

Date: _____

Name: _____

Practice Quadratic Problem Solving

3. Determine two numbers whose difference is 12 and whose product is a minimum.
4. The sum of two numbers is 20. What is the least possible sum of their squares?
5. What is the smallest possible total of a number and its square?
6. What number exceeds its square by the greatest amount?
7. A rectangular field is to be enclosed with 600 m of fencing. What is the maximum area that can be enclosed and what dimensions will give this area?
8. A rectangular field is to be enclosed and divided into two sections by a fence parallel to one of the sides using a total of 600 m of fencing. What is the maximum area that can be enclosed and what dimensions will give this area?
12. Lemon Motors has been selling an average of 60 new cars per month at \$800 over the factory price. They are considering an increase in this markup. A marketing survey indicates that for every \$20 increase, they will sell one less car each month. What should their new markup be to maximize income?
13. Maria produces and sells shell necklaces. The material for each necklace costs her \$4. She has been selling them for \$8 each and averaging sales of 40 per week. She has been told that she could charge more but has found that for each \$0.50 increase in price, she would lose 4 sales each week. What selling price should she set and what would her profit per week be at this price?

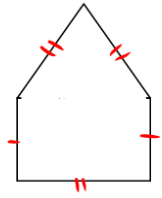
ANSWERS:

3. 6 and -6
4. 200
5. -0.25
6. 0.5
7. $22\,500\text{m}^2$, 150m by 150m
8. $15\,000\text{ m}^2$, 100m by 150m
12. \$1000
13. \$8.50, \$162

Date: _____

Name: _____

14. Mark is designing a pentagonal-shaped play area for a daycare facility. He has 30 m of nylon mesh to enclose the play area. The triangle in the diagram is equilateral. Find the dimensions of the rectangle plus the triangle that will maximize the area he can enclose.



15. Rowing at 8 km/h, in still water, Rima and Bhanu take 16 h to row the 39 km down a river and back. Find the speed of the current. (The equation is found for you below. Study the chart – as it shows how the set up will look for this type of problem)

	Distance	Speed	Time $T = \frac{D}{S}$
with the current speed, C	$39 \div 2 = 19.5$	$8 + C$	$\frac{19.5}{8 + C}$
against the current	19.5	$8 - C$	$\frac{19.5}{8 - C}$

Since it took 16 hours add the times for the equation to solve:

$$\frac{19.5}{8 + C} + \frac{19.5}{8 - C} = 16$$

16. A river flows at 2km/h, and John takes 6 hours to row 16 km trip up the river and back. How fast did he row? (set up similar to above question)
17. Ero and Jamal set off at the same time on a 30km walk for charity. Ero, who has trained all year for this event, walks 1.4km/h faster than Jamal, but sees a friend on the route and stops to talk for 20 min. Even with this delay, Ero still waits for Jamal to finish for 2 hrs more. How fast was each person walking?

ANSWERS

14. rectangle 7.03 m by 4.46 m
triangle all sides 7.03m
15. 6.67 km/h
16. 3.74 km/h
17. Jamal = 3.6km/h and Ero 5km/h