Area Problems

1. In a landscaping plan, a rectangular flowerbed is designed to be 4 meters longer than it is wide. If 60 square meters are needed for the plants in the bed, what should the dimensions of the rectangular bed be?

2. If the side of a square is increased by 5 the area is multiplied by 4. Find the side of the original square.

3. A rectangular lot is 20 yards longer than it is wide and its area is 2400 square yards. Find the dimensions of the lot.

4. The length of a room is 8 ft greater than its width. If each dimension is increased by 2 ft, the area will be increased by 60 sq. ft. Find the dimensions of the room.

5. The length of a rectangular lot is 4 rods greater than its width, and its area is 60 square rods. Find the dimensions of the lot.

6. The length of a rectangle is 15 ft greater than its width. If each dimension is decreased by 2 ft, the area will be decreased 106 ft^2. Find the dimensions.

7. Twice the breadth of a rectangular lot exceeds the length by 2 yards. The area of the lot is 1200 yd^2. Find the length and breadth.

8. A rectangular piece of paper is twice as long as a square piece and 3 inches wider. The area of the rectangular piece is 108 in^2. Find the dimensions of the square piece.

9. A room is one yard longer than it is wide. At 75¢ per sq. yd. a covering for the floor costs $31.50. Find the dimensions of the floor.

10. A rectangular court is twice as long as it is wide. It costs as much to fence it at 50¢ per yard as to sod it at 15¢ per sq. yd. Find its dimensions.

11. The area of a rectangle is 48 ft^2 and its perimeter is 32 ft. Find its length and width.

12. The dimensions of a picture inside a frame of uniform width are 12 by 16 inches. If the whole area (picture and frame) is 288 in^2, what is the width of the frame?

13. A mirror 14 inches by 15 inches has a frame of uniform width. If the area of the frame equals that of the mirror, what is the width of the frame.

14. A lawn is 60 ft by 80 ft. How wide a strip must be cut around it when mowing the grass to have cut half of it.

15. A grass plot 9 yards long and 6 yards wide has a path of uniform width around it. If the area of the path is equal to the area of the plot, determine the width of the path.

16. A page is to have a margin of 1 inch, and is to contain 35 in^2 of painting. How large must the page be if the length is to exceed the width by 2 inches?

17. A picture 10 inches long by 8 inches wide has a frame whose area is one half the area of the picture. What is the width of the frame?

18. A rectangular wheat field is 80 rods long by 60 rods wide. A strip of uniform width is cut around the field, so that half the grain is left standing in the form of a rectangular plot. How wide is the strip that is cut?

19. A corner building lot, rectangular in shape, contained 9600 square feet. After a sidewalk 6 feet wide had been built on one side and the front, the area of the lot was reduced to 8316 ft^2. Find the original length and width.

20. A farmer is cutting grain around a field 60 rods long and 40 rods wide. How wide a strip must be cut so that 5 acres remain (160 sq rods = 1 acre)?

21. A picture 8 inches by 12 inches is placed in a frame of uniform width. If the area of the frame equals the area of the picture find the width of the frame.

22. A rectangular field 225 ft by 120 ft has a ring of uniform width cut around the outside edge. The ring leaves 65% of the field uncut in the center. What is the width of the ring?

23. A rectangular field 280 ft by 400 ft has a ring of uniform width cut around the outside edge. The ring leaves 40% of the field uncut in the center. What is the width of the ring?

24. One Saturday morning George goes out to cut his lot that is 100 ft by 120 ft. He starts cutting around the outside boundary spiraling around towards the center. By noon he has cut 60% of the lawn. What is the width of the ring that he has cut?

25. A frame is 15 in by 25 in and is of uniform width. The inside of the frame leaves 75% of the total area available for the picture. What is the width of the frame?

26. A farmer has a field 180 ft by 240 ft. He wants to increase the area of the field by 50% by cultivating a band of uniform width around the outside. How wide a band should he cultivate?

27.   The farmer in the previous problem has a neighbor who has a field 325 ft by 420 ft. His neighbor wants to increase the size of his field by 20% by cultivating a band of uniform width around the outside of his lot. How wide a band should his neighbor cultivate?

28.   A third farmer has a field that is 500 ft by 550 ft. He wants to increase his field by 20%. How wide a ring should he cultivate around the outside of his field?

29.   Donna has a garden that is 30 ft by 36 ft. She wants to increase the size of the garden by 40%. How wide a ring around the outside should she cultivate?

30.   A picture is 12 in by 25 in and is surrounded by a frame of uniform width. The area of the frame is 30% of the area of the picture. How wide is the frame?

31.   An ancient Mayan glyph is in the shape of two concentric rectangles. The dimensions of the inner rectangle are approximately 11 cm by 18 cm and makes up 60% of the total area. What are the outside dimensions of the glyph?

32.   A landscape architect is designing a rectangular flowerbed to be bordered with 28 plants that are placed 1 meter apart. He needs an inner rectangular space in the center for plants that must be 1 meter from the border of the bed and that require 24 square meters for planting. What should the overall dimensions of the flowerbed be?

33.   A homeowner has a backyard containing 2880 square meters and wants to build a pool with a surrounding tile walk that will occupy no more than one-third of the space, or 960 square meters. He finds a pool company that offers special low prices on rectangular pools. If he decides to build a rectangular pool that is twice as long as it is wide with a 4 meter tiled area surrounding it, what should the dimensions of the pool be?

34.   A school wishes to build a rectangular parking lot against the side of a building and enclose the other three sides with a brick wall. The budget will allow only enough money (for labor and materials) to build a 100 meter length of brick wall to enclose this lot. There is to be a 4 meter opening across at the center of the lot for entry and exit. It has been determined that the greatest area that can be enclosed under these conditions is 1352 square meters. What should the dimensions of the lot be in order to enclose this maximum area?

35.   A rectangular pool surrounded by a 3 meter boardwalk is to be built in a park. The space available requires that the outside perimeter of the walk be limited to 190 meters. If the surface area of the pool is to be 1590 square meters, what should be the dimensions of the pool?

36.   A store has an adjacent parking lot that has an area of 5000 ft^2. The city has required them to put a sidewalk 2.5 ft wide around the three sides next to the street. This will reduce the available area for parking by 10%. What are the current dimensions of the lot?

Answers

1.	6 m × 10 m	2.	5	3.	40 yd × 60 yd
4.	10 ft × 18 ft	5.	6 ×10	6.	20 ft × 35 ft
7.	25 yd × 48 yd	8.	6" × 6"	9.	6 yd × 7 yd
10.	10 × 20	11.	4 ft × 12 ft	12.	1.54 in
13.	3 in	14.	10 ft	15.	1.5 yd
16.	7 × 9	17.	9 × 11	18.	10 rods
19.	60' × 160'	20.	10 rods	21.	2 in
22.	15 ft	23.	60 ft	24.	20 ft
25.	1.25 in	26.	23.16 ft	27.	17.5 ft
28.	25 ft	29.	3 ft	30.	1.145 in
31.	15 cm × 22 cm	32.	6 m × 8 m	33.	16 m × 32 m
34.	26 m × 52 m	35.	30 m × 53 m	36.	62.5 ft × 80 ft
37.	100 ft × 300 ft	38.	3 ft × 5 ft	39.	4 ft × 5 ft
40.	5 ft × 13 ft				

37.   Montgomery's Market has a lot next to their store with an area of 30000 ft^2. They need to put a sidewalk 10 ft. wide around the three sides of the lot that abut the street. This will reduce the area of the lot by 16%. What are the original dimensions of the lot?

38.   The area of a rectangle is 15 ft^2. If the width is increased by 2 and the length is decreased by 2 then the area is still 15 ft^2. What are the dimensions of the rectangle?

39.   The area of a rectangle is 20 ft^2. If the width is decreased by 1 and the length is increased by 5 the new area is 30 ft^2. What are the dimensions of the rectangle?

40.   The area of a rectangle is 65 ft^2. If the width is decreased by 3 and the length is increased by 12 the new area is 50 ft^2. What are the dimensions of the rectangle?