

Name: _____

M\$3A “Picture Frame” Problems

1. Joey wants to buy a new rug for his bedroom. He knows that the length is 2 feet more than the width, but can't remember either dimension. If the total area of the room is 48 square feet, what are the dimensions of Joey's room?
2. The length of a photograph is 1 cm less than twice the width. The area is 45 sq. cm. Find the dimensions of the photograph.
3. Jake's garden is 6 m long and 4 m wide. He wishes to double the area of his garden by increasing its length and width by the same amount. Find the number of meters by which each dimension must be increased.
4. The combined area of a square and a rectangle is 225 square yards. The length of the rectangle is 8 times the width of the rectangle and the length of a side of the square is the same as the width of the rectangle. Find the dimensions of the square and the rectangle.
5. Lucy paints a picture for her friend Julia. The painting has a width of 40 inches and a height of 28 inches. Julia decides to frame the painting in a frame of uniform width. If the total area of the framed picture is 1,260 square inches, what is the width of the frame?
6. A 4 m by 6 m rug covers half of the floor area of a room and leaves a uniform strip of bare floor around the edges. What are the dimensions of the room?
7. Vera is an interior designer. She has been asked to locate an oriental rug for a new corporate office. As a rule, the rug should cover one-half of the total floor area with a uniform width surrounding the rug. If the dimensions of the room are 12 feet by 16 feet, what are the dimensions of the rug?
8. The length of a rectangular flower garden is 6 feet more than its width. A walkway 3 feet wide surrounds the outside of the garden. The total area of the walkway itself is 288 square feet. Find the dimensions of the garden.
9. A homeowner wants to decrease the size of his backyard by planting flowers around the perimeter. He wants to decrease the length and width by the same amount and wants the final area to be 1500 square feet. If the backyard is originally 50 feet by 40 feet, by how much is each dimension decreased to the nearest foot?
10. A square picture frame contains a picture with a mat border. The border is 3 inches thick on the sides and 4 inches thick on the top and bottom. If the area exposed within the mat border is 528 square inches, what are the dimensions of the original frame?
11. Suppose that a strip of uniform width is plowed along both sides and both ends of a garden that is 120 ft long by 90 ft wide. How wide is the strip, if the garden is one-half plowed?
12. The owners of a 10 ft by 25 ft swimming pool want to surround the pool with a crushed-stone border of uniform width. They have enough stone to cover 74 square meters. How wide should they make the border?
13. The length of Mr. McGregor's rectangular carrot patch is 2 less than twice its width. The area of the garden is 420 square feet, but in order to sabotage Peter Cottontail's annoying thefts from the garden, Mr. McGregor wants to install a 2-foot wide irrigation ditch all the way around the garden. Find (a) the dimensions of the garden and (b) the perimeter of the garden's planned irrigation ditch.

Miscellaneous Problems

14. The hypotenuse of a right triangle is 3 less than 4 times the smaller leg. The other leg measures 3 more than 3 times the smaller leg. Find the lengths of all sides of the triangle.
15. Two cars start out at the same point and move in the same direction. Their speeds are in the ratio 5:3. After 2 hours, the cars are 42 miles apart. Find their speeds.
16. Mary Lu is four years younger than her sister, Mary Jane. Their mother, who is a math teacher, noticed that the product of the ages of the two sisters is 32. How old are the girls?
17. When Lauren and Harbin worked together to rake the leaves in their backyard, it took them 6 hours. The last time the leaves needed raking, Harbin worked alone, and it took him 10 hours. If Lauren raked the leaves by herself, how long would it take her?
18. Four times the reciprocal of a number is added to the number and the result is $10\frac{2}{5}$. Find the number.
19. Eric roared off on his motorcycle at 60 mph. Then, much to his chagrin, he ran out of petrol. He pushed the motorcycle all the way back at 3 mph. If the entire trip took 21 hours, how far did he push the motorcycle?
20. At 5 p.m., Ben whizzed off from the planet Gorkon. One hour later, Yong Mi whizzed off from Gorkon in the opposite direction at a speed 400 kph less than that of Ben. If they were 7900 km apart at 11 p.m., how fast did each travel?