Algebra 1-2: 6-1 Adding and Subtracting Polynomials Homework Name: _____

Write each polynomial in standard form. Then name each polynomial based on its degree and by its number of terms.

1) $4y^3 - 4y^2 + 3 - y$ **2)** $x^2 + x^4 - 6$ **3)** $5x + 2 - 4x$

4) $2m^2 + 3 - 7m^2 + 3m$ **5)** $4x^2 + 4x - x + 2x^2$ **6)** $7x^3 + 2x^2 - 6x^3 - 2x^2$

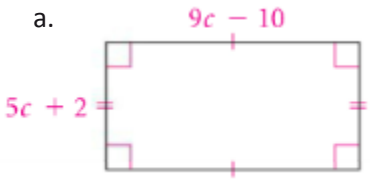
Simplify. Write each answer in standard form.

7) $(3a^2 + a^3 - 1) + (2a^2 + 3a + 1)$ 9) $(n^4 - 2n - 1) + (5n - n^4 + 5)$ 11) $(y^3 + 3y - 1) - (y^3 + 3y + 5)$

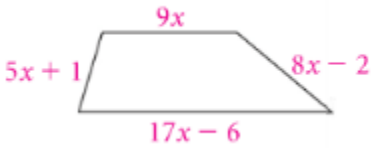
8) $(2x^2 + 3 - x) - (2 + 2x^2 - 5x)$ 10) $(x^3 + 3x) - (x^2 + 6 - 4x)$ 12) $(3 + 5x^3 + 2x) - (x + 2x^2 + 4x^3)$

13) Find an expression for the perimeter of each figure:

a.



b.



14) You can model the number of men and women in the United States who enrolled in college within a year of graduating from high school with the linear equations shown below. Let *t* equal the year of enrollment, with t = 0 corresponding to 1990. Let *m(t)* equal the number of men in thousands, and let *w(t)* equal the number of women in thousands.

Men enrolled in college: $m(t) = 35.4t + 1146.8$ Women enrolled in college: $w(t) = 21.6t + 1185.5$

a. Add the expression on the right side of each equation to model the total number of recent high school graduates p(t) who enrolled in college between 1990 and 1998.

b. Use the equation you created in part (a) to find the number of high school graduates who enrolled in college in 1995.

c. If you had subtracted the expressions on the right side of each equation above, what information would the resulting expression model?

15) Celina says that each of the following expressions is actually a binomial in disguise. Simplify the expressions to determine if she is correct.

i. $5abc - 2a^2 + 6abc$

ii. $5x^3 \cdot 2x^2 - 10x^4 + 3x^5 + 3x \cdot x^4(-2)$

iii. $5(a - 1) - 10(a - 1) + 100(a - 1)$

iv. $r(2\pi r - \pi r^2) - 2r(2\pi r - \pi r^2)$

Algebra 1-2: 6-2 Multiplying and Factoring Polynomials Homework Name: _____

Simplify each product.

1. $-3x^2(x^2 + 3x)$

2. $4x(5x - 6)$

3. $4x^3(x - 3)$

4. $3x(x^2 - 5x - 3)$

5. $-5x^2(x^2 + 2x + 1)$

6. $4(x^2 - 3) + x(x + 1)$

Factor each polynomial completely.

7. $8x + 10$

8. $12n^3 - 8n$

9. $3z^4 - 15z^3 - 9z^2$

10. $x^3 - 5x^2$

11. $8x^3 - 12x^2 + 4x$

12. $3n^3 - 6n^2 + 9n$

13. $2w^3 + 6w^2 - 4w$

14. $12c^3 - 30c^2$

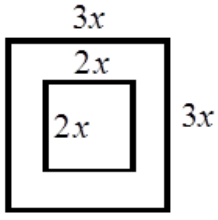
15. $2x^2 + 8x - 14$

16. $6y^4 + 9y^3 - 27y^2$

17. $16m^3 - 8m^2 + 12m$

18. $18c^4 - 9c^2 + 7c$

19. A square poster of length $3x$ is to have a square painting centered on it. The length of the painting is $2x$. The area of the poster not covered by the painting will be painted black. What is the area of the poster that will be painted black?



20. How do you know if you've factored out the GCF of a polynomial? Illustrate your explanation by using the GCF to factor $10x^4 + 6x^3 + 2x^2$

Algebra 1-2: 6-3 Multiplying Binomials Homework Name: _____

Simplify each product using a table or distribution. Write in standard form.

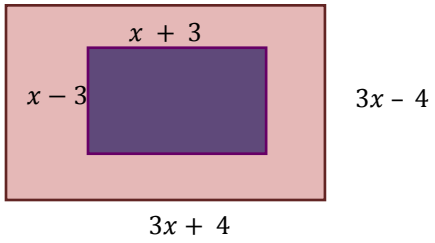
1. $(x+3)(x-5)$ **2.** $(x+3)(x-7)$ **3.** $(w+4)(w-1)$

4. $(3x+7)(x+5)$ **5.** $(x+9)(x-6)$ **6.** $(3y+7)(4y+5)$

7. $(a-6)^2$ **8.** $(3x+2)^2$ **9.** $(4a-1)^2$

10. $(2x+1)(4x+3)$ **11** $(3x-1)(2x-1)$ **12.** $(n-7)(4n+7)$

13) In the accompanying diagram, the width of the inner rectangle is represented by $x-3$ and its length by $x+3$. The width of the outer rectangle is represented by $3x+4$ and its length by $3x-4$.



a) Find the area of the larger rectangle. b) Find the area of the smaller rectangle.

c) Express the area of the outer (lighter) shaded region as a polynomial in terms of x. (Hint: You will have to add or subtract polynomials to get your final answer.)

Algebra 1-2: 6-4a Factoring Trinomials Homework

Name: _____

Solve the following Ts.

1) 20 | 9 **2)** -15 | -2 **3)** 50 | 15 **4)** 24 | 11 **5)** -20 | 1 **6)** -64 | 0 **7)** 30 | -13

Factor these trinomial as the product of two binomials and check your answer by multiplying:

8) x^2+3x+2

9) $x^2-8x+15$

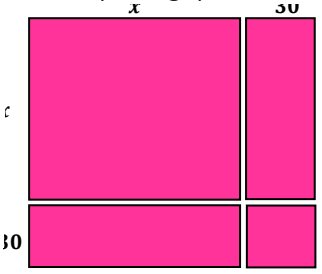
10) x^2+3x-4

11) $x^2+6x-40$

12) x^2-3x+2

13) $x^2-16x+28$

14) The parking lot at the Donut Palace is going to be enlarged, so that there will be an additional 30 ft. of parking space in the front and 30 ft. on the side of the lot. Write an expression in terms of x that can be used to represent the area of the new parking lot.

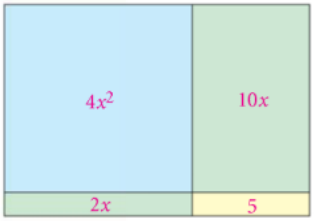


15) The area of a rectangular garden is given by the trinomial x^2+x-42. What are the possible dimensions for the garden?

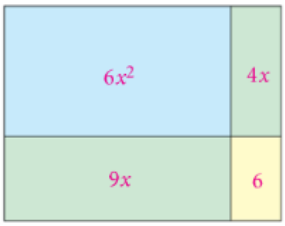
Algebra 1-2: 6-4b Advanced Factoring Strategies Homework Name: _____

Write the standard form for each of the polynomials modeled below. Then factor each expression.

1)



2)



Factor these trinomial as the product of two binomials and check your answer by multiplying:

3) $2x^2+15x+7$

4) $11x^2-14x+3$

5) $6x^2+25x+11$

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

7) $10x^2+11x-8$

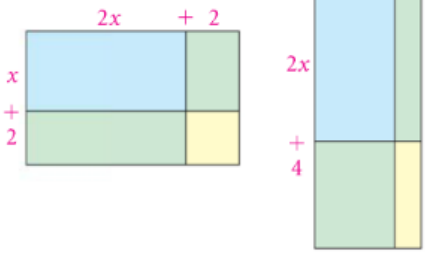
8) $8x^2-10x-3$

Factor out the GCF, then factor into two binomials. Check your answer by multiplying.

9) $4x^2+12x-16$

10) $25x^3-10x^2-15x$

11)



a. Write each area as a product of two binomials.

b. Are the products equal?

c. Explain how that is possible.

Name: _____

6-4c Extra Trinomial Factoring Practice

Factor each trinomial completely. (Don't forget to always check for a GCF first!)

1. $3m^2 - 8m - 3$

$a = 3,\ b = -8,\ c = -3$

2. $x^2 - 6x - 27$

3. $y^2 - 9y + 14$

4. $12p^2 - 7p + 1$

5. $4x^2 + 26x - 48$

6. $4x^2 - 10x - 24$

7. $3n^2 - 2n - 5$

8. $3x^2 + 8x + 5$

9. $2p^2 + 21p + 40$

10. $10a^2 + 3a - 4$

11. $4a^2 - 18a - 10$

12. $x^2 + x - 6$

Algebra 1-2: 6-5 Difference of Squares Homework

Factor each expression completely. Multiply the factors to check your answer.

1. $x^2 - 9$

2. $4m^2 - 1$

3. $n^2 - 144$

4. $9x^2 - 49y^2$

5. $16c^2 - 49$

6. $25x^2 - 64$

7. $2a^2 - 18$

8. $3n^2 - 3$

9. $3a^2 - 48$

10. $12w^2 - 27$

11. $x^3 - 36x$

12. $50m^3 - 32m$

13. When you multiply two terms by two terms you should get four terms. Why is the final result when you multiply two binomials sometimes only three terms?

Give an example of how your final result can end up with only two terms.

14. **Error Analysis** Suppose a classmate factored the binomial at the right. What error did your classmate make?

$$4x^2 - 121 = (4x - 11)(4x - 11)$$
$$= (4x - 11)^2$$

15. These difference of squares will factor more than once!

a) $a^4 - 81b^4$

b) $16x^4 - y^4$

Algebra 1-2: 6.1-6.5 Review Homework Name: _____ Per: _____

Complete the tables identifying polynomials by degree and number of terms.

Degree	Name
0	
1	
2	
3	
4+	

# Terms	Name
1	
2	
3	
4+	

Simplify each polynomial. Write your answer in standard from and classify by degree and number of terms.

1) $(4x^2 + 9x + 1) + (2x^2 + 7x + 13)$

2) $(8x^2 + 5x + 7) - (5x^2 + 8x - 6)$

Find each product. Write in standard form and classify by degree and number of terms. .

3) $-p(8p^2 + 3p)$

4) $(r + 8)(r + 6)$

5) $(5w - 6)(2w + 7)$

6) $(4s + 5)(-4s + 3)$

7) $(q - 1)^2$

8) $(3g - 5)(3g + 5)$

Factor.

9) $16x^6 + 22x^2 + 30x^5$

10) $7v^3 - 10v^2 + 9v^4$

11) $x^2 + 7x + 12$

12) $v^2 - 64$

13). $b^2 - 16b + 64$

14) $9y^2 - 121$

15) $4v^2 - 16v + 7$

16) $b^2 - 4b + 3$

17) $y^5 - 9y$

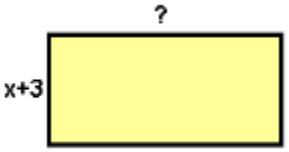
NOTE: The 6-6 HW is in the NOTES

Algebra 1-2: Polynomial Applications Homework Name: _____Per: _____

1) A rectangle has length represented by the expression $3x^2 + 5x - 8$ and width by $2x^2 + 6x$. Write expressions in terms of x for the perimeter and area of the rectangle. Give your answers in standard polynomial form and show your work.

Perimeter: Area:

2) The room that is shown in the figure at right has a floor space of $2x^2 + x - 15$ square feet. If the width of the room is $(x + 3)$ feet, what is the length?

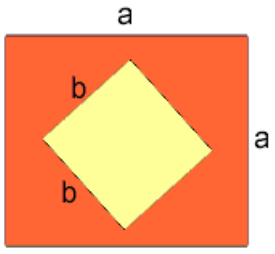


3) Write a variable expression for the area of a square whose side is $2x + 8$.

4) The side of a cube is represented by $x + 1$. Find, in terms of x, the volume of the cube.

5) The volume of a shipping box is given by the expression $3x^3 - 4x^2 + x$. What are the dimensions of the box in terms of x?

6) The diagram below shows two squares. What is the area of the darker, outer section, expressed in factored form?



- $(a - b)(a - b)$
- $(a - b)(a + b)$
- $(a + b)(a + b)$
- $(a^2 + b^2)$