### Lesson 13 Practice Problems

1. Add the number that would make the expression a perfect square. Next, write an equivalent expression in factored form.
	1. $x^{2}+3x$
	2. $x^{2}+0.6x$
	3. $x^{2}−11x$
	4. $x^{2}−\frac{5}{2}x$
	5. $x^{2}+x$
2. Noah is solving the equation $x^{2}+8x+15=3$. He begins by rewriting the expression on the left in factored form and writes $\left(x+3\right)\left(x+5\right)=3$. He does not know what to do next.
* Noah knows that the solutions are $x=-2$ and $x=-6$, but is not sure how to get to these values from his equation.
* Solve the original equation by completing the square.
1. An equation and its solutions are given. Explain or show how to solve the equation by completing the square.
	1. $x^{2}+20x+50=14$ . The solutions are $x=-18$ and $x=-2$.
	2. $x^{2}+1.6x=0.36$ . The solutions are $x=-1.8$ and $x=0.2$.
	3. $x^{2}−5x=\frac{11}{4}$. The solutions are $x=\frac{11}{2}$ and $x=\frac{-1}{2}$.
2. Solve each equation.
	1. $x^{2}−0.5x=0.5$
	2. $x^{2}+0.8x=0.09$
	3. $x^{2}+\frac{13}{3}x=\frac{56}{36}$
3. Match each quadratic expression given in factored form with an equivalent expression in standard form. One expression in standard form has no match.
	1. $\left(2+x\right)\left(2−x\right)$
	2. $\left(x+9\right)\left(x−9\right)$
	3. $\left(2+x\right)\left(x−2\right)$
	4. $\left(x+y\right)\left(x−y\right)$
	5. $x^{2}−4$
	6. $81−x^{2}$
	7. $x^{2}−y^{2}$
	8. $4−x^{2}$
	9. $x^{2}−81$
* (From Unit 7, Lesson 8.)
1. Four students solved the equation $x^{2}+225=0$. Their work is shown here. Only one student solved it correctly.
* Student A:
* $\begin{matrix}x^{2}+225&=0\\x^{2}&=-225\\x=15 & or  x=-15\end{matrix}$
* Student B:
* $\begin{matrix}x^{2}+225&=0\\x^{2}&=-225\\No& solutions\end{matrix}$
* Student C:
* $\begin{matrix}x^{2}+225&=0\\\left(x−15\right)\left(x+15\right)&=0\\x=15  or  x&=-15\end{matrix}$
* Student D:
* $\begin{matrix}x^{2}+225&=0\\x^{2}&=225\\x=15 & or  x=-15\end{matrix}$
* Determine which student solved the equation correctly. For each of the incorrect solutions, explain the mistake.
* (From Unit 7, Lesson 9.)



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