

OPTIMIZATION ASN'T

1. Two numbers have a product of 36. Find these numbers if the sum of their squares is to be a minimum. Also state the minimum sum of squares?

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2. One number is 5 larger than another. Find these numbers if the sum of their squares is to be a minimum. What is the minimum sum of their squares?

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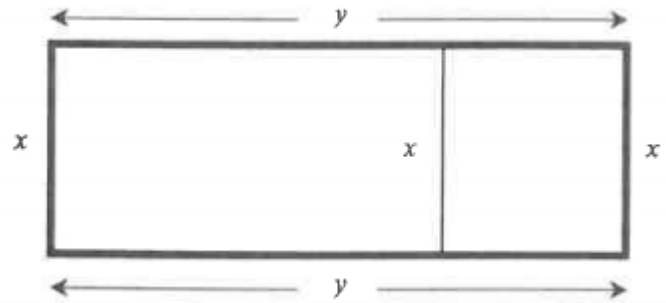
3. Two non-negative numbers have a product of 90. What is their minimum sum?

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4. What is the minimum perimeter of a rectangle whose area is 200 m^2 ?

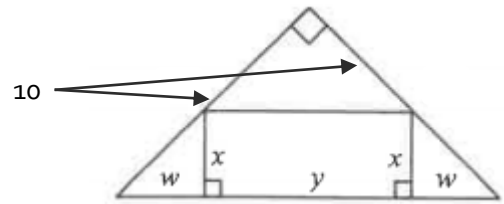
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5. A farmer has 350 m of fencing with which he wants to make two adjacent rectangular pens as shown in the figure below. What is the maximum total area that can be enclosed? What are the dimensions of the outside of the largest rectangle (x and y)?



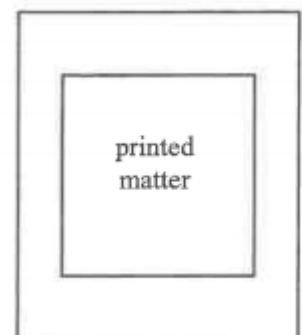
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6. Find the dimensions of the rectangle of largest area that can be inscribed in an isosceles right triangle with legs of length 10 cm as shown in the figure?



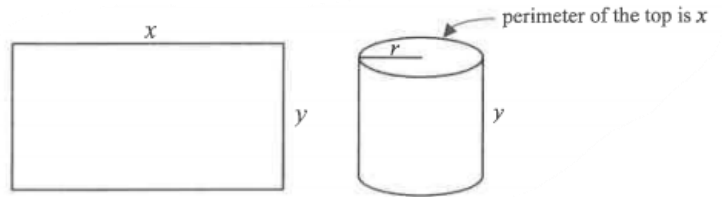
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7. A rectangular paper poster must contain 250cm^2 of printed matter. The printed area is to be surrounded by a border of width 5cm, on the top and bottom and 2cm on the sides. Find the outside dimensions of the poster if the area of the paper used is to be a minimum.



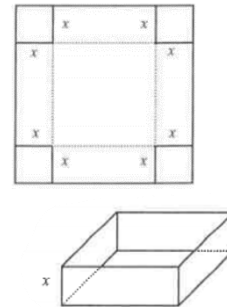
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8. A rectangle has a perimeter of 180cm. The rectangle is to be rolled into a cylindrical tube with hollow ends. Find the dimensions of the rectangle in order to maximize the volume of the tube. See figure below.



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9. A piece of cardboard, 30cm by 30cm is to be transformed into a box with an open top by cutting squares of the same size from each corner and folding up the flaps. Find the dimensions of the cut-out squares so that the volume of the box can be maximized.



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