

HOMEWORK #404

Multiplying Polynomials and Area Problems (work all problems on notebook paper)

For #1 – 3, Multiply the Polynomials and simplify to Standard Form

1. $(x + 10)(3x^2 + 5x - 2)$ 2. $(2t^2 - 9t - 5)(3t + 7)$ 3. $(3r^2 + 3r - 8)(5 - 2r)$

For each problem:

- Define a variable.
- Draw and label a picture
- Write and solve an equation that describes the problem.
- Answer the question.

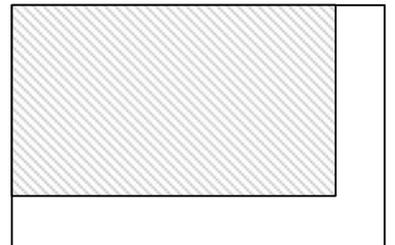
Example: Mr. Wright made a rectangular fishpond surrounded by a brick walk 2 m wide. He had enough bricks for the area of the walk to be 76 m^2 . Find the dimensions of the pond if it is twice as long as it is wide.

4) A rectangle is 5 cm longer than it is wide. If its length and width are both increased by 3 cm, its area is increased by 60 cm^2 (see picture to the right below).

- a) Letting x = the original width, write an expression for the original length.
- b) Using your answer to part a), write an expression for the original area.
- c) Now write (and simplify if necessary) expressions for the length and width of the rectangle after the dimensions are increased.
- d) Use your answer to part c) to write an expression for the new area.
- e) Use your answers to parts b) and d) to write an equation that shows that the new area = the original area + the change in area.
- f) Solve your equation from part e) and find the original dimensions of the rectangle.



5) A rectangle is 10 m longer than it is wide. If its length and width are both decreased by 2 m, its area is decreased by 48 m^2 . Follow the six steps outlined in problem 1 above to find the original dimensions of the rectangle.



6) A poster is 25 cm taller than it is wide. It is mounted on a piece of cardboard so that there is a 5 cm border on all sides. If the area of the border alone is 1350 cm^2 , what are the dimensions of the poster? (HINT: You should draw and label a picture, since the picture for this looks different than the pictures in the first two problems.)

7) A brick patio is twice as long as it is wide. It is bordered on all sides by a garden 1.5 m wide. Find the dimensions of the patio if the area of the garden is 54 m^2 .

8) A house has two rooms of equal area. One room is square and the other room is a rectangle 4 ft narrower and 5 ft longer than the square one. Find the area of each room. (HINT: Since you are not given a change in area, you will need to use different logic for writing your equation. Be sure that you are using ALL of the information in BOTH of the sentences in the original problem.)

9) A corner lot that originally was square lost 185 m^2 of area when one of the adjacent streets was widened by 3 m and the other was widened by 5 m. Find the new dimensions of the lot. (Hint: Let x = the length of a side of the original square lot.)