't add, they are NOT like terms

10. $\frac{4xy}{z}$ is an example of a monomial.

A) *True* $4xyz^{-1}$ - yes! No good Can't have variables in the denominator

B) *False*

11. Simplify: $5x^2(-2x^3 + 3x^2 + x - 4)$

A) $(10x^6 + 15x^4 + 5x^2 - 20)$ $-10x^5 + 15x^4 + 5x^3 - 20x^2$

B) $(-10x^5 + 15x^4 + 5x^3 - 20x^2)$

C) $(3x^3 + 8x^2 + 6x + 1)$

D) none of the above

B

12. Simplify $(6x^4)^5$

$(6)^5 \cdot (x^4)^5 = 7776x^{20}$ or $(6x^4)(6x^4)(6x^4)(6x^4)(6x^4) = 7776x^{20}$

_____

13. Simplify: $4a^2b(3a^2b + 2ab^2 - 5abc)$

$12a^4b^2 + 8a^3b^3 - 20a^3b^2c$

A) $7a^4b^2 + 6a^3b^3 - a^3b^2c$

B) $12a^4b^2 + 8a^3b^3 + 20a^3b^2c$

C) $12a^4b^2 + 8a^2b^2 - 20a^2bc$

D) none of the above

_____

14. When multiplying a monomial by a polynomial, the most commonly used property at the first step is the Distributive Property.

A) *True*

B) False

_____

15. Evaluate: $(4xy + y)(2x + 3)$

$8x^2y + 12xy + 2xy + 3y$

$8x^2y + 14xy + 3y$

A) $8x^2y + 14xy + 3y$

B) $6x^2y + 9xy + 3y$

C) $8x^2y + 10xy + 3y$

D) none of the above

_____

16. Multiply: $(x - 6)(3x - 5)$

$3x^2 - 5x - 18x + 30$

$3x^2 - 23x + 30$

A) $3x^2 - 5x - 30$

B) $3x^2 - 23x + 30$

C) $x^2 + 18x - 11$

D) none of the above

_____

17. Find the solution: $(2x^2 + 1)(-4x^2 - 3)$

$-8x^4 - 6x^2 - 4x^2 - 3$

$-8x^4 - 10x^2 - 3$

A) $-8x^4 - 10x^2 - 3$

B) $-2x^2 - 2$

C) $-6x^4 - 9x^2 - 3$

D) none of the above

Distribute

_____

18. Simplify: $(8x^8y^5z^3)(4x^5y^2z)$

Don't Distribute

$32x^{13}y^7z^4$

_____

19. The expression $3x^2y(6x^4y^3 - 7x^2y^5)$ is equal to $18x^8y^6 - 21x^4y^5$.

A) *True*

B) *False*

$18x^6y^4 - 21x^4y^6$

20. Simplify: $(x^2 + 2x + 1)(x^2 + 5x + 6)$

$x^4+5x^3+6x^2+2x^3+10x^2+12x+x^2+5x+6$

$x^4+5x^3+2x^3+6x^2+10x^2+x^2+12x+5x+6$

$x^4+7x^3+17x^2+17x+6$

21a. Simplify: $\frac{18y^3+12y^2-24y}{3y}$

$\frac{18y^3}{3y} + \frac{12y^2}{3y} - \frac{24y}{3y}$

$6y^2+4y-8$

21b. Simplify: $\frac{y^2-16y}{y}$

$\frac{y^2}{y} - \frac{16y}{y}$

$y-16$

22. Simplify: $(x + 6)^2$

$(x+6)(x+6)$

$x^2+6x+6x+36$

$x^2+12x+36$

23. Simplify: $\frac{4x^3-8x^2+4x}{4x}$

$\frac{4x^3}{4x} - \frac{8x^2}{4x} + \frac{4x}{4x}$

x^2-2x+1

24. Simplify: $(x - 3)^2$

$(x-3)(x-3)$

$x^2-3x-3x+9$

x^2-6x+9

Part II: **Show all organized work for the following problems.**

25. a) **Draw a box diagram to represent (x – 3)(x + 6).**

	x	−3
x	x^2	−3x
6	6x	−18

b) **Find the answer.**

$x^2 - 3x + 6x - 18$

$x^2 + 3x - 18$

26. a) **Find the area of a rectangle if the length is represented by $x^2 - 4x + 2$ and the width is represented by x – 5. Show all organized work.**

$A = L \cdot W$

$A = (x^2 - 4x + 2)(x - 5)$

$A = x^3 - 5x^2 - 4x^2 + 20x + 2x - 10$

$A = x^3 - 9x^2 + 22x - 10$

b) **What is the area of the rectangle if x = 6 units?**

$A = x^3 - 9x^2 + 22x - 10$

$A = (6)^3 - 9(6)^2 + 22(6) - 10$

$A = 216 - 9(36) + 22(6) - 10$

$A = 216 - 324 + 132 - 10$

$A = 140^2$

27. **From the sum of $6x^2 - 2x + 5$ and $-3x^2 + 6x + 2$, subtract $4x^2 + 3x - 6$.**

1st

$(6x^2 - 2x + 5)$

$+(-3x^2 + 6x + 2)$

$3x^2 + 4x + 7$

$(3x^2 + 4x + 7)$

$-(4x^2 + 3x - 6)$

$-x^2 + x + 13$

skip, switch change

28. **Given:** $12x^3 + 6x^2 - 2 + 7x^4 + 7 - 3x^2 + 4x^3 - 4x^2 + 8$

$7x^4 + 12x^3 + 4x^3 + 6x^2 - 3x^2 - 4x^2 - 2 + 7 + 8$

$7x^4 + 16x^3 - x^2 + 13$

a) Simplify the expression and write in standard form.

Descending Power order

b) How many different terms does the polynomial have?

4

c) What is the degree of the polynomial?

highest Exponent

4

d) What the leading coefficient of the polynomial?

7

Coefficient of 1st term When they are in Descending Power order