**For Problems 71–86, set up an equation and solve each**

**Solve By Factoring – Word Problems**

**problem.**

71. Find two numbers whose product is 15 such that one of the numbers is seven more than four times the other number.

*-5 & -3 or 5/4 & 12*

72. Find two numbers whose product is 12 such that one of the numbers is four less than eight times the other number.

*3/2 & 8 or -1 & -12*

73. Find two numbers whose product is -1. One of the numbers is three more than twice the other number.

*-1/2 & 2 or -1 & 1*

74. Suppose that the sum of the squares of three consecutive integers is 110. Find the integers.

*-7, -6, & -5 or 5, 6, & 7*

75. One number is one more than twice another number. The sum of the squares of the two numbers is 97. Find the numbers.

*-24/5 & -43/5 or 4 & 9*

76. One number is one less than three times another number. If the product of the two numbers is 102, ﬁnd the numbers.

*-17/3 & -18 or 6 & 17*

77. In an ofﬁce building, a room contains 54 chairs. The number of chairs per row is three less than twice the number of rows. Find the number of rows and the number of chairs per row.

*6 rows & 9 chairs per row*

78. An apple orchard contains 85 trees. The number of trees in each row is three less than four times the number of rows. Find the number of rows and the number of trees per row.

*5 rows with 17 trees per row*

79. Suppose that the combined area of two squares is 360 square feet. Each side of the larger square is three times as long as a side of the smaller square. How big is each square?

*6 feet by 6 feet and 18 feet by 18 feet*

80. The area of a rectangular slab of sidewalk is 45 square feet. Its length is 3 feet more than four times its width. Find the length and width of the slab.

*Width of 3 feet and length of 15 feet*

81. The length of a rectangular sheet of paper is 1 centimeter more than twice its width, and the area of the rectangle is 55 square centimeters. Find the width and length of the rectangle.

*5 cm by 11 cm*

82. Suppose that the length of a certain rectangle is three times its width. If the length is increased by 2 inches and the width increased by 1 inch, the newly formed rectangle has an area of 70 square inches. Find the width and length of the original rectangle.

*4 inches by 12 inches*

83. The area of a triangle is 51 square inches. One side of the triangle is 1 inch less than three times the length of the altitude to that side. Find the length of that side and the length of the altitude to that side.

*Side is 17 inches, altitude is 6 inches*

84. Suppose that a square and a rectangle have equal areas. Furthermore, suppose that the length of the rectangle is twice the length of a side of the square, and the width of the rectangle is 4 centimeters less than the length of a side of the square. Find the dimensions of both ﬁgures.

*16 cm by 4 cm and 8 cm by 8 cm*

85. The sum of the areas of two circles is 180p square inches. The length of a radius of the smaller circle is 6 inches less than the length of a radius of the larger circle. Find the length of a radius of each circle.

*12 inches and 6 inches*

86. The sum of the areas of two circles is 100p square centimeters. The length of a radius of the larger circle is 2 centimeters more than the length of a radius of the smaller circle. Find the length of a radius of each circle.

*6 cm and 8 cm*