

TEKS *a.5, a.6, 2A.2.A; P.3.B*

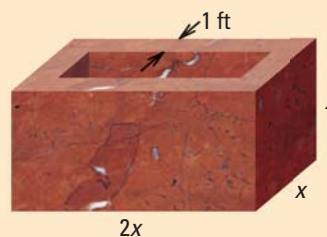


Another Way to Solve Example 6, page 356

MULTIPLE REPRESENTATIONS In Example 6 on page 356, you solved a polynomial equation by factoring. You can also solve a polynomial equation using a table or a graph.

PROBLEM

CITY PARK You are designing a marble basin that will hold a fountain for a city park. The basin's sides and bottom should be 1 foot thick. Its outer length should be twice its outer width and outer height.



What should the outer dimensions of the basin be if it is to hold 36 cubic feet of water?

METHOD 1

Using a Table One alternative approach is to write a function for the volume of the basin and make a table of values for the function. Using the table, you can find the value of x that makes the volume of the basin 36 cubic feet.

STEP 1 Write the function. From the diagram, you can see that the volume y of water the basin can hold is given by this function:

$$y = (2x - 2)(x - 2)(x - 1)$$

STEP 2 Make a table of values for the function. Use only positive values of x because the basin's dimensions must be positive.

STEP 3 Identify the value of x for which $y = 36$. The table shows that $y = 36$ when $x = 4$.

X	Y1
1	0
2	0
3	8
4	36
5	96

Y1=96

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Y1=96

► The volume of the basin is 36 cubic feet when x is 4 feet. So, the outer dimensions of the basin should be as follows:

- Length = $2x = 8$ feet
- Width = $x = 4$ feet
- Height = $x = 4$ feet