


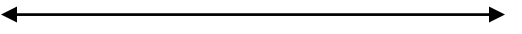



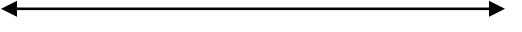
**MAT 101 - BEGINNING ALGEBRA**  
**Comprehensive Review for the Final Examination**


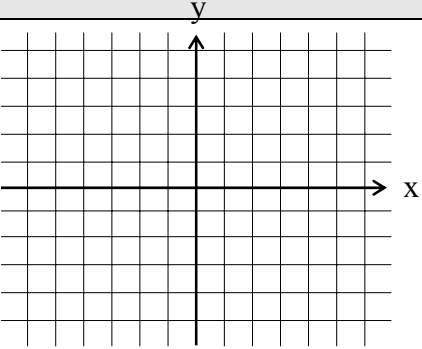
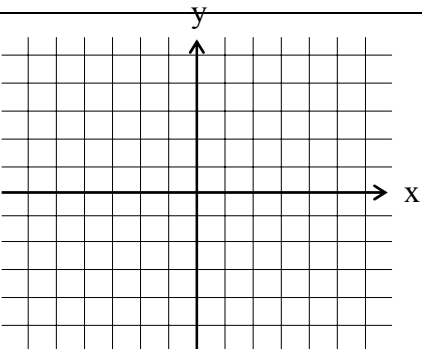
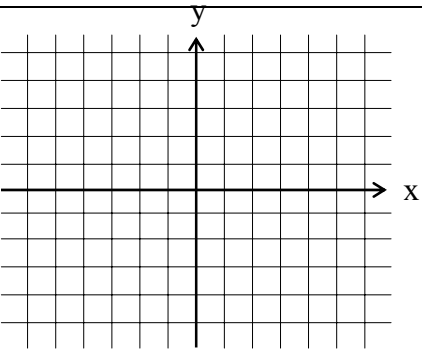
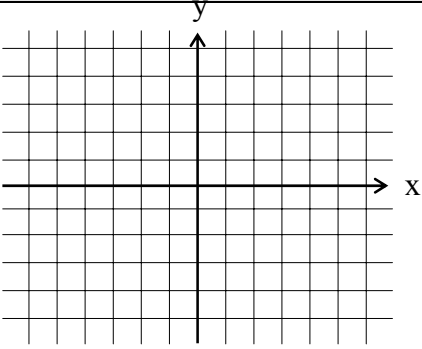
Problem	Answer
<b>Match.</b>	
A. Additive inverse property B. Identity element of addition C. Associative property of addition D. Commutative property of addition	E. Commutative property of multiplication F. Distributive property G. Identity element of multiplication H. Multiplication property of zero
1. $-9(1) = -9$	1.
2. $(-3) + 4 = 4 + (-3)$	2.
3. $6(0) = 0$	3.
4. $(-5)(-6) = (-6)(-5)$	4.
5. $-4 + 0 = -4$	5.
6. $[7 + (-3)] + (-2) = 7 + [(-3) + (-2)]$	6.
7. $-5(7 + 8) = -5(7) - 5(8)$	7.
8. $3 + (-3) = 0$	8.
<b>Simplify each expression.</b>	
9. $-17 - (-6)$	9.
10. $6[2 + 7(5 - 9) - 1]$	10.
11. $-2(-3)^2 - 24$	11.
12. $-9 \div 0$	12.
13. $-11 + (-3)$	13.
14. $(-2 + 1)^3 - (5 - 2)^2$	14.
15. $-10(-4)$	15.
16. $15 - (-1)$	16.
17. $-9 + 15 \div 3(2)$	17.
18. $-4^2 + 12 \div (-3)$	18.
19. $(-4)^2 + 6^2 \div (-2)$	19.

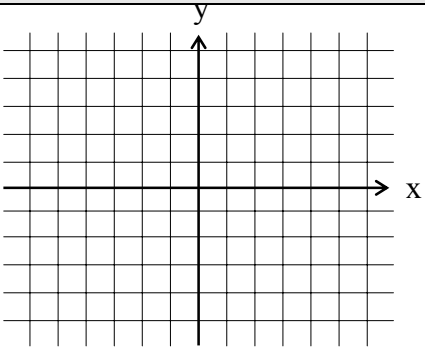
Problem	Answer
<b>Simplify each expression.</b>	
20. $0 \div (-5)$	20.
21. $[-9 + (3 \div 3)] 2$	21.
22. $2(8) + 4 \div (-1)(3)$	22.
<b>Evaluate.</b>	
23. $x^2 - 2yz$ when $x = -2$ , $y = 5$ , and $z = 3$	23.
24. $3x^2 - 2x + 1$ when $x = -2$	24.
<b>Solve each of these linear equations.</b>	
25. $17y + 12 = -5$	25.
26. $10(x-3) - x + 2 - 2(x+1) = 3(3+x) - 9$	26.
27. $-\frac{4}{7}x = 24$	27.
28. $.5(w+1) = 2.5w - 7.5$	28.
29. $3(4n+5) - 2n = 5(n-6)$	29.
30. $4.1m + 7.85 = 8.26$	30.
31. $\frac{6(a+1)}{7} = a - 3$	31.
32. $5x - (2x + 3) = 4(x + 1) - 2x$	32.
33. $\frac{x}{3} - 7 = 9$	33.
34. $\frac{4}{5}x - 1 = \frac{2}{7}x + 3$	34.
35. $\frac{1}{2} - b + \frac{5}{2} = b + 3$	35.
<b>Solve for the indicated letter.</b>	
36. $h = 3(p + 2k)$ for $k$	36.
37. $3x - y + 7 = 0$ for $y$	37.

Problem	Answer
<b>Solve for the indicated letter.</b>	
38. $I = p + prt$ for $t$	38.
39. $5ax - 3y = g$ for $x$	39.
40. $3 - 4h = 3h - a$ for $a$	40.
41. $y = mx + b$ for $b$	41.
<b>Solve each of the following applications.</b>	
42. A number increased by two-thirds of the number is 25. Find the number.	42.
43. Two trains leave Boston simultaneously traveling on the same track in opposite directions at average speeds of 80 and 92 miles per hour. How long will it take before they are 516 miles apart?	43.
44. The sum of a number and twice the number is 57. What is the number?	44.
45. For three consecutive integers, the sum of the smallest and largest integers, added to four more than the middle integer, equals 97. What are the three integers?	45.
46. One angle of a triangle is $20^\circ$ greater than the first angle. The third angle is twice as large as the first angle. What are the measures of the three angles?	46.
47. The width of a rectangle is 8 feet less than the length. If the perimeter of the rectangle is 64 feet, what are the dimensions of the rectangle?	47.
48. Two cars that are 550 miles apart are traveling towards each other. One is traveling 10 mph faster than the other car. What is the speed of each car if they meet in 5 hours?	48.
49. The second angle of a triangle is $7^\circ$ more than three times the first angle. The third angle is $12^\circ$ greater than the second angle. What are the measures of the three angles?	49.

Problem	Answer
<b>Solve each of the following applications.</b>	
50. A total of \$10,000 was invested in two bond funds, a junk bond fund and a government bond fund. The junk bond fund is risky and yields 11% interest. The safe government bond fund yields 5%. The year's total income from the two investments was \$740. How much was invested in each fund?	50.
51. An embossing shop etches metal with acid solutions. The owner is discussing a certain job with the shop supervisor, and they decide to use 30 ounces of a 40% acid solution. Upon checking the acid solution supplies, the supervisor has found some 25% acid solution and some 50% acid solution, but there is no 40% solution. How much of each solution must the supervisor mix to obtain the 40% acid solution for the job?	51.
52. You are scheduling parties for a restaurant. One dining room holds four more than twice as many guests as a second room. Together they hold 127 guests. How many can you schedule into the smaller room?	52.
53. The owner of a small business, hoping to maintain good relations with two banks, invested a total of \$5,000. Part of the money went to Nation Securities, which pays 8% simple interest. The remainder went to Lowcountry investments, which pays 12% simple interest. Altogether the two investments earned a total of \$420 for the year. How much was invested in each of the two accounts?	53.
54. At Cloth World a fabric worker has a 106-yard bolt of cloth that has to be cut into three lengths. The second piece is to be 4 yards longer than the first. The third piece is to be three times as long as the second piece. What is the length of each piece?	54.
55. The length of a rectangle is 7 meters greater than the width. If the perimeter of the rectangle is 134 meters, what are the dimensions of the rectangle?	55.

Problem	Answer
<b>Solve each of the following applications.</b>	
56. A Hanahan seed company has fescue grass seed worth 55 cents per pound and bluegrass seed worth 95 cents per pound. How many pounds of each should be mixed to produce 100 pounds of seed mix that will sell for 70 cents per pound?	56.
57. Two sons borrowed a total of \$26,000 from their mother for one year. One son was charged 6% simple interest, but the less reliable son was charged 10% simple interest. If both pay off their loans on time and the mother receives a total of \$2,000 in interest, how much did each son borrow?	57.
58. The sum of two consecutive even integers is sixty-two. What are the integers?	58.
59. Dillard's advertised a 25% off sale. If the sale price was \$117 on a London Fog coat, what was the original price?	59.
<b>Solve and graph each of the inequalities.</b>	
60. $x + 5 < 9$	60.  A horizontal number line with arrows at both ends. A solid dot is placed at the number 4. A horizontal line segment extends to the right from the dot, ending in an arrowhead.
61. $3x - 8 \leq 6x + 16$	61.  A horizontal number line with arrows at both ends. A solid dot is placed at the number -4. A horizontal line segment extends to the right from the dot, ending in an arrowhead.
62. $4x - 7 \leq x + 14$	62.  A horizontal number line with arrows at both ends. A solid dot is placed at the number -11. A horizontal line segment extends to the right from the dot, ending in an arrowhead.
63. $-3x \geq -9$	63.  A horizontal number line with arrows at both ends. A solid dot is placed at the number 3. A horizontal line segment extends to the left from the dot, ending in an arrowhead.
64. $9 < 2x + 9 < 27$	64.  A horizontal number line with arrows at both ends. Open circles are placed at the numbers 0 and 9. A horizontal line segment connects the two circles, ending in arrowheads at both ends.
65. $18 < 2x < 20$	65.  A horizontal number line with arrows at both ends. Open circles are placed at the numbers 9 and 10. A horizontal line segment connects the two circles, ending in arrowheads at both ends.

Problem	Answer
<b>Solve and graph each of the inequalities.</b>	
66. $-9 \leq -3x + 6 < 12$	66. 
<b>Graphs.</b>	
67. Graph the linear equation $5x + 3y = 15$ .	67. 
68. Graph the equation $-2x + y = 3$ .	68. 
69. Graph the equation $4x - 3 = 7y$ .	69. 
<b>Graph the equation by using intercepts.</b>	
70. $3x + 4y = 12$	70. 

Problem		Answer	
<b>Graph the equation by using intercepts.</b>			
71. $2x - 3y = 6$		71. 	
<b>Complete the table for the polynomial.</b>			
72. $x^2y^2 + 5x^2 - 7y^2 + 11xy - 1$	<b>Term</b>	<b>Numerical Coefficient</b>	<b>Degree of Term</b>
	$x^2y^2$		
	$5x^2$		
	$-7y^2$		
	$11xy$		
	$-1$		
What is the degree of the polynomial?			
<b>Perform the indicated operation and simplify each problem. Write your answer in standard form.</b>			
73. $-8m - 3m$	73.		
74. $(8a - 9)(4a + 3)$	74.		
75. $(2x)^2(5x)^2$	75.		
76. $(m - n) - (m - n) - (m - n)$	76.		
77. $(m - 5)^2$	77.		
78. $(-4a^2b^2)^3$	78.		
79. $(2x + 1)(2x - 1)$	79.		
80. $(x^2y^3)^4(xy)^2$	80.		
81. Subtract $(-x^2y - 2x + 3y)$ from $(x^2y + 2x - 3y)$	81.		

Problem	Answer
<b>Perform the indicated operation and simplify each problem. Write your answer in standard form.</b>	
82. $(3a - 2b)(2a - 3b)$	82.
83. $-4x(x - 3y)$	83.
84. $(3m - 2n)(7m + 4n)$	84.
85. $3x - [x - (5x - 1)]$	85.
86. $-5h - (-6h)$	86.
87. $2[3(a - 4) - 5]$	87.
88. $(3y + 5)^2$	88.
89. $2x^2y^3(x^2y - 3x^2y^3)$	89.
90. $\frac{2x^5 + 6x^3 - 4x^2}{-2x^2}$	90.
91. $\frac{4x^3 + 12x^4 - 4x^5}{4x^3}$	91.
92. $\frac{2x^2 + x - 15}{x + 3}$	92.
93. $\frac{4x^3 + 12x^2 + x - 12}{2x + 3}$	93.
94. $\frac{3x^2 + 17x + 7}{3x + 2}$	94.
95. $(3x^2 + x) - (4x - 3) + (2x^2 + 3x - 5)$	95.
96. $(7y - 5)(4y + 1)$	96.
97. $5x^4(2x^3 - 7x + 9)$	97.
98. $\frac{12x^5b^3}{18x^3b^7}$	98.
99. $-7(y - 2) - 3(4 - 6y)$	99.

Problem	Answer
<b>Perform the indicated operation and simplify each problem. Write your answer in standard form.</b>	
100. $(x - 5)(x - 7)$	100.
101. $(2x - 3)(7x + 5)$	101.
102. $(3x - 1)(2x^2 + 3x - 1)$	102.
103. $(x - 10)(x + 10)$	103.
<b>Reduce to simplest exponential form. Leave all results with positive exponents.</b>	
104. $(2a)^{-1}$	104.
105. $2a^{-1}$	105.
106. $y^{-3}y^{-5}$	106.
107. $\left(\frac{a^3}{b^3}\right)^{-2}$	107.
108. $(2a^4)^{-3}$	108.
109. $(3a^{-3})^2$	109.
110. $\frac{x^{-2}y^4}{x^5y^{-2}}$	110.
<b>Factor completely each of these polynomials.</b>	
111. $x^2 + 12x + 35$	111.
112. $2a^2b + 6ab^2$	112.
113. $6x^2 + 11x + 3$	113.
114. $1 - 7x - 18x^2$	114.
115. $3x - 3y + 2x^2 - 2xy$	115.
116. $9a^3b^2 - 12a^2b^5 - 3ab$	116.
117. $25y^2 - 36$	117.
118. $9a^2b - 24ab + 16b$	118.
119. $a^3 - 64$	119.

Problem	Answer
<b>Factor completely each of these polynomials or state that it is prime.</b>	
120. $64x^3 - 216$	120.
121. $x^2 - 18x + 81$	121.
122. $x^4 - 10x^2 + 9$	122.
123. $x^3 - y^2$	123.
124. $40x^4 + 5xy^3$	124.
125. $125m^3 - 64n^3$	125.
126. $25x^2 + 81$	126.
127. $x^4 - 16$	127.
128. $10x^2 - 23xy - 5y^2$	128.
129. $4b^3 + 32c^3$	129.
130. $x^4 - 3x^2 - 4$	130.
131. $x^4 + x^2 - 20$	131.
132. $2x^2 + 7x - 12$	132.
133. $6x^2 - 17xy + 7y^2$	133.
134. $x^3 - 27$	134.
135. $5 - 25a - 30a^2$	135.
136. $x^2 + 4$	136.
137. $64a^6 - 16a^3b^3 + b^6$	137.
<b>Solve the following quadratic equations by factoring.</b>	
138. $x^2 - x - 6 = 0$	138.
139. $x^2 + x = 2$	139.
140. $x^2 - 9 = 0$	140.
141. $2y^2 - y = 0$	141.

Problem	Answer
<b>Solve the following quadratic equations by factoring.</b>	
142. $x^2 = 4$	142.
143. $x^2 + 8x = -15$	143.
<b>Solve the following quadratic equations by factoring.</b>	
144. The length of a rectangle is 2 centimeters less than twice the width. Its area is 84 square centimeters. Find the dimensions of the rectangle.	144.
145. A hang-glider pilot accidentally drops his compass from the top of a 576-foot cliff. The height $h$ of the compass after $t$ seconds is given by the quadratic equation $h = -16t^2 + 576$ . When will the compass hit the ground?	145.