

Name \_\_\_\_\_ Hour \_\_\_\_\_

*Solve the following problems. If necessary, round your answers to the nearest hundredth.*

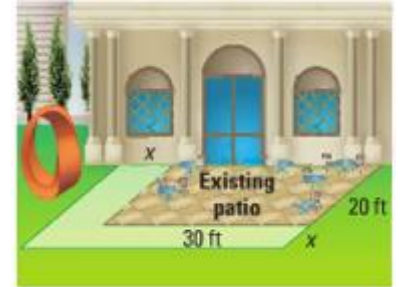
**WRITE YOUR ANSWERS IN SENTENCE FORM!**

1. A museum has a café with a rectangular patio. The museum wants to add 464 square feet to the area of the patio by expanding the existing patio as shown.

a.) Find the area of the existing patio.

b.) Write an equation that you can use to find the value of  $x$ .

c.) Solve the equation. By what distance  $x$  should the length and the width of the patio be expanded?



2. A city's skate park is a rectangle 100 feet long by 50 feet wide. The city wants to triple the area of the skate park by adding the same distance  $x$  to the length and width. Write and solve an equation to find the value of  $x$ . What are the new dimensions of the skate park?

3. A rectangular enclosure at a zoo is 35 feet long by 18 feet wide. The zoo wants to double the area of the enclosure by adding the same distance  $x$  to the length and the width. Write and solve an equation to find the value of  $x$ . What are the new dimensions of the enclosure?

4. At last year's school fair, an 18 foot by 15 foot rectangular section of land was roped off for a dunking booth. The length and width of the section will each be increased by  $x$  feet for this year's fair in order to triple the original area. Write and solve an equation to find the value of  $x$ . What is the length of rope needed to enclose the new section?

5. A rectangular deck for a recreation center is 21 feet long by 20 feet wide. Its area is to be halved by subtracting the same distance  $x$  from the length and the width. Write and solve an equation to find the value of  $x$ . What are the deck's new dimensions?

6. A grocery store wants to double the area of its parking lot by expanding the existing lot as shown. By what distance  $x$  should the lot be expanded?

