

South Plains College
Beginning Algebra (MATH 0315)
Review Objectives

Objective 1: Add, subtract, multiply, and divide real numbers. (*Section 1.4*)

1. Find both the opposite (or additive inverse) and the reciprocal (or multiplicative inverse) of the following number.

$$-7$$

2. Find both the opposite (or additive inverse) and the reciprocal (or multiplicative inverse) of the following number.

$$\frac{1}{17}$$

3. Add. $-15 + 7$

4. Add. $2 + (-13)$

5. Multiply. $(-3) \cdot (-2)$

6. Multiply. $2(-2)$

7. Evaluate. $\frac{4}{9} \cdot \frac{27}{16}$

8. Evaluate. $\frac{3}{8} \div \frac{9}{32}$

9. Evaluate. $\frac{5}{12} - \frac{2}{5}$

10. Evaluate. $-\frac{7}{11} - \frac{1}{4}$

Objective 2: Use the order of operations to simplify an expression. (*Section 1.6*)

11. Simplify. $4^2 - 5^3$

12. Evaluate. $2 + 5 \cdot (6 - 3)$

13. Evaluate. $-4[7 - (3 - 5)]$

14. Evaluate. $15 \cdot \frac{5}{3} - 4 \cdot 6$

15. Evaluate. $4[3 + 4(4 - 3)]$

16. Evaluate. $(3^2 - 3) \cdot (2 - (-2)^3)$

17. Evaluate. $\frac{3 \cdot 8 + 10}{3^2 + 2 \cdot 4}$

18. Evaluate for $x = -3$.
 $-2x^2 + 7x - 3$

Objective 3: Simplify algebraic expressions. (*Section 1.7*)

19. Evaluate for $z = 5$.
 $-z^2 + 6$

20. Evaluate for $r = 4$.
 $|5r - 6|$

21. Simplify.
 $13z + 7 - 14z - 5$

22. Simplify.
 $\frac{2}{5}x + \frac{1}{3}x$

23. Simplify.

$$9y + 3y^2 - 5y - 8y^2$$

24. Simplify.

$$-7x - 4 - x + 5 + 3x$$

25. Simplify.

$$-4(3x+1) - (2x-7)$$

26. Simplify.

$$\frac{3}{4}(5x+2) - \frac{4x+1}{3}$$

27. Express the following English phrase into an algebraic expression.

"the sum of 7 and a number y "

28. Express the following English phrase into an algebraic expression.

"twice the sum of a number z and 4"

29. Express the following English phrase into an algebraic expression.

"seven less than four times a number t "

30. Express the following English phrase into an algebraic expression.

"the product of some number x and 3 decreased by the quotient of 6 and some number y "

Objective 4: Solve linear equations. (Sections 2.1, 2.2, 2.3)

31. Solve. $-5x - 8 = 27$

32. Solve. $7n - 4 = 6n + 2$

33. Solve.

$$3y + 2 - 4y + 3 = 2y - 7 + y - 2$$

34. Solve.

$$3x + 8 - 14x = 4(x - 2) - 11x$$

35. Solve. $5a - 2(a + 3) - a = 7(a - 2) - 5a$

36. Solve.

$$\frac{x-1}{4} - \frac{3x+2}{6} = \frac{1}{2}$$

37. Solve.

$$0.5x - 2.7 = 0.8x - 0.3$$

38. What is 25% of 60?

39. 12 is what percent of 75?

40. 14 is 40% of what number?

41. Solve.

$$\frac{3}{2}b - \frac{4}{5}b = \frac{28}{5}$$

42. Solve.

$$\frac{3}{2}h - \frac{4}{11} = \frac{91}{22}$$

43. Solve.

$$\frac{3x+2}{4} - \frac{x}{12} = \frac{x}{3} - 1$$

44. Solve.

$$5x + 7 = 42$$

45. Solve.

$$4y + 3 = 3y + 9$$

46. Solve.

$$\frac{2m}{5} - \frac{7}{3} = \frac{6m-35}{15}$$

Objective 5: Translate and solve word problems. (Sections 2.5, 2.6, 2.7)

47. Translate and solve.

"Two times the difference of a number y and 3 is 10."

48. The sum of five consecutive even integers is 210. Find the integers.

49. In preparation for the final exam, which counts as two exams, a student has exam scores of 88, 97, and 91. What score does the student need on the final exam to have a 90 average?

50. A television is purchased for \$649. Sales tax is 8%. What is the total bill for the purchase of the television, including sales tax?

51. After a 30% reduction, you purchase a new sofa on sale for \$315. What was the original price of the sofa?

52. \$180 is to be split between you and your friend, with your friend receiving \$15 less. How much will each of you receive?

53. Bob has a credit card balance of \$2750. The credit card company charges 13% per annum simple interest. What is the interest charge on Bob's credit card after 2 months?

54. June has been saving nickels and dimes for three weeks in a jar. She looked into the jar and found that it contained 29 coins worth \$2.05. How many nickels and dimes were in the jar?

55. Two cars are 250 miles apart and are traveling toward each other. The first car is traveling 15 miles per hour slower than the second car. After two hours the cars pass each other. How fast is each car traveling?

Objective 6: Solve linear inequalities. (Section 2.8)

56. Solve. Also, write the solution in interval notation and graph on the number line.

$$x - 4 \geq 3$$

57. Solve. Also, write the solution in interval notation and graph on the number line.

$$8x > 72$$

58. Solve. Also, write the solution in interval notation and graph on the number line.

$$-4x < 24$$

59. Solve. Also, write the solution in interval notation and graph on the number line.

$$6x + 7 > 37$$

60. Solve. Also, write the solution in interval notation and graph on the number line.

$$8x + 9 \leq 3x + 4$$

61. Solve. Also, write the solution in interval notation and graph on the number line.

$$3(x - 2) > 2(x + 1)$$

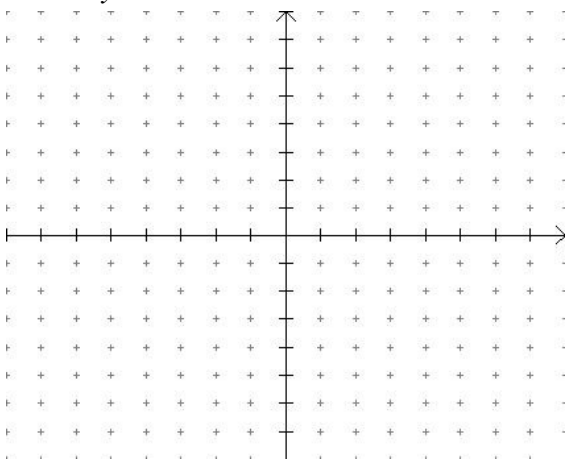
62. Solve. Also, write the solution in interval notation and graph on the number line.

$$3(9 - 2x) > 5 - 3x$$

Objective 7: Graph equations in two variables by the intercept method and the slope intercept method. (Sections 3.1, 3.2, 3.3, 3.4)

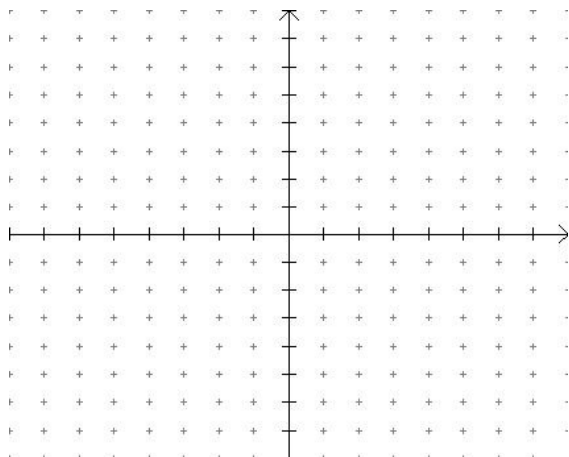
63. Plot the intercepts to graph the equation.

$$x + y = -4$$



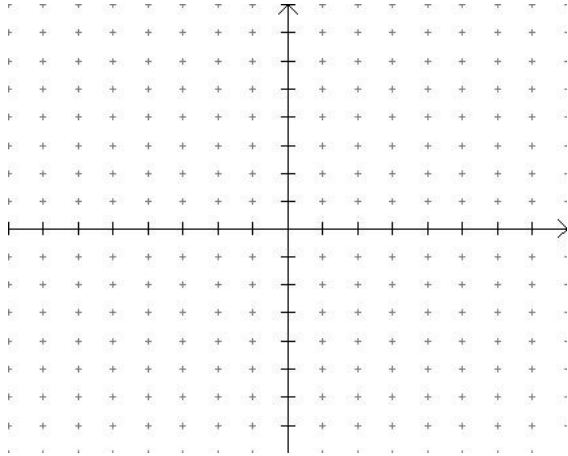
64. Plot the intercepts to graph the equation.

$$9x - 6y = 18$$



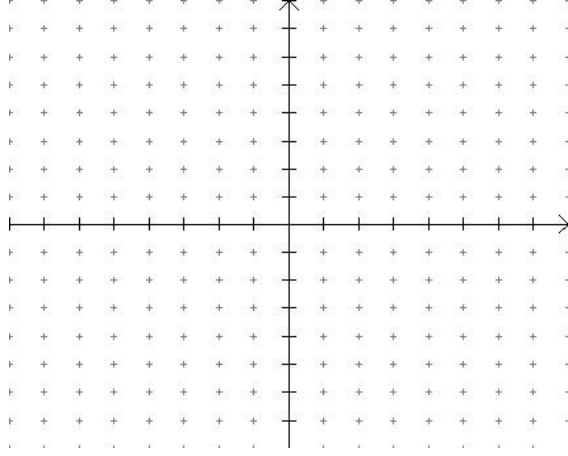
65. Graph the equation.

$$5x - 7y = 0$$



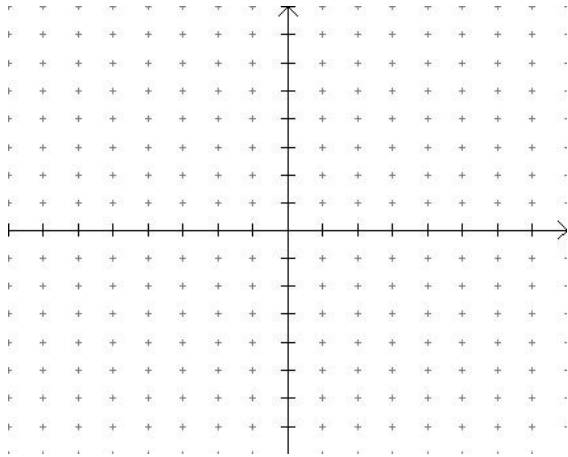
66. Graph the equation.

$$x = 7$$



67. Graph the equation.

$$y = -4$$



68. Find the slope of the line that contains the following points.

(7, -2) and (4, 3)

69. Find the slope of the line that contains the following points.

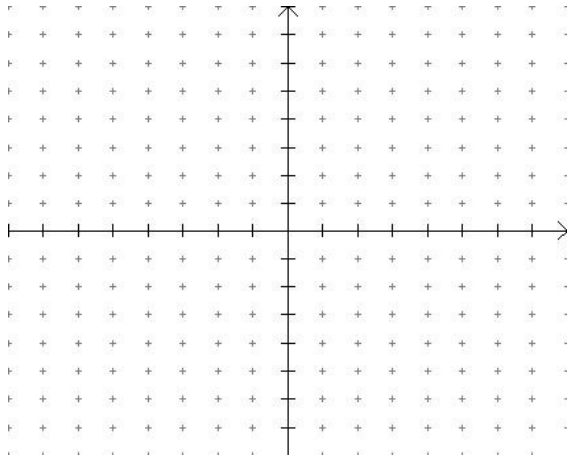
(3, 9) and (3, -2)

70. Find the slope of the line that contains the following points.

(4, -6) and (-1, -6)

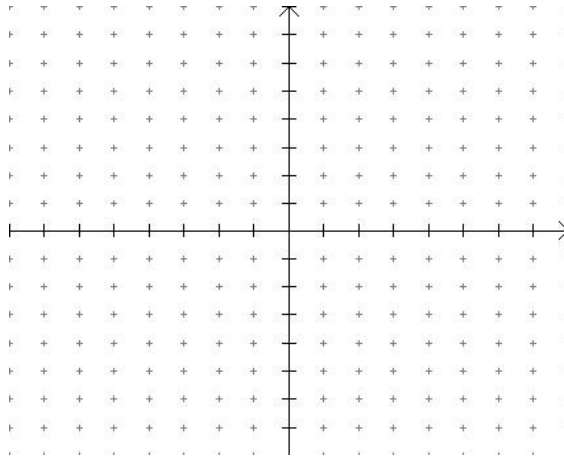
71. Find the slope, y-intercept, and graph the line.

$$y = 2x + 5$$



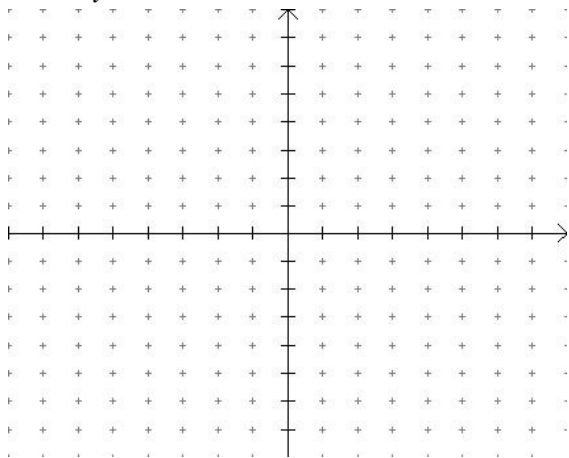
72. Find the slope, y-intercept, and graph the line.

$$y = -3x$$



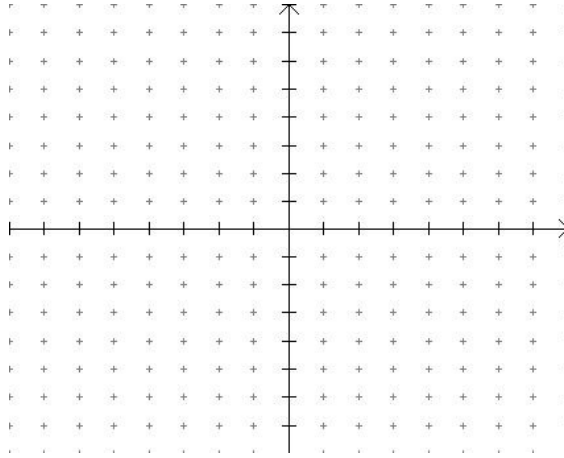
73. Find the slope, y-intercept, and graph the line.

$$2x + 4y = 8$$



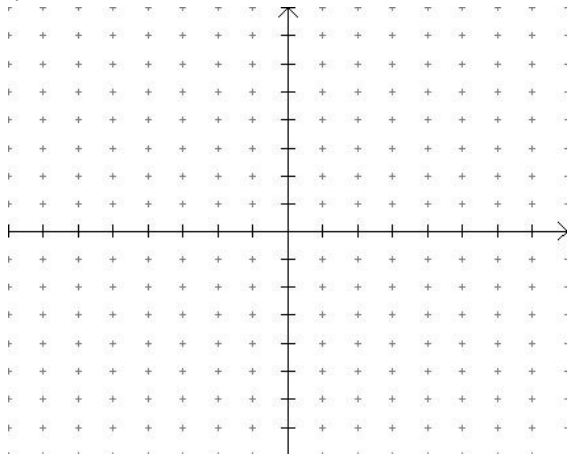
74. Find the slope, y-intercept, and graph the line.

$$x = -3$$



75. Find the slope, y-intercept, and graph the line.

$$y = 5$$



Objective 8: Add, subtract, multiply and divide polynomials. (Sections 5.1, 5.2, 5.3, 5.4, 5.5)

76. Simplify.

$$4z^8 + 9z^8$$

77. Simplify.

$$(3x^2 + 5x - 8) - (2x^2 - 7x + 1)$$

78. Simplify.

$$(8 - 3y^2 + 2y^3) - (-2 + 5y^2 - 7y^3)$$

79. Simplify.

$$a^3 \cdot a^7$$

80. Simplify.

$$(5y^6)(3y^2)$$

81. Simplify.

$$(-8w)^2 \left(\frac{3}{16} w^5\right)$$

82. Simplify.

$$\frac{4^9}{4^6}$$

83. Simplify.

$$\frac{-15r^9 s^2}{-5r^8 s}$$

84. Simplify.

$$\left(\frac{7a^2 b}{c^3}\right)^2$$

85. Simplify.

$$m^{-2}$$

86. Simplify.

$$(4x^{-6} y^3)(4^{-1} x^{10} y^{-7})$$

87. Simplify.

$$\left(\frac{x}{4t^2}\right)^3 \left(\frac{3x^2}{2t^4}\right)^{-4}$$

88. Simplify.

$$(3xy^2)(-4x^2 y^3)$$

89. Simplify.

$$3x(2x^2 - 5x + 1)$$

90. Simplify.

$$(x+3)(x+7)$$

91. Simplify.

$$(3x+5)(x-4)$$

92. Simplify.

$$(3a+2b)(5a-8b)$$

93. Simplify.

$$(x+3)(x^2+4x+7)$$

94. Simplify.
 $(x+4)(x-4)$

95. Simplify.
 $(2y-5)^2$

96. Simplify.
 $(4x-5y)(4x+5y)$

97. Simplify.
 $(4x+\frac{1}{4})^2$

98. Simplify.
$$\frac{3z+4z^3-2z^2}{8z}$$

99. Simplify.
$$\frac{5x^3-15x^2+10x}{5x^2}$$

100. Simplify.
$$\frac{x^2-4x-21}{x+3}$$

101. Simplify.
$$\frac{2x^4-3x^3-11x^2-40x-1}{x-4}$$

Objective 9: Factor polynomials. (Sections 6.1, 6.2, 6.3, 6.4, 6.5, 6.6)

102. Factor.
 $5x+15$

103. Factor.
 $27x^2+9x$

104. Factor.
 $18m^4n+24m^2n^2-12m^3n^4$

105. Factor.
 $3a(2b+7)-5(2b+7)$

106. Factor.
 $14x+14y+ax+ay$

107. Factor.
 $8x^3+16x^2-5x-10$

108. Factor.
 $x^2+13x+36$

109. Factor.
 x^2+x-56

110. Factor.
 $x^2+11xy+24y^2$

111. Factor.
 $-3p^2-21p-30$

112. Factor.

$$3q^2 + 8q + 4$$

113. Factor.

$$25x^2 + 45x + 14$$

114. Factor.

$$18x^2 - 3x - 6$$

115. Factor.

$$3x^2 + 4xy - 4y^2$$

116. Factor.

$$-3x^3 + 24x^2 - 36x$$

117. Factor.

$$x^2 + 7x + 14$$

118. Factor.

$$x^2 - 9$$

119. Factor.

$$36m^2 - 25n^2$$

120. Factor.

$$x^2 + 25$$

121. Factor.

$$x^2 - 6x + 9$$

122. Factor.

$$16y^2 - 72y + 81$$

123. Factor.

$$8x^3 + 1$$

124. Factor.

$$8x^3 - 27y^3$$

125. Solve by factoring.

$$x^2 + 2x - 63 = 0$$

126. Solve by factoring.

$$3x^2 + x - 14 = 0$$

127. Solve by factoring.

$$m^2 - 30 = 7m$$

128. Solve by factoring.

$$(x - 2)(x - 3) = 56$$

129. Solve by factoring.

$$16x^2 - 25 = 0$$

130. Solve by factoring.

$$y^2 - 64 = 0$$