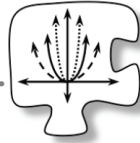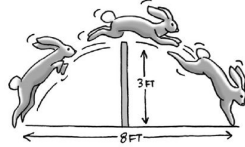## 2.1.2   How can I model the relationship?

Modeling with Parabolas
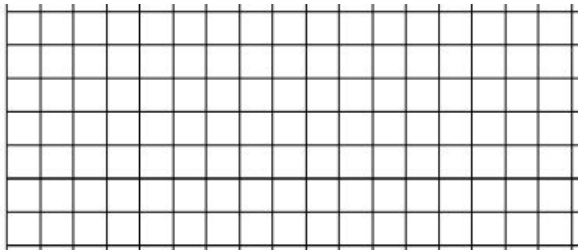

#13 The diagram below shows a jackrabbit jumping over a three-foot-high fence. To just clear the fence, the rabbit must start its jump at a point four feet from the fence.

3 FT

8 FT

#14 The jackrabbit is jumping along and encounters a brick wall that is 2.5 feet high and 1 foot wide. Can he clear the wall if his jump is the same height and width as in problem #13?
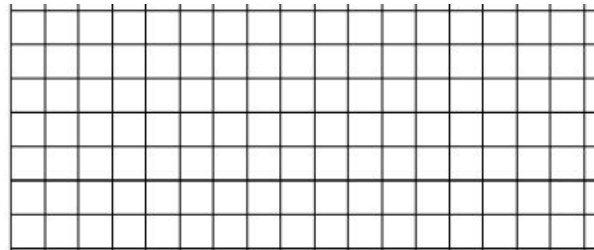

Sketch:

Sketch:

Equation:

Work:

Explain how you know your sketch and equation fit the situation.

Will the rabbit be able to clear the wall?

#15 When Ms. Bibbi kicked a soccer ball, it traveled a horizontal distance of 150 feet and reached a height of 100 feet at its highest point.

#16 At the skateboard park, the hot new attraction is the *U-Dip,* a cement structure embedded into the ground. The cross-sectional view of the *U-Dip* is a parabola that dips 15 feet below the ground. The width at ground level, its widest part, is 40 feet across. Sketch the cross-sectional view of the *U-Dip*, and find an equation of the parabola that models it.
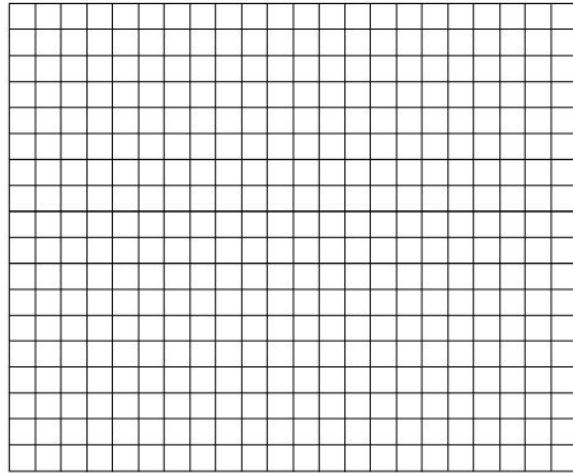
Sketch:
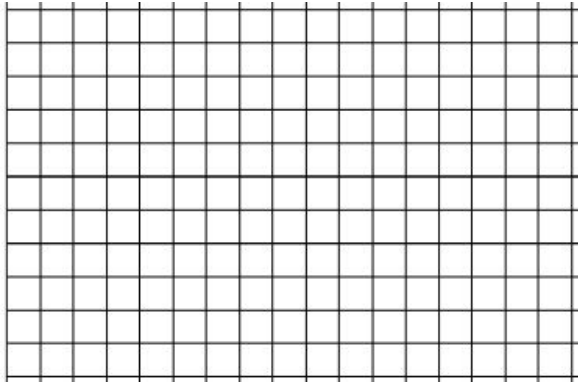
Equation:

How far (horizontally) is the ball from Ms. Bibbi when it is 25 feet high?

Sketch:

Equation: