# Algebra IB – Mrs. Dubay

7.2 Worksheet

**FACTORING BY GCF**

<table>
<thead>
<tr>
<th>1. Factor $12y^2 + 33y^2 - 6y$.</th>
<th>2. Factor $9x(2) - 5(x - 2)$.</th>
<th>3. Factor $15x^2 - 25x + 10$ by grouping.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. $3y(4y^2 + 11y - 2)$</td>
<td>A. $(x - 2)(9x - 5)$</td>
<td>A. $(5x - 5)(3x^2 - 2)$</td>
</tr>
<tr>
<td>B. $3(4y^3 + 11y^2 - 2y)$</td>
<td>B. $(9x - 5)(x - 2)(x - 2)$</td>
<td>B. $(x - 2)(15x^2 - 5)$</td>
</tr>
<tr>
<td>C. $y(12y^2 + 33y - 6)$</td>
<td>C. $-45x(x - 2)$</td>
<td>C. $(5x - 2)(3x^2 - 5)$</td>
</tr>
<tr>
<td>D. Cannot be factored</td>
<td>D. $(x - 2)(5 - 9x)$</td>
<td>D. $(15x - 2)(x^2 - 5)$</td>
</tr>
</tbody>
</table>

4. The amount of paint needed to cover a wall is proportional to its area. The wall is rectangular and has an area of $4x^2 + 2x$ square meters. Factor this polynomial to find possible expressions for the length and width of the wall.

A. $2x(2x + 1)$; possible dimensions: $2x$ meters by $(2x + 1)$ meters
B. $2x^2(2x + 1)$; possible dimensions: $2x^2$ meters by $(2x + 1)$ meters
C. $2(2x + x)$; possible dimensions: 2 meters by $(2x + x)$ meters
D. $2x(4x + 2)$; possible dimensions: $2x$ meters by $(4x + 2)$ meters

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### I can factor out a monomial GCF. ★

**Factor each polynomial. Check your answer.**

1. $5a^2 + 15a$  
2. $10g^3 - 3g$  
3. $-35x + 42$  
4. $-4x^2 - 6x$

5. $5x^2 - 30x$  
6. $3x^3 + 3x^2$  
7. $3x^2 - 9x + 3$  
8. $12x^2 - 4x + 8$

9. $-20x^2 - 15x$  
10. $33x^2 + 11x + 22$  
11. $14x^3 + 63x^2 + 7x$  
12. $21x^4 - 14x^3$

13. Which is the complete factorization of $24x^3 - 12x^2$?

A. $6(4x^3 - 2x^2)$  
B. $12(2x^3 - x^2)$  
C. $12x(2x^2 - x)$  
D. $12x^2(2x - 1)$

14. A model rocket is fired vertically into air at 320 ft/s. The expression $-16t^2 + 320t$ gives the rocket’s height after $t$ seconds. Factor this expression.
15. Which factorization of \(3n^3 - n^2\) is incorrect. Explain.

Explanation: _____________________________
________________________________________
________________________________________

★ I can factor out a binomial GCF. ★

Factor each expression.
16. \(6x(x - 2) - 5(x - 2)\)  
17. \(5(m - 2) - m(m - 2)\)  
18. \(6x(x + 4) - 5(x + 4)\)

19. \(8y(y - 4) + 3(y - 4)\)  
20. \(3x(x + 2) - 4(x + 2)\)  
21. \(3(4x - 1) + x(4x - 1)\)

★ I can factor by grouping. ★

Factor each polynomial by grouping. Check your answer.
22. \(x^3 + 4x^2 + 2x + 8\)  
23. \(6x^3 + 4x^2 + 3x + 2\)  
24. \(7a^3 - 35a^2 - 6a + 30\)

25. \(2x^3 - 8x^2 + 3x - 12\)  
26. \(x^2 + 3x - 5x - 15\)  
27. \(6y^3 + 18y^2 + y + 3\)

28. \(x^2 - 5x + 4x - 20\)  
29. \(14x^2 - 21x + 4x - 6\)  
30. \(10x^3 - 16x^2 + 25x - 40\)

31. The area of a rectangle is represented by the polynomial \(x^2 + 4x - 6x - 24\). Which of the following could represent the length and width of the rectangle?
A. Length: \(x + 4\); width: \(x + 6\)  
B. Length: \(x - 4\); width: \(x - 6\)  
C. Length: \(x + 4\); width: \(x - 6\)  
D. Length: \(x - 4\); width: \(x + 6\)

32. The area of a rectangle is represented by the polynomial \(2x^2 + 10x - 7x - 35\). Factor by grouping to find the expressions that represent the length and width.