# Mini-Vignettes [High School] For Tool le. 8 

D. Anna has been asked to develop a model that would describe how long it takes to get from one end of the high school to the other at various times of the day. She gathers data and begins to create equations to describe the hallway passage time in order to predict travel time. As she works, she monitors and evaluates her progress and adapts her strategy when it doesn't seem to be working.
A. Noah is building triangles. He says, "The longest side cannot be more than the other two sides." Nick says, "It can't be the same as the two sides either." Amy says, "Yes, they can be the same, just not greater." Maria says, "No, if the long side was the same, then the two other sides would stretch out flat. It has to be smaller, even if only by a tiny amount."
B. Pairs of students are charged with making different kinds of quadrilaterals and then asked to examine and "guarantee" their properties. Some students use rulers, protractors, and sheets of paper. Others choose to use dynamic geometry programs, such as Geometer's Sketchpad or GeoGebra.
C. In solving for $n$, Amanda notices that in the equation $6(n+1)-4(n+1)=-30$, the expressions inside the parenthesis match, so she can subtract the groups and get $2(n+1)$ rather than apply the distributive property as a first step.
H. In solving for $n$ in $6(n+1)-4(n+1)=$ -30, Carlos says, "We can divide both sides by two and have a simpler problem, and it will still be equal. In other words, if 6 bags of something minus 4 bags of something equal -30 , then half as much of each will equal -15 ."
E. Rachel is trying to determine which of four stores offers the biggest percentage price reductions on items. She is listing the costs for items of the same price. She realizes that an equation would help her with this work and writes a formula to help determine two items for the price of one:

$$
p-\frac{1 p}{2}=\frac{1}{2} p
$$

F. Lin and Ben are writing a solution that explains the difference between the freezing points of ocean water $\left(-2.5^{\circ} \mathrm{C}\right)$ and of antifreeze $\left(-64^{\circ} \mathrm{C}\right)$. Lin says, "It's changing -61.5 degrees." Ben says, "It drops 61.5 degrees." Lin pauses and writes, "The difference between the temperatures that ocean water and antifreeze turn to a solid is $-2.5-(-64)=61.5$. So the temperature must drop another $61.5^{\circ} \mathrm{C}$ after ocean water freezes for the antifreeze to turn to ice."
G. Jeremy has solved $6(n+1)-4(n+1)$ and two others:
$1.5(2 x+1)-(x+1)$
$3\left(x^{2}+x-1\right)-\left(x^{2}+x-1\right)$
He sees that when the expression inside the parentheses matches, it is often easier to combine the like terms rather than apply the distributive property. He continues to look for this possibility in other problems.

