

Math 101, Ch. 5 Practice Test

<p>1. Write the prime factorization of</p> <p>(a) 12</p> <p>(b) 50</p>	<p>2. Find the GCF of</p> <p>(a) 20 and 24</p> <p>(b) 300 and 345</p>
<p>3. Factor out the GCF</p> <p>(a) $10a - 5$</p> <p>(b) $12c + 4d$</p>	<p>4. Factor out the GCF</p> <p>(a) $25xyz - 35x + 45xy$</p> <p>(b) $12a^3b + 6a^2b^2 + 3ab^3$</p>

<p>5. Factor</p> <p>(a) $wz + mz + wy + ym$</p> <p>(b) $w^2 - w - bw + b$</p>	<p>6. Factor</p> <p>(a) $x^2 - 3x - 5x + 15$</p> <p>(b) $2y^2 + 3y - 16y - 24$</p>
<p>7. Factor</p> <p>(a) $x^2 - 9$</p> <p>(b) $25 - 9y^2$</p>	<p>8. Factor</p> <p>(a) $x^3 - 8$</p> <p>(b) $m^3 + 27$</p>

<p>9. Factor</p> <p>(a) $x^2 + 15x + 5$</p> <p>(b) $y^2 + 6y + 5$</p>	<p>10. Factor</p> <p>(a) $a^2 - 7a + 12$</p> <p>(b) $m^2 - 9m + 14$</p>
<p>11. Factor</p> <p>(a) $x^2 + 11x - 60$</p> <p>(b) $w^2 + 5w - 10$</p>	<p>12. Factor</p> <p>(a) $x^2 - 9x - 36$</p> <p>(b) $x^2 - 13xy - 90y^2$</p>

13. Factor

$$2x^2 + 7x + 3$$

14. Factor

$$5x^2 + 9x - 2$$

15. Factor

$$6x^2 - 19x + 15$$

16. Factor

$$2x^2 - xy - 6y^2$$

17. Factor completely.

$$x^5 - 16x^3$$

18. Factor completely.

$$5x^2 + 20x - 25$$

19. Factor completely.

$$x^3 - x^2 - 2x$$

20. Factor completely.

$$5x^3 - 35x^2 + 60x$$

21. Solve

$$(x - 10)(x + 12) = 0$$

22. Solve

$$(2x - 1)(5x - 3) = 0$$

23. Solve

$$x^2 + 17x + 72 = 0$$

24. Solve

$$x^2 - 14x + 45 = 0$$

25. Solve

$$3x^2 + 2x = 5$$

Rules for Signed Numbers

<i>Addition</i>				<i>Subtraction</i>			
Positive	+	Positive	= Positive	$A - B = A + (-B)$			
POSITIVE	+	Negative	= Positive				
Positive	+	NEGATIVE	= Negative				
Negative	+	Negative	= Negative				
Numbers in bold, capital letters have a greater magnitude than nonbold, lower case partner number.							
<i>Multiplication</i>				<i>Division</i>			
Positive	×	Positive	= Positive	Positive	÷	Positive	= Positive
Positive	×	Negative	= Negative	Positive	÷	Negative	= Negative
Negative	×	Positive	= Negative	Negative	÷	Positive	= Negative
Negative	×	Negative	= Positive	Negative	÷	Negative	= Positive

Addition Table

+	1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10	11
2	3	4	5	6	7	8	9	10	11	12
3	4	5	6	7	8	9	10	11	12	13
4	5	6	7	8	9	10	11	12	13	14
5	6	7	8	9	10	11	12	13	14	15
6	7	8	9	10	11	12	13	14	15	16
7	8	9	10	11	12	13	14	15	16	17
8	9	10	11	12	13	14	15	16	17	18
9	10	11	12	13	14	15	16	17	18	19
10	11	12	13	14	15	16	17	18	19	20

Multiplication Table

×	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

Factoring Methods for Polynomials of 2-4 Terms									
Number of terms	Step 1	Identify the polynomial or polynomial factor	Step 2						
2	Factor out any GCF	Difference of squares \Rightarrow	$a^2 - b^2 = (a + b)(a - b)$						
		Sum of cubes \Rightarrow	$a^3 + b^3 = (a + b)(a^2 - ab + b)$						
		Difference of cubes \Rightarrow	$a^3 - b^3 = (a - b)(a^2 + ab + b)$						
		None of the above \Rightarrow	Prime – or cannot be factored by methods shown in this course.						
3	Factor out any GCF	$x^2 + bx + c \Rightarrow$	$= (x \quad)(x \quad)$ <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td colspan="2">Product c</td> </tr> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> <tr> <td colspan="2">Sum b</td> </tr> </table>	Product c				Sum b	
		Product c							
Sum b									
$ax^2 + bx + c \Rightarrow$	$ax^2 + bx + c = ax^2 + b_1x + b_2x + c$ <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td colspan="2">Product ac</td> </tr> <tr> <td style="width: 20px; height: 20px;">b_1</td> <td style="width: 20px; height: 20px;">b_2</td> </tr> <tr> <td colspan="2">Sum b</td> </tr> </table> Then factor by grouping or box method.	Product ac		b_1	b_2	Sum b			
Product ac									
b_1	b_2								
Sum b									
None of the above \Rightarrow	Prime – or cannot be factored by methods shown in this course.								
4	Factor out any GCF		Try to factor by grouping or box method.						