

## 5.8 Problems with Quadratics Day 2

### Problem Solving Process

- Define your variables.
- Write an equation to model the situation.
- Simplify the equation, if necessary.
- Solve the equation using an appropriate method.
- Consider the allowable values of the unknown. Reject a solution if necessary, providing an appropriate reason.
- Provide a concluding statement, answering the original question.

Ex. 1 A rectangular skating rink measure 40 m by 20 m. It is to be doubled in area by extending all 4 sides by the same amount. How much should each side be extended?



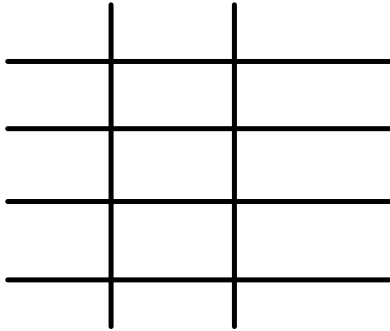
Ex 2. A rectangular lawn measuring 8m by 4m is surrounded by a flower bed of uniform width. The combined area of the lawn and the flower bed is  $165 \text{ m}^2$ . What is the width of the flower bed?



Ex. 3 A sporting goods store sells 65 ski jackets in a season for \$250 each. Each \$10 decrease in price would result in 5 more jackets being sold.

a) Write an algebraic expression that models the revenue for this situation.

Revenue =



b) Determine the price that will maximize revenue.



c) Determine the price required to have a revenue of \$17 600 from ski jackets.

Graph

Ex 4. A theatre company has 300 season ticket subscribers. The board of directors has decided to raise the price of a season ticket from the current price of \$400. A survey of subscribers has determined that, for every \$20 increase in price, 10 subscribers would not renew their season tickets.

- a) What ticket price will maximize their revenue?
- b) What is the maximum revenue?
- c) How many season tickets will be sold when revenue is maximized?

Ex. 5 Students' Council holds an annual talent show to raise money for the food bank. Last year, tickets sold for \$10 each and 75 people attended the show. The Students' Council has decided to lower the price to improve attendance and revenue. They have determined that for every \$1 decrease in price, 15 more people would attend.

- a) What ticket price will maximize revenue?
- b) What is the maximum revenue?
- c) How many tickets will be sold when the revenue is maximized?