

## PRACTICE ALGEBRA QUESTIONS FOR

### MATH PLACEMENT TESTS

( 03-22-12 elementary (math0302) and intermediate (math0303) questions )

[www.alvarezmathhelp.com](http://www.alvarezmathhelp.com)

Videos on demand at math0200

Save and extract Alvarezlab to your computer

Desktop (Alvarezlab works on WINDOWS XP only)

1. Simplify  $|-7| - |-3|$  GINTEA45...52 math0302
2. Simplify  $|-2 - (-8)|$  GINTEA45...52 math0302
3. Simplify  $\frac{a}{x} + \frac{b}{2x}$  GFUNS87,88 math0302
4. Simplify  $\frac{y}{x} - \frac{1}{2}$  GFUNSL89 math0302
5. If  $x = 2a + b$ , then  $a =$  GLITER61,62 math0302
6. If  $x = 2a - b^2$ , then  $a =$  GLITER61,62 math0302
7. If  $a = bx + c$ , then  $x =$  GLITER51 math0302
8. If  $p = 2(a + b)$ , then  $b =$  GLITER52 math0302
9. If  $\frac{ax - b}{a - 1} = b$ , then  $x =$  GLITER57 math0302
10. If  $P = 2(L + W)$ , then  $L =$  GLITER53 math0302
11. If  $y = 2x - 1$ , then  $x =$  GLITER58,59,60 math0302
12. If  $kx + y = 4$ , then  $x =$  GLITER54 math0302
13. If  $\frac{2}{x} = \frac{2}{k} + c$ , then  $x =$  GLITER42,44,41,43 math0302
14. If  $ax = b - cx$ , then  $x =$  GLITER56 math0302
15. If  $x - 10 = 5x - 10$ , then  $x =$  GLINEQ23,24,20,21,22 math0302
16. If  $3 + N = 2N$ , then  $8N =$  GLINEQ93...96 math0302
17. If  $3x = 7 - 5x$ , then  $x =$  GLINEQ53,54 math0302
18. If  $1 + 2x \leq 3x - 5$ , solve for  $x$ . GNUMLY13...20 math0302
19. If  $3a > a + 8$ , solve for  $a$ . GNUMLY13...20 math0302

20. If  $\frac{x}{4} - \frac{3x}{8} > 0$ , solve for  $x$ . GNUMLY61,62 math0302
21. If  $0 < x - 3 < 5$ , solve for  $x$ . GABSLH01,04,13,14,15,16 math0302
22. Multiply  $(1 + xy)(1 - xy)$  GFOILB27,28 math0302
23. Multiply  $(x - 8y)(x - 8y)$  GFOILB29,30 math0302
24. Multiply  $(4z + 7)(2z + 5)$  GFOILB12...20 math0302
25. Multiply  $(2x + 1)(1 - ax)$  GFOILB math0302
26. Factor  $a(x - y) + (x - y)$  GFACTR81...88 math0302
27. Factor  $b^2 - 6b - 16$  GFACTR39 math0302
28. Factor  $25 - \frac{x^2}{4}$  GFACTR91...94,21...26 math0302
29. Factor  $3x^3 - 9x^2 + 6x$  GFACTR55,56 math0302
30. Factor  $b^2 - bc - 2c^2$  GFACTR39,37...42 math0302
31. Factor  $x^3 - x^2 - 2x$  GFACTR55,56 math0302
32. Factor  $\frac{a^2}{4} - \frac{1}{9}$  GFACTR91...94,21...26 math0302
33. If  $a = 3$  and  $b = -5$ , what is  $\frac{a - b}{b}$ ? GINTEA61,62 math0302
34. If  $x = 5$  and  $y = 3$ , what is  $3x + 5y$ ? GINTEA63,64 math0302
35. Simplify  $(3\sqrt{2y})^2$  GRADSU31,32 MATH0302
36. Simplify  $8\sqrt{5} + 3\sqrt{5} - \sqrt{5}$  GRADSU21...24 math0302
37. Simplify  $\frac{x}{x+3} + \frac{3}{x-3}$  GFUNSL73,74 math0302
38. Simplify  $\frac{x}{y} + \frac{2y}{x} - \frac{3}{xy}$  GFUNSL81,82 math0302
39. Simplify  $\frac{1}{x} + \frac{1}{x+2}$  GFUNSL76 math0302
40. Simplify  $\frac{1}{x-2} + \frac{1}{x}$  GFUNSL75 math0302

41. Simplify  $\frac{4}{x+4} - \frac{2}{x+1}$  GFUNSL77,78 math0302
42. Simplify  $\frac{x}{y} + \frac{x-y}{y} + \frac{2x}{3y}$  GFUNSL83,84 math0302
43. Simplify  $\frac{1}{x} + \frac{1}{y}$  math0302
44. Simplify  $\frac{2x}{3y} + \frac{x-y}{y}$  GFUNSL85,86 math0302
45. Simplify  $\frac{1}{\frac{1}{a} + \frac{1}{b}}$  GFUNSL56...59 math0302
46. Simplify  $\frac{\frac{3}{y} - \frac{3}{x}}{\frac{1}{y^2} - \frac{1}{x^2}}$  GFUNSL48,52 math0302
47. Simplify  $\frac{5}{1 + \frac{3}{x}}$  GFUNSL28,32,63,64 math0302
48. If  $\frac{1}{x} + \frac{1}{x+2} = \frac{4}{x+2}$ , then  $x =$  GQLCDM11,12 math0302
49. If  $\frac{x+2}{3} = \frac{2x-1}{4}$ , then  $x =$  math0302
50. Given  $\begin{cases} x+2y=7 \\ x=5y \end{cases}$ , solve for  $x$  and  $y$ .  
GSYSTE11,12 math0303
51. Given  $\begin{cases} y=2x+4 \\ y=x-5 \end{cases}$ , solve for  $x$  and  $y$ . GSYSTE34  
math0303
52. Given  $\begin{cases} x-y=0 \\ x+y=2 \end{cases}$ , solve for  $x$  and  $y$ .  
GSYSTE01...04 math0303
53. Given  $\begin{cases} x-y=0 \\ 2x-y=1 \end{cases}$ , solve for  $x$  and  $y$ .  
GSYSTE12,13,30...33 math0303
54. Given  $\begin{cases} x+y=6 \\ x=2y \end{cases}$ , solve for  $x$  and  $y$ . GSYSTS11,12  
math0303

55. Given  $|x+2| = 4$ , solve for  $x$ .  
GABSLN14...21 math0303
56. Given  $|x+2| < 6$ , solve for  $x$ .  
GABSLI01...04,9,11,15,17,19,23,25,27,29,31  
math0303
57. Given  $|x+2| > 8$ , solve for  $x$ .  
GABSLI05...08,10,12,14,16,18,20,22,24,26,28,30,32  
math0303
58. Given  $|x-2| = 4$ , solve for  $x$ .  
GABSLN14...21 math0303
59. Given  $x^2 + x - 6 > 0$ , solve for  $x$ . math0303
60. Given  $\frac{x+1}{x-1} > 0$ , solve for  $x$ . math0303
61. Given  $x^2 > x$ , solve for  $x$ . math0303
62. Simplify  $15x^2y + 4xy^2 - 2xy^2 + 3x^2y$  GFUNSL93,94  
math0302
63. Simplify  $13a - 15b - a + 2b$  GFUNSL95  
math0302
64. Simplify  $(2a - 7b + 1) - (a - 7b + 2)$  GFUNSL96  
math0302
65. Simplify  $(x^2 - 3x + 2) - (3x^2 - 5x - 1)$   
GFUNSL91,92 math0302
66. Simplify  $7x^2 - (8x^2 - x)$  GFUNSL97 math0302
67. Simplify  $2x + 3x + y$  GFUNSL95 math0302
68. Simplify  $(x-3) - 3(x+2)$  GFUNSL98 math0302
69. Simplify  $(x^2 - 5) - (x^2 + 6)$  GFUNSL99 math0302
70. Simplify  $-4(9r+7) + 6(3r+5)$  GFUNSL98  
math0302
71. Simplify  $7X + 6 + 3X - X + 4$  GFUNSL95  
math0302
72.  $2X - 3(X - 4) = -5$  solve for  $X$  GLINEQ34...36  
math0302
73.  $(3-2) - (2-3)$  evaluate GINTEA36  
math0302
74.  $7X - 12 = 5X + m$  solve for  $X$  GLITER63,64  
math0302
75.  $6 - X = 2(X - 6)$  solve for  $X$  GLINEQ31,32  
math0302

76.  $2(2X - 7) < 3X$  solve for X GNUMLY13...20  
math0302
77.  $(12X - X) - (3Y - 15Y)$  simplify GFUNSL96  
math0302
78.  $-2 - (-8)$  simplify GINTEA16...19 math0302
79.  $-(4 - 6) - (2 - 6)$  simplify GINTEA36  
math0302
80.  $AX - X = 6$  solve for X GLITER19,20  
math0302
81.  $3X(X - 8) - 2(X - 8)$  factor GFACTOR14,15  
math0302
82.  $12XY - 14X + 18Y - 21$  factor GFACTOR17  
math0302
83.  $12XY - 14X - 18Y + 21$  factor GFACTOR18  
math0302
84.  $2X + 1 = 4X + 9$  solve for X GINEQ19,20  
math0302
85.  $2(2X + 4) = 12$  solve for X GLINEQ31,32  
math0302
86.  $2X + 1 = 4X + 1$  solve for X GLINEQ23,24  
math0302
87.  $2X + 2 = 2X + 8$  solve for X GLINEQ21  
math0302
88.  $6 - X = -2(6 - X)$  solve for X GLINEQ31,32  
math0302
89.  $2X + y = X + y$  solve for X GLITER23  
math0302
90.  $2X + 4Y = 4X + 8Y$  solve for X GLITER24  
math0302
91.  $(3X - 2)(4X + C) = 12X^2 + X - 6$  then C =  
GFOILB83 math0302
92.  $A^2 + N + 2B^2 = (A + B)(A + 2B)$  then N =  
GFOILB82 math0302
93.  $8Z^2 + CZ + 35 = (4Z + 7)(2Z + 5)$  then C =

- GFOILB81 math0302
94.  $(X - 4)(X - 4) = AX^2 + BX + C$  then A= ,B= ,C=  
GFOILB55 math0302
95.  $(X - 6)(X + 6) = AX^2 + BX + C$  then A= ,B= ,C=  
GFOILB56 math0302
96.  $(X - 4)(X + 2) = AX^2 + BX + C$  then A+B+C =  
GFOIL57,58 math0302
97.  $(X - 8)(X - 8) = AX^2 + BX + C$  then A+B+C=  
GFOIL57,58 math0302
98. If  $4X - 8 = 2X$  then  $12X =$  GLINEQ17..36  
math0302
99. simplify  $(6X/2)^2$  math0302
100. simplify  $(-1/2)^2$  math0302
101. simplify  $(8 - 2) - (2 - 8)$  GINTEA36 math0302
102. simplify  $(4X - 3y)^2$  math0302
103. simplify  $(2 - XY)^2$  math0302
104. simplify  $X(X - 2) - 3X(X + 2)$   
GFOIL69,70,71,72 GFUNSL05,06 math0302
105. factor  $X^3 + 6X^2 + 8X$  GFACTOR55,56 math0302
106. factor  $2X^3 + 2X^2 - 8X - 8$  GFACTOR27,28, 17  
math0302
107. evaluate  $X^2 - Y^2$  if X = -2 and Y = -6 math0302
108. solve for X  $X^2 - X = 2$  GQUADN24 math0302
109. factor  $25X^2 - 64Y^2$  GFACTOR22 math0302
110.  $Y = -2X^2 - 5X + 2$  find Y if X = -4 GINTEA68,69  
math0302
111.  $Y = -2(X + 4)^2 - 8$  find Y if X = -6 GINTEA71,72  
math0302
112. factor  $X^2 - 10X + 16$  GFACTOR38 math0302
113. factor  $X^2 - 4X - 12$  GFACTOR39 math0302
114. factor  $X^2 + 6X - 16$  GFACTOR40 math0302

115. solve for X  $2X^2 + 10X - 48 = 0$  GQUADN72

math0302

116. solve for X  $X^2 - 6X - 40 = 0$  GQUADN24

math0302

117. factor  $2X^2 + 4X - 16$  GFACTOR51,52,53,54

math0302

118. simplify  $(X^2 - 5X + 6)/(2X^2 + 4X - 16)$

GFUNSL08,36,40 math0302

119. simplify  $(3X - 6)/(X^2 - 4)$  GFUNSL12 math0302

120. simplify  $X(X - 5) - 4X(X - 5)$  math0302

GFOIL69,70,71,72 GFUNSL05,06 math0302

121. simplify  $(X - 2)X + (2 - X)3X$  GFOIL69,70,71,72

GFUNSL05,06 math0302

122. Find the area of a circular garden with a radius of

$(X - 4)$  ft. GFOIL61,62 GFOIL59,60 math0302

123. solve for X  $X^2 + 3 = 4X$  GQUADN41 math0302

124. simplify  $(-24X^2 Y^2 + 12XY^2 + 28XY)/(4XY)$

GFACTOR71,72,73,74 math0302

125. factor  $8X^2 Y^2 - 4X^2 Y - 10XY^2$

GFACTOR01...04,81...88 math0302

126. solve for X  $-2X + 1 < 21$  GNUMLY13..20

math0302

127. factor  $2X^2 - 32Y^2$  GFACTOR21...26 65...69

math0302

128.  $P = 2(C+W)$  then  $C =$  GLITER52 math0302

129.  $AX + B = 3$  then  $A =$  GLITER51 math0302

130.  $AX = B(X + C)$  then  $X =$  GLITER55 math0302

131.  $AB - C = CB$  then  $A =$  GLITER51 math0302

132.  $y = 2(X - 2) - 10$  find Y if  $X = -6$  GINTEA67 math0302

133.  $\frac{4x}{3} = 6 - \frac{x}{4}$ , Solve for  $x$ .

GLINEQ45...48 41...44 math0302

134.  $-|(-3)^2|$ , Simplify

GINTEA43,44,27...31,45...52 math0302

135.  $\begin{cases} 2x - y = 6 \\ 2x + y = 6 \end{cases}$ , Solve for  $x$  and  $y$ .

GSYSY02,30,31,32,33,34 GSYSY11,12 math0302

136.  $\frac{-48x^2}{36x}$ , Simplify. GFACTOR75,76 math0302

137.  $\frac{20x^3 y^4}{30x^5 y^2}$ , Simplify. GFACTOR75,76 math0302

138.  $3x^2 - 27y^2$ , Factor. GFACTOR21...26,65...69 math0302

139.  $\frac{x}{4x - 16} \div \frac{x^2 - 2x}{x - 4}$ ,

Simplify. GFUNSL44,15,16,19,23 math0302

140.  $\frac{1 + \frac{2}{x}}{\frac{3}{x^2}}$ , Simplify.

GFUNSL28,32,48,52,56,57,58,59,61...64 math0302

141.  $y = mb^2$ , solve for  $b$ . math0303

142.  $\frac{x}{2} - \frac{1}{4} = 3 + \frac{5x}{6}$ , Solve for  $x$ .

GLINEQ45...48,41...44 math0302

143.  $\left(\frac{x^3}{18y}\right)\left(\frac{6y}{4x^2}\right)$ , Simplify. math0302

144.  $x^{\frac{1}{2}} \cdot x^{\frac{3}{2}}$ , Simplify. math0302

145.  $\left(x^{\frac{1}{4}}\right)^5$ , Simplify. math0302

146. Which has  $x = 0$  as a solution?

a.  $x(x-1) = 0$  GQUADM11 math0302

b.  $(x+1)(x-1) = 0$  GQUADM10 math0302

c.  $x^2(x-1) = 0$  GQUADN73,74 math0302

147. All are true for  $|x| < 2$ , except: math0302

a.  $-\frac{3}{2}$

b.  $\frac{5}{4}$

c.  $-\frac{5}{2}$

d.  $\frac{7}{4}$

148. For  $0 < x < 1$  find the greatest: math0302

a.  $(-x^2)$

b.  $x^3$

c.  $(-x)^4$

d.  $x^5$

149. Find the negative: math0302

a.  $-(4-4.5)$

b.  $-(4.5-4)$

c.  $-(-4.5+4)$

d.  $-(-4-4.5)$

150.  $\frac{2}{3x^2} - \frac{3}{x^2 - 2x}$ , Simplify. math0302

GFUNSL25,26

151.  $1.95x + 10 = 1.90x + 30$ , Solve for  $x$ .

GLINER01...04 math0302

152.  $2x - 8y = 10$ , Solve for  $x$ . GLITER01...08 math0302

153.  $2(2x+4) = 2x+20$ , Solve for  $x$ .

GLINEQ27...36 math0302

154.  $(2x^2 - 5x - 7) \div (x-1)$ , Divide using synthetic division. GSYNTK01...10 math0302

155.  $\frac{m^2 - 16}{m^2 + 3m - 28} \div \frac{m^2 - 3m - 28}{m - 4}$ , Simplify.

GFUNSL44,15,16,19,23 math0302

156.  $\sqrt{\frac{45x^8y^6z^6}{5x^2y^4z^1}}$ , Simplify. math0303

157.  $(x+2)(x^2 - 3x + 5)$ , Multiply. GFOIL33...40 math0302

158.  $f(x) = -2x^2 - 4x + 6$ , find  $f(-5)$ .

GFUNEV05...08 math0303

159. Given:  $f(x) = 4x^2 - 8x - 9$  and

$g(x) = -2x^2 - 3x + 5$ , find  $(f-g)(x)$ .

GFUNSM02,06,10,14,18,22 GFUNCSU01...04 math0303

160.  $f(x) = 2x^2 + 3x + 4$ , find  $f(x-1)$ .

GFUNCI01...04 math0303

161.  $18 - 3x \geq -12$ , Solve for  $x$ .

GNUMLY01...20,40...48,51...54 math0303

162.  $|r-2| = 5$ , Solve for  $r$  GABSLN14...21 math0303

163.  $|x+9| < 15$ , Solve for  $x$ . GABSLI01...32  
math0303

164.  $|x+6| > 16$ , Solve for  $x$ . GABSLI01...32  
math0303

165. Graph:  $y = 2x - 2$  BEN1003...1010 math0303

166. Find the slope of the line thru the points:  
 $(8,3)$  &  $(-4,4)$ . GSLOPE01...09 math0303

167. Find the equation of the line with the slope  
 $m = 3$  thru point  $(-3,6)$ . GTASPT80...85 math0303

168. Simplify:  $\sqrt{180}$   
GRADSU02,03,31,32 GRADRU01...04 math0303

169. Simplify:  $\sqrt{169x^6yz^9}$   
GRADSU03...08 GRADRU01...04 math0303

170. Simplify:  $\sqrt{3x^3}\sqrt{6x^2}$   
GRADRU01...04 math0303

171. Rationalize the denominator:  $\frac{2}{8-\sqrt{3}}$   
GRADRT01...06 math0303

172.  $\sqrt{7-x} = x-1$ , Solve for  $x$ .  
GRADSC01...08 math0303

173. Find the distance between  $(5,-2)$  &  $(2,2)$ .  
GDISTA01...04 math0303

174. Simplify:  $\sqrt[3]{-27a^{11}b^{13}}$  GRADRU01...04  
math0303

175. Solve for  $x$ :  $\sqrt[3]{x+3} = 4$  math0303

176.  $h(x) = 3x^2 - 7x - 4$ , find  $h(-5)$ .  
GFUNEV01...08 math0303

177.  $f(x) = |5x-4|$ , find  $f(-3)$ .

GFUNEV09,10 math0303

178.  $f(x) = x^2 - 6$ , find  $f(a+h)$ .

GFUNDE01...08 math0303

179.  $f(x) = x^2 + 8x - 6$  Find  $\frac{f(x+h) - f(x)}{h}$ ,  
called a difference quotient.

GFUNCDF01...08 math0303

180. Use the quadratic Formula to solve:  
 $x^2 - 6x + 8 = 0$ . GQUADC01...08 math0303

181. For  $f(x) = 2x + 3$  and  $g(x) = 5x + 8$ , find  
 $(f \circ g)(x)$ . GFUNCJ01...04 GFUNCL01...08  
GFUNCM01...18 math0303

182. For  $f(x) = 2x + 3$  and  $g(x) = x^2 + 6x - 5$ ,  
find  $(g \circ f)(x)$ . GFUNCJ01...04 GFUNCL01...08  
GFUNCM11...18 math0303

183. Find the midpoint for  $(4,-8)$  &  $(-10,2)$ .  
GMIDPT01...04 math0303

184. For  $f(x) = -1(x-2)^2 + 9$ , find the vertex.  
GVERTD01...10 GVERTE01...10 GVERTF01...08  
math0303

185. For  $f(x) = -x^2 + 4x + 5$ , find the vertex, use  
 $\left(-\frac{b}{2a}, f\left(\frac{-b}{2a}\right)\right)$  to find the vertex.

GVERTE05...10 GVERTF01...06 math0303

186. For  $f(x) = -x^2 + 4x + 5$ , find the  $y$ -intercept.  
GVERTD01...04 math0303

187. For  $f(x) = -x^2 + 4x + 5$ , find the  $x$ -intercept.  
GVERTDF01...08 math0303

188. Graph:  $f(x) = x^2 - 4$  BEN2001...2010  
math0303

189. Graph:  $f(x) = -1(x-2)^2 + 9$

GVERTD01...04 GVERTE01...10 BEN101...122  
math0303

190. Graph:  $f(x) = -x^2 + 4x + 5$

GVERTE01...10 GVERTF01...06 math0303

191. Simplify:  $(2+8i)(3-2i)$  GCOMPL01...04  
math0303

192. Simplify:  $\frac{2+i}{5-i}$  GCOMPL13...16 math0303

193. Solve for  $x$ :  $(x+4)^2 = -9$

aaaaaaaaa math0303

194.  $\begin{cases} 2x-3y=2 \\ 4x-6y=1 \end{cases}$ , Solve for  $x$  &  $y$ .

GSYSTS01...08,11,12 GSYSTE01...14 GSYSTE20...28  
math0303

195. Simplify:  $\frac{x^2}{x^2-4} - \frac{8x-12}{x^2-4}$ .

GFUNSL13,14,17,18,21,22,71...78 math0302

196. Simplify:  $\frac{4}{x+2} + \frac{1}{x^2-4}$ .

GFUNSL71...78,13,14,17,18,21,22,25,26,81...86  
math0302

197. Simplify:  $\left( \frac{4a^3b^{-9}c^4}{-8a^5b^{-2}c^{-2}} \right)^4$  math0302

198. Graph  $f(x) = x^2$  and  $g(x) = (x-1)^2 + 4$

GVERTD01...04 GVERTE01...10 GVERTF01...08  
GQFPAPNA,B,C,...H math0303

199. Find the maximum value (use vertex formula)  
for:  $f(x) = -250x^2 + 2500x + 50,000$

GVERTF01...06 GVERTE01...06 GQFPAPNA,B,C...H  
math0303

200. Solve for  $x$ :  $2^{x+1} = 16$  GLOGEQ01...18  
math0303

201. For  $4X + 2Y = 8$  determine the ordered pair that  
is a solution to the equation

A (0,2) B (2,4) C (1,2) D (2,1)

Bbbbbbbbbb math0303

202. Solve for N and D N + D = 100  
.05N + .10D = 9.50

GSYSTE01...14 20...28 GSYSTS01...08,11,12 math0303

203.  $f(x) = 4x^2 - 3$  and  $g(x) = 5x + 4$  find  $(fg)(x)$   
GFUNSM03,07,11,15,19,23 math0303

204.  $f(x) = 3x - 6$  and  $g(x) = x^2 - 4$  find  $(f/g)(x)$

GFUNSM04.08,12,16,20,24 GASYMD01...12 math0303

205. Are lines  $Y=2X+1$  and  $Y=-2X+8$  parallel,  
perpendicular, or neither GPARAL03...18 math0303

206. For  $A^2 + B^2 = C^2$  the Pythagorean Theorem if  $A = 3$   
,  $B = 4$ , then  $C =$  ccccccccc math0303

207. Solve the double inequality for  $X$   $-4 < 2X + 6 < 4$   
GABSLH01,04,13,14,15,16 math0303

208. Find the equation of the line through the two  
points (10,800) and (12,900) in  $Y = MX + B$  form  
GTASPT86...96 math0303

209. Multiply  $(4 + 5\sqrt{6})(4 - 5\sqrt{6})$

Hhhhhhhh math0303

210. Find the slope and the Y-intercept using the slope-  
intercept form of the equation of the line and graph.  
 $Y = 2X + 4$  GTASPT07,09 math0303

