***Quadratic Equations in Context***

1. Jason jumped off of a cliff into the ocean in Acapulco while vacationing with some friends. His height as a function of time could be modeled by the function $h\left(t\right)=-16t^{2}+16t+480$, where $t$ is the time in seconds and $h$ is the height in feet.
	* Jason hit the water after how many seconds?
2. If a toy rocket is launched vertically upward from ground level with an initial velocity of 128 feet per second, then its height $h$ after $t$ seconds is given by the equation $h\left(t\right)=-16t^{2}+128t$ (if air resistance is neglected).
	* How long will it take for the rocket to return to the ground?
3. A rocket is launched from atop a 101-foot cliff with an initial velocity of 116 f/s.
	* Substitute the values into the vertical motion formula $h\left(t\right)=-16t^{2}+vt+h\_{0}.$ Let $h\left(t\right)=0$.
	* Use the quadratic formula to find out how long the rocket will take to hit the ground after it is launched. Round to the nearest tenth of a second.
4. A ball is thrown upward from a height of 15 ft. with an initial velocity of 5 ft/s. Use the formula $h\left(t\right)=-16t^{2}+vt+h$ to find how long it will take for the ball to hit the ground.
	* What is the formula?
	* How long will it take to hit the ground?
5. A diver is standing on a platform 24 ft. above the pool. He jumps from the platform with an initial upward velocity of 8 ft./s. Use the formula $h\left(t\right)=-16t^{2}+vt+h$, where $h(t)$ is the height above the water, $t$ is the time, $v$ is his starting upward velocity, and $h$ is the starting height.
	* How long will it take for him to hit the water?