**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_**

**CC Algebra**

**Quadratic Real Life Applications**

**1.** A rocket is launched from the ground and follows a parabolic path represented by the equation

y = –x2 + 10x . At the same time, a flare is launched from a height of 10 feet and follows a

straight path represented by the equation y = –x + 10. Using the accompanying set of axes,

graph the equations that represent the paths of the rocket and the flare, and find the

coordinates of the point or points where the paths intersect.



**2.** A Frisbee is thrown with an initial velocity of 12 feet per second. The path of the Frisbee is modeled by the equation:$f\left(x\right)= -\frac{1}{2}x^{2}+12x+3$, where f(x) represents the Frisbee’s height above the ground, and x represents the amount of seconds passed after the Frisbee has been thrown. Use the graph below to answer the following.

1. After what time does the Frisbee reach the ground?
2. What is the maximum height reached by the Frisbee?



**3.** A baseball is hit from an initial height of 1 meter, with an initial velocity of 45 meters per second. The flight of the ball can be modeled by the following equation: $h\left(t\right)= -9t^{2}+45t+1. $At what time will the ball reach the ground? Round your answer to the nearest hundredth of a second

**4.** At the local Renaissance fair there will be a trebuchet (catapult) demonstration. The path of the stone launched by the trebuchet will follow the path modeled by the equation$ h\left(x\right)= -x^{2}+2x+30$. The landing pad for the stone is 6 feet tall. How long will it take the stone to reach the landing pad?

**5.** A golf ball is hit with an initial velocity of 48 meters per second. The height of the ball can be modeled

 by the equation $h\left(t\right)=64t-16t^{2} $, where t is the number of seconds.

1. What is the maximum height of the ball?

 Explain how you found your answer

1. How long will the golf ball take to fall to the ground?