



Problem of the Week

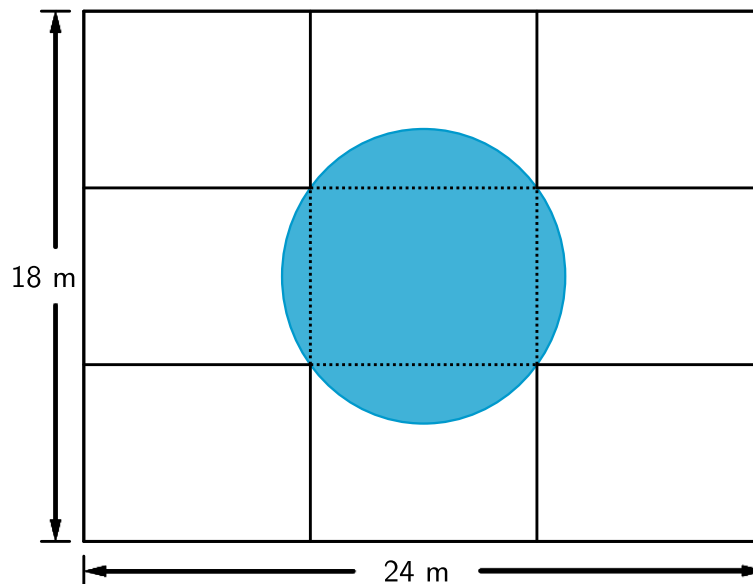
Problem C

Making a Splash!

A family has decided that they want to have a pool installed in their backyard. The city they live in has a by-law which states, “No pool may occupy more than 20% of the total area of the backyard in which it is to be installed.”

Their backyard is rectangular and measures 24 m by 18 m. The family creates a design in which they divide their backyard into a 3 by 3 grid of nine identical rectangles. The pool will be circular with the circumference of the pool passing through the four vertices of the middle rectangle. The middle rectangle will be completely covered by the pool. The distance across the pool through its centre will equal the length of the diagonal of the middle rectangle. Their plan is illustrated on the diagram below.

Should their plan be approved by the city?



You may find the following useful:

The *Pythagorean Theorem* states, “In a right-angled triangle, the square of the length of hypotenuse (the side opposite the right angle) equals the sum of the squares of the lengths of the other two sides.”

In the right-angled triangle shown, c is the hypotenuse and

$$c^2 = a^2 + b^2$$

