A Brief Introduction to Black Holes
A black hole is an object with a gravitational field so strong that not even light can escape.
The Schwarzschild Radius

Let’s insert the speed of light, $c$, into the escape-velocity equation:

$$\frac{c^2}{2} = \frac{G M}{R}$$

The result is a relationship between the mass, $M$, and radius, $R$, of a black hole. Solving for $R$, we get

$$R = \frac{2 G M}{c^2}$$

$R$ is called the **Schwarzschild Radius**. Any object of mass $M$ becomes a black hole if its radius is less than or equal to $R$, because *light is unable to escape*. 
Sizes of Black Holes

$M = 3 M_\odot$

18 km