Answer Key 2
1.2: 79, 85, 88, 100
1.3: 22, 27, 35, 46, 53, 57, 68, 71, 72, 79, 86, 92, 107, 109, 124
1.2

79) a) $\frac{1}{\sqrt{6}}\cdot\frac{\sqrt{6}}{\sqrt{6}}=\frac{\sqrt{6}}{6}$ b) $\sqrt{\frac{3}{2}}=\frac{\sqrt{3}}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}}=\frac{\sqrt{6}}{2}$ c) $\frac{9}{\sqrt[4]{2}}\cdot\frac{\left(\sqrt[4]{2}\right)^3}{\left(\sqrt[4]{2}\right)^3}=\frac{9\sqrt[4]{8}}{\left(\sqrt[4]{2}\right)^4}=\frac{9\sqrt[4]{8}}{2}$	85) (Commas are optional) a) 319,000 b) 272,100,000 c) .00000002760 d) .000000009999
88) a) 9.3×10^{7} b) 5.3×10^{-23} c) 5.97×10^{24}	100) $\frac{1.674\times10^{13}}{3.164\times10^{8}}=.5291\times10^{5}=5.291\times10^{4}$ or \$5291

1.3

22) $4\left(x^2-3x+5\right)-3\left(x^2-2x+1\right)=$ $4x^2-12x+20-3x^2+6x-3=$ $x^2-6x+17$	27) $(3x+5)(2x-1)=$ $6x^2-3x+10x-5=$ $6x^2-7x-5$
35) $(2x+3y)^2=4x^2+12xy+9y^2$	46) $(3+2y)^3=$ $3^3+3\cdot3^2\cdot2y+3\cdot3\cdot(2y)^2+(2y)^3=$ $27+54y+36y^2+8y^3$
53) $y^{1/3}\left(y^{2/3}+y^{5/3}\right)=y^1+y^2=y+y^2$	57) $\left(\sqrt{a}-b\right)\left(\sqrt{a}+b\right)=\left(\sqrt{a}\right)^2-b^2=a-b^2$
68) $-7x^4y^2+14xy^3+21xy^4=$ $-7xy^2\left(x^2-2y-3y^2\right)$	

71) $8x^2-14x-15$ What combinations of the factors of 8 and 15 have a difference of 14? $8-2 \quad 15-1$ $4-2 \quad 5-3$ Looks like 5x4-2x3=14 $(4x\pm3)(2x\pm5)$ To get -14*x* $(4x+3)(2x-5)$	
72) $6y^2+11y-21$ What combinations of the factors of 6 and 21 have a difference of 11? $6-1 \quad 21-1$ $3-2 \quad 7-3$ Looks like 6x3-7x1=11 $(6y\pm7)(y\pm3)$ To get +11 $(6y-7)(y+3)$	72) Using the Quadratic Formula $\frac{-(-11)\pm\sqrt{11^2-4\cdot6\cdot-21}}{2\cdot6}=\frac{11\pm\sqrt{121+504}}{12}$ $=\frac{11\pm\sqrt{625}}{12}=\frac{11\pm25}{12}=3,-\frac{7}{6}$ So the factors are $(6y+7)(y-3)$
79) $27x^3+y^3=(3x)^3+y^3=$ $(3x+y)\left((3x)^2+(3x)y+y^2\right)=$ $(3x+y)\left(9x^2+3xy+y^2\right)$	86) $3x^3-x^2+6x-2=$ $\left(3x^3-x^2\right)+(6x-2)=$ $x^2(3x-1)+3(2x-1)=$ $\left(x^2+3\right)(2x-1)$
92) $3x^{-1/2}+4x^{1/2}+x^{3/2}=$ $x^{-1/2}\left(3+4x+x^2\right)=$ $x^{-1/2}(x+3)(x+1)$	107) t^2-6t+9 This is a perfect square *A*=*t* and *B*=3 $(t-3)^2$
109) $4x^2+4xy+y^2$ This is a perfect square *A*=2*x* and *B*=*y* $(2x+y)^2$	124) $y^4(y+2)^3+y^5(y+2)^4=$ $y^4(y+2)^3\left[1+y(y+2)\right]=$ $y^4(y+2)^3\left[y^2+2y+1\right]=$ $y^4(y+2)^3(y+1)^2$