3-4-6 Triangles and Parallelograms with Algebra

Practice: Use the formulas to find the dimensions. Draw the picture.

Triangle	**Parallelogram**	**Trapezoid**
Area **$A = \frac{1}{2} bh$** Perimeter **$P = a+b+c$** where b is the base and h is the perpendicular height. a,b and c are the lengths of the sides.	Area **$A = bh$** Perimeter $P =$ **$2b+2s$** where b is the base and s is the slant height. h is the perpendicular height.	Area **$A = \frac{1}{2} h(b_1 + b_2)$** Perimeter **$P = s_1+s_2+b_1+b_2$** where h is height, s_1, and s_2 are the slant heights, and b_1, b_2 are the bases.
a) A triangle on a quilt has a perimeter of 6 2/3 inches. Two sides measure 1 ½ and 3 inches. What is the measure of the third side?	Also on the quilt is a parallelogram with perimeter 42 cm and slant height 9cm. What is the length of the base?	The perimeter of a trapezoid with equal slant heights is 500 cm. The bases are 125 cm. and 210 cm. What is the slant height?
b) The area of a triangle with a base of 16 cm is 45 cm^2. What is the perpendicular height?	The area of the parallelogram above is 84 cm^2. What is the perpendicular height?	The area of the trapezoid above is 11725 cm^2. What is the perpendicular height?
c) The perimeter of a triangle is 14 $^2/_3$ in. One side is 5 $^1/_3$ and the other is 3 ¼ in. What is the length of the other side?	The height of a parallelogram is 3 ¾ in. The area is 15 ½ sqin. What is the length of the base?	The perimeter of a trapezoid is 20 $^3/_8$ in. The slant sides are equal and are 4 $^2/_5$ in each. One base is 7 inches. What is the length of the other base?
d) The area of a triangle is 14 2/3 sqin. If the height is 5 ½ in what is the length of the base?	A parallelogram has base 2 $^1/_3$ in and perimeter 8 $^1/_8$ in. What is the length of the slant height?	The bases of a trapezoid are 2 $^1/_5$ in. and 3 $^2/_3$ in. What is the height if the area is 12 ½ sqin.
e) The area of a right triangle is 1.4 m^2. The base is 0.25 m. What is the height of the triangle?	The perimeter of a parallelogram is 7 m. The slant sides are 0.23 m each. How long is the base?	A trapezoid is 15 m around. The bases are 2.5m and 3.71 m. One slant height is one meter less than the other. What are the lengths of the two slant heights?
f) One side of a triangle is 3 times that of another. The third side is 4 less than the long side. If the perimeter is 52 feet what are the dimensions of the triangle?	The length of a parallelogram is 2 more than twice the slant height. If the perimeter is 34 feet, what are the dimensions?	The sum of the slant heights of a trapezoid is 12 ft. shorter than the sum of the bases. One base is twice as long as the other. The perimeter is 42 feet. What are the lengths of the bases? Can you find the lengths of the slant heights?
g) The base of a triangle is 10 less than 5 times another side. The third side is 5 more than 2 times the shorter side. The perimeter is 91 in. Find the lengths of the sides.	The slant height of a parallelogram is 5 more than 3 times the base. The perimeter is 74 inches. What is the length of each side?	One base is four more than three times as long as the other in a trapezoid. Both slant heights are half as long as the long side. The perimeter is 22in. What are the dimensions of the trapezoid?