### Lesson 12 Practice Problems

1. Add the number that would make the expression a perfect square. Next, write an equivalent expression in factored form.
	1. $x^{2}−6x$
	2. $x^{2}+2x$
	3. $x^{2}+14x$
	4. $x^{2}−4x$
	5. $x^{2}+24x$
2. Mai is solving the equation $x^{2}+12x=13$. She writes:
* $\begin{matrix}x^{2}+12x&=13\\(x+6)^{2}&=49\\x&=1 or x=-13\end{matrix}$
* Jada looks at Mai’s work and is confused. She doesn’t see how Mai got her answer.
* Complete Mai’s missing steps to help Jada see how Mai solved the equation.
*
1. Match each equation to an equivalent equation with a perfect square on one side.
	1. $x^{2}+8x=2$
	2. $x^{2}+10x=-13$
	3. $x^{2}−14x=5$
	4. $x^{2}+2x=0$
	5. $x^{2}+4x−5=0$
	6. $x^{2}−20x=-9$
	7. $(x−7)^{2}=54$
	8. $(x+5)^{2}=12$
	9. $(x−10)^{2}=91$
	10. $(x+4)^{2}=18$
	11. $(x+1)^{2}=1$
	12. $(x+2)^{2}=9$
2. Solve each equation by completing the square.
* $x^{2}−6x+5=12$
* $x^{2}−2x=8$
* $11=x^{2}+4x−1$
* $x^{2}−18x+60=-21$
1. Rewrite each expression in standard form.
	1. $(x+3)(x−3)$
	2. $(7+x)(x−7)$
	3. $(2x−5)(2x+5)$
	4. $(x+\frac{1}{8})(x−\frac{1}{8})$
* (From Unit 7, Lesson 8.)
1. To find the product $203⋅197$ without a calculator, Priya wrote $(200+3)(200−3)$. Very quickly, and without writing anything else, she arrived at 39,991. Explain how writing the two factors as a sum and a difference may have helped Priya.
* (From Unit 7, Lesson 8.)
1. A basketball is dropped from the roof of a building and its height in feet is modeled by the function $h$.
* Here is a graph representing $h$.
* Select **all** the true statements about this situation.
* 
	1. When $t=0$ the height is 0 feet.
	2. The basketball falls at a constant speed.
	3. The expression that defines $h$ is linear.
	4. The expression that defines $h$ is quadratic.
	5. When $t=0$ the ball is about 50 feet above the ground.
	6. The basketball lands on the ground about 1.75 seconds after it is dropped.
* (From Unit 6, Lesson 5.)
1. A group of students are guessing the number of paper clips in a small box.
* The guesses and the guessing errors are plotted on a coordinate plane.
* What is the actual number of paper clips in the box?​​​​​​
* 
* ​​​​​
* (From Unit 4, Lesson 13.)



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