

<p>1.</p> $5x(3x) = 5x(x \cdot 3)$ <p>is an example of which property?</p> <p>(a) Associative property of addition</p> <p>(b) Commutative property of addition</p> <p>(c) Associative property of multiplication</p> <p>(d) Commutative property of multiplication</p>	<p>2. Evaluate</p> $-15 - (-10)$
<p>3. Evaluate</p> $\left(-\frac{2}{7}\right)\left(-\frac{21}{4}\right)$	<p>4. Evaluate</p> $\frac{3}{7} - \frac{12}{21}$

5. For $a = -4$ and $b = -7$, find

$$a^2 - 4b$$

6. For $a = -5$ and $b = 6$, find

$$|3a - b|$$

7. Simplify

$$7(x + 2) + 3(x - 2)$$

8. Simplify

$$5m + 8 - (2m - 4)$$

9. Solve

$$5x = \frac{1}{4}$$

10. Solve

$$3x + 2 = 20$$

11. Solve

$$6(2x - 5) = 3x + 6$$

12. Solve

$$5x - \frac{1}{3} = \frac{5}{6}$$

13. Five less than twice a number is equal to the number. What is the number?

14. Find three consecutive numbers whose sum is 105.

15. Solve

$$3x + 2 < 23$$

16. Solve

$$7 - 7x > 21$$

17. Determine the slope of the line that passes through the points

$$(-3, 2) \text{ and } (-5, 8)$$

18. Determine the slope of the line with the equation

$$x + 2y = 4$$

19. Determine the slope of a line perpendicular to

$$y = -\frac{2}{5}x + 3$$

20. Find the x -intercept and y -intercept of the line with the equation

$$5x + 4y = 40.$$

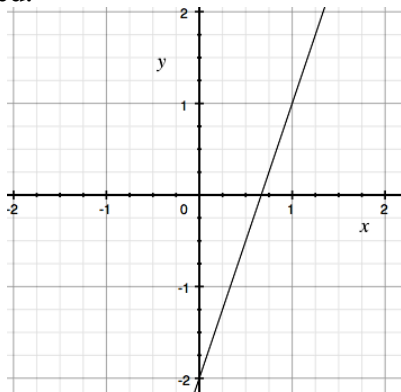
21. Write an equation in slope-intercept form of the line that has slope 6 and passes through the point

$$(5, -3)$$

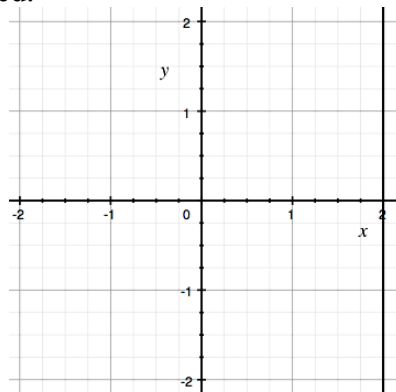
22. Write an equation in slope-intercept form of the line that passes through the points

$$(6, -1) \text{ and } (5, 2)$$

23. Determine the equation of the line graphed.



24. Determine the equation of the line graphed.



25. Simplify

$$(2x^5y^3)^5$$

26. Simplify.

$$\frac{x^3}{x^{-8}}$$

27. Simplify.

$$\left(\frac{a^4}{5b^2}\right)^{-2}$$

28. Simplify.

$$(2x^2y^{-2})(7x^{-5}y^5)$$

<p>29. Write 8.371×10^5 in standard notation.</p>	<p>30. Write each number in scientific notation, then multiply and simplify, leaving your answer in scientific notation.</p> $0.0001 \times 25,000$
<p>31. Multiply and simplify.</p> $(5a - b)(4a + 2b)$	<p>32. Multiply and simplify.</p> $(x + 5)(x^2 + x - 5)$

<p>33. Write the prime factorization of</p> <p style="text-align: center;">90</p>	<p>34. Find the GCF of</p> <p style="text-align: center;">$10y^5$ and $25y$</p>
<p>35. Factor completely.</p> <p style="text-align: center;">$12x^3 - 3x^4$</p>	<p>36. Factor.</p> <p style="text-align: center;">$x^2 - x - 20$</p>

37. Factor.

$$2x - 2y + ax - ay$$

38. Factor.

$$10x^2 - 13x - 3$$

39. Solve

$$(x + 4)(x - 10) = 0$$

40. Solve

$$x^2 + 7x - 8 = 0$$

Math 101, Final Exam Resource Page

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

Rules for Signed Numbers

Addition				Subtraction			
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.							
Multiplication				Division			
Positive	×	Positive	= Positive	Positive	÷	Positive	= Positive
Positive	×	Negative	= Negative	Positive	÷	Negative	= Negative
Negative	×	Positive	= Negative	Negative	÷	Positive	= Negative
Negative	×	Negative	= Positive	Negative	÷	Negative	= Positive

Rules for Fractions

For any real numbers, $a, b, c,$ and $d, b \neq 0, c \neq 0,$ and $d \neq 0$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c} \qquad \frac{a}{c} - \frac{b}{c} = \frac{a-b}{c} \qquad \frac{a}{b} \cdot \frac{c}{d} = \frac{ac}{bd} \qquad \frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \cdot \frac{d}{c} = \frac{ad}{bc}$$

Distributive Property

For any real numbers, $a, b, c,$ and d

$$a(b + c) = ab + ac$$

Properties of Equality	Properties of Inequality			
For any real numbers, $a, b, c,$ If $a = b,$ then $a + c = b + c$ and $ac = bc$	For any real numbers, $a, b,$ and $c > 0$		For any real numbers, $a, b,$ and $c < 0$	
	If $a < b,$ then $a + c < b + c$ and $ac < bc$	If $a < b,$ then $a + c < b + c$ and $ac < bc$	If $a > b,$ then $a + c > b + c$ and $ac < bc$	If $a < b,$ then $a + c < b + c$ and $ac > bc$

Formulas for Linear Equations		
Slope-Intercept Form	Slope	Point-slope Form
$y = mx + b$	$m = \frac{y_2 - y_1}{x_2 - x_1}$	$y - y_1 = m(x - x_1)$

Rules for Exponents				
Product Rule	Quotient Rule	Power Rules	Zero Exponent	Negative Exponent
$a^m \cdot a^n = a^{m+n}$	$\frac{a^m}{a^n} = a^{m-n}$ $(a \neq 0)$	$(a^m)^n = a^{mn}$ $(ab)^m = a^m b^m$ $\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m} \quad (b \neq 0)$	$a^0 = 1$ $(a \neq 0)$	$a^{-n} = \frac{1}{a^n}$ $(a \neq 0)$

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> </td><td> </td></tr> <tr><td colspan="2">Sum b</td></tr> </table>	Product c				Sum b	
		Product c							
Sum b									
$ax^2 + bx + c \Rightarrow$	$ax^2 + bx + c = ax^2 + b_1x + b_2x + c$ Then factor by grouping or box method. <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td colspan="2">Product ac</td></tr> <tr><td>b_1</td><td>b_2</td></tr> <tr><td colspan="2">Sum b</td></tr> </table>	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.						