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Applications of Quadratic Functions Word Problems

Part B - Shapes and Boarder

Part 3: Shapes

1.	Farmer Joel wants to fence in a rectangular area that has one side bordered by a stream.	If he
	has 80 m of fence, what are the dimensions and the maximum area he can enclose?	

2. A handball court is to be surrounded by plastic stripping 30 m long. One side of the court does not need the stripping because it is a brick wall. What must be the dimensions of the court in order to obtain a maximum area? What is the maximum area?

3.	A rectangular field is to be enclosed by fence and then divided into two by another fence parallel to one of the sides. If there are 1800 m of fencing available, find the dimensions of the field of maximum area. What is the area?
4.	A rectangular building lot is 8 m longer than it is wide and has an area of 2900m ² . Find the dimensions of the lot.
5.	The length of a rectangular field is 2 m $^{\circ}$ greater then three times its width. The area of the field is 1496 m 2 . What are the dimensions of the field?

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6. A rectangular field is to be enclosed with 920 m of fencing. Prove that the maximum area occurs when the field is square.

8. The length of the hypotenuse of a right triangle is 5 cm. Find the lengths of the two sides if one side is 1 cm longer than the other.

Part 4: Boarders

9. A rectangular picture frame measures 20 cm by 30 cm. A matte is made of uniform width to go inside the frame and make a nice boarder for the picture. The area of the matte is to be equal to the area of the picture. What is the width of the matte?

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10. A rectangular garden measures 15 m by 24 m. A larger garden is to be made by increasing each side length by the same amount. The resulting area is to be 1.5 times the original area. Find the dimensions of the new garden to the nearest tenth of a metre.

11. An open-topped box is to be made from a rectangular piece of tin measuring 50 cm by 40 cm by cutting square of equal size from each corner. The base area is to be 875 cm². What is the volume of the box?