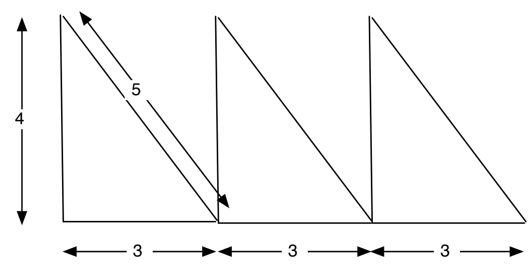

Figure 1.2: The Greek Parthenon is 69.5 meters longs, 30.88 meters wide and 13.72 meters tall, exactly the same proportions that you get if you take three 3x4 rectangles and lay them end to end as indicated. Note that the length of the diagonal of a 3x4 rectangle is 5.

ements, which captured the geometry of the 4th century B.C. Greeks. This was a tremendous achievement and provided fundamental insights and algorithms for a variety of different problems, both theoretical and practical.

A good example of how the Greeks viewed numbers as geometric lengths and ratios is provided by the Parthenon [115]. The Parthenon is 69.5 meters long, 30.88 meters wide, and 13.72 meters high. This means that the ratio of the width to the length is 30.88/69.5 or about 4/9, while the ratio of the height to the width is 13.72/30.88 or about 4/9. These are the dimensions you would get if you took three rectangles of length 3×4 and placed them side by side, as in the diagram below. Note that the diagonal of a 3×4 rectangle is of length 5, since by the Pythagorean Theorem $3 \times 3 + 4 \times 4 = 5 \times 5$.

Another significant advance in computing which is easy to take for granted is the introduction in the seventeenth century of symbols for unknown quantities, such as the variable x. With these types of symbols, equations such as 2.2 x = 32.8 could be easily represented, as could geometric objects such as the circles, ellipses, and hyperbolas.

Just as today's positional number system enables com-