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1. What does it mean to FACTOR an expression, for example $x^{2}+5 x-14$ ? Be specific.
2. Use an area model to factor:
a. $x^{2}-8 x-20$
b. $\quad 10 x^{2}+13 x-3$.
3. What is the Zero Product Property (you should have notes about this) How can you use the Zero Product Property to solve equations like $10 x^{2}+13 x-3=0$ ?
4. Solve each equation below. Show your work.
a. $\quad(x-3)(x+7)=0$
b. $\quad(2 x-5)(x+3)=0$
c. $x^{2}+5 x-6=0$
d. $\quad 2 x^{2}+11 x+12=0$
e. $x^{2}-11 x=0$
f. $\frac{2}{x}+2=\frac{3}{x-1}$
5. A model rocket was placed on the Lincoln football field and launched. The rocket follows the path $r(x)=-2(x-2)(x-12)$ where $\mathrm{x}=$ horizontal yards traveled and $\mathrm{y}=$ height in feet.
a. From what yard line was the rocket launched from? How do you know?
b. From what yard line did the rocket land? How do you know?
c. What was the maximum height the rocket reached? Explain or show how you found your answer.
6. A second model rocket was launched from 3 yard line on the the Lincoln football field. The rocket reached its highest point of 48 feet directly above the 7 yard line.
a. What yard line did the rocket land on? Show or explain how you know.
b. Write the quadratic function for this rocket in FACTORED FORM: $y=\#(x-\#)(x-\#)$. Show how you found the dilation factor.
