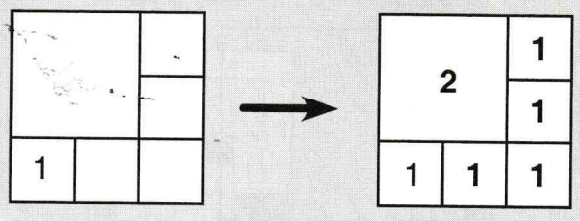
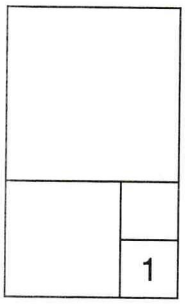
Grogg has dissected the rectangles below into squares with whole-number side lengths. Some of the squares below have been labeled with their side lengths.

EXAMPLE | Use the labeled squares to label the side lengths of the other squares.

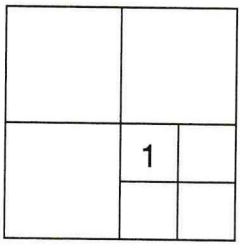


PRACTICE | Use the labeled squares to label the side lengths of the other squares.

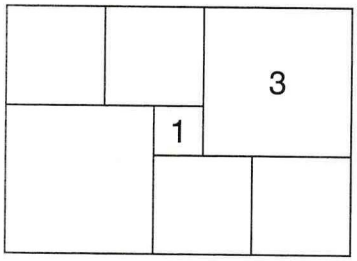
70.



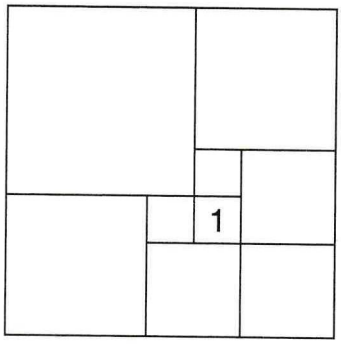
71.



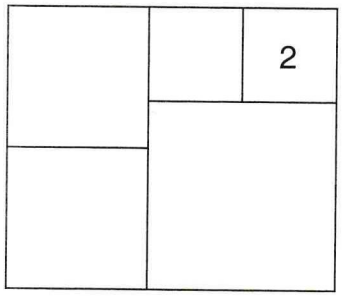
72.



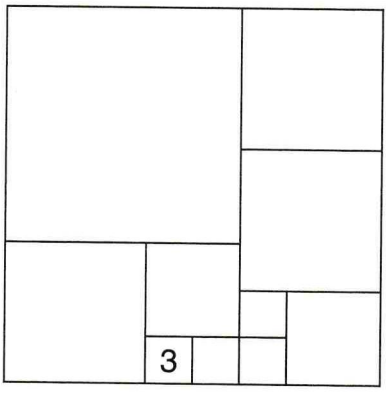
73.



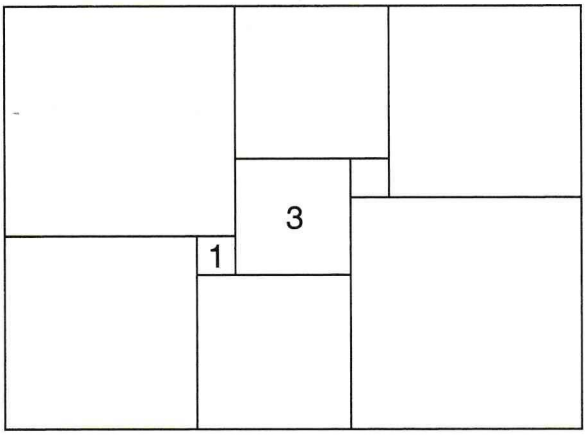
74.



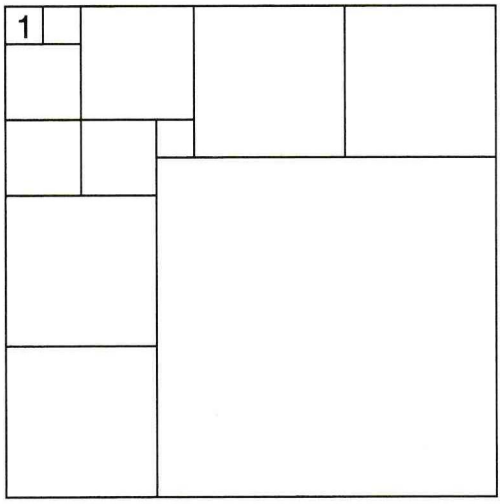
75.



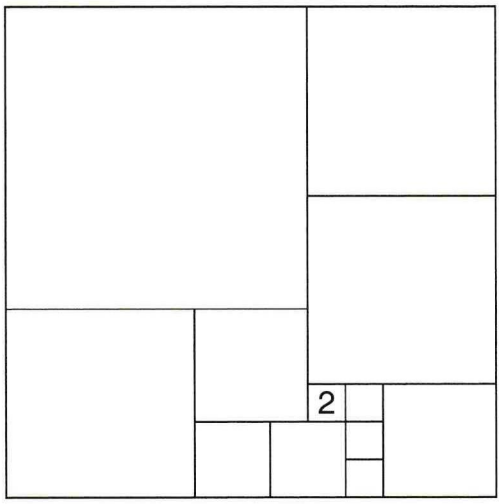
76.



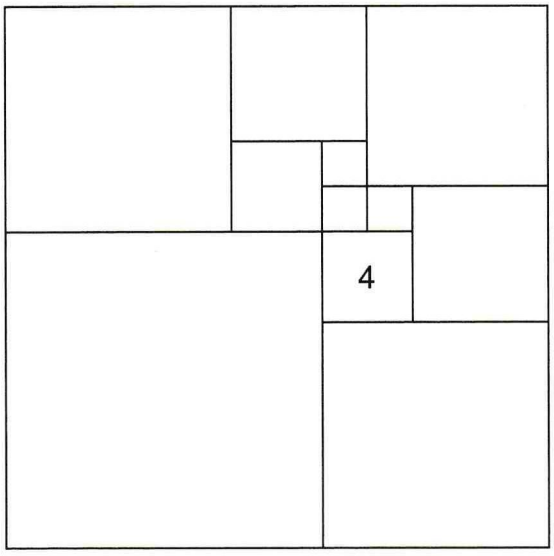
77.



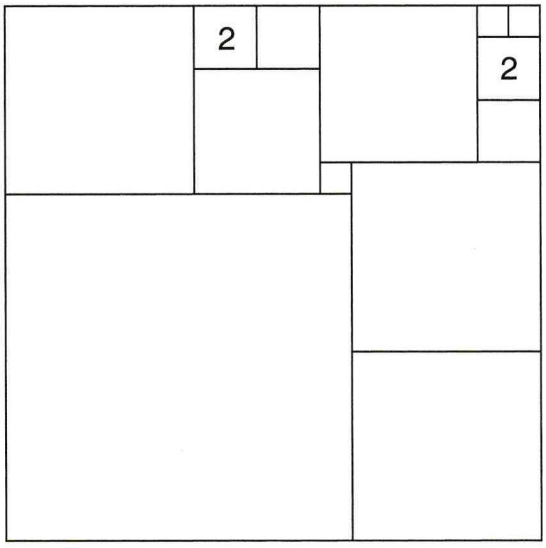
78.



79.



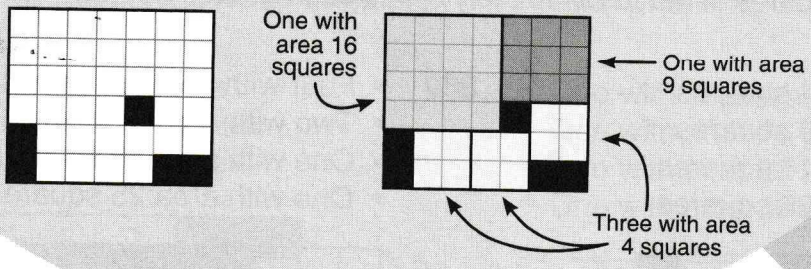
80.



Alex is arranging big squares in the grids below.
The black sections cannot have squares placed on or over them.

EXAMPLE | Arrange all of the big squares listed to completely cover the grid below.

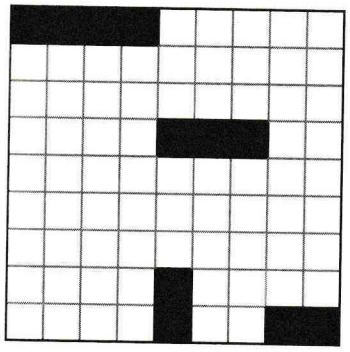
- Three with area 4 squares
- One with area 9 squares
- One with area 16 squares



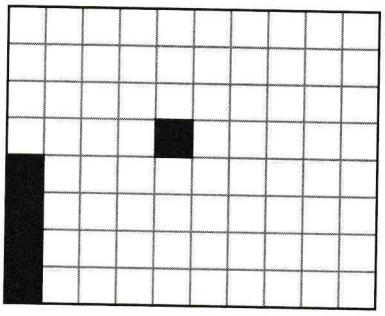
PRACTICE | For the problems below, arrange all of the squares listed to completely cover each grid.

You can print more copies of these square-arrangement puzzles at BeastAcademy.com.

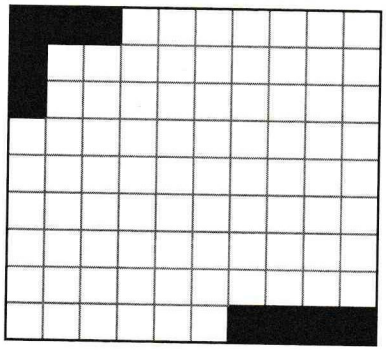
81.
- Five with area 4 squares
- Two with area 9 squares
- Two with area 16 squares



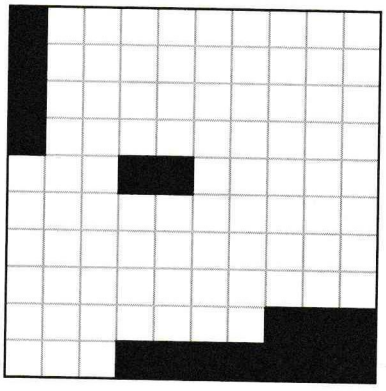
82.
- Two with area 9 squares
- Two with area 16 squares
- One with area 25 squares



83.
- One with area 4 squares
- One with area 9 squares
- Two with area 16 squares
- One with area 36 squares

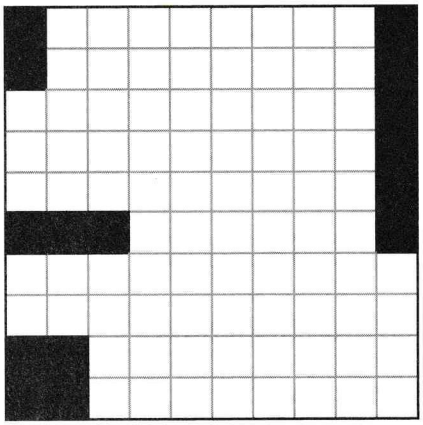


84.
- Three with area 9 squares
- Two with area 16 squares
- One with area 25 squares

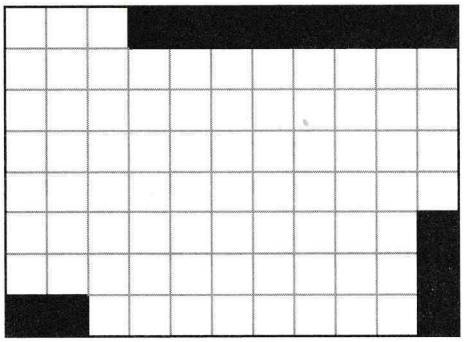


PRACTICE For the problems below, arrange all of the squares listed to completely cover each grid.

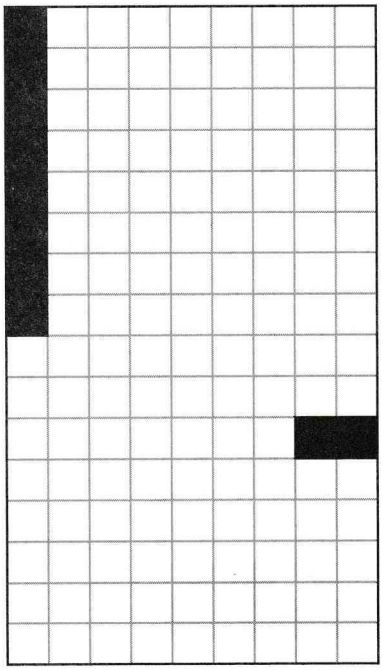
85.
- Two with area 4 squares
- One with area 9 squares
- Two with area 16 squares
- One with area 36 squares



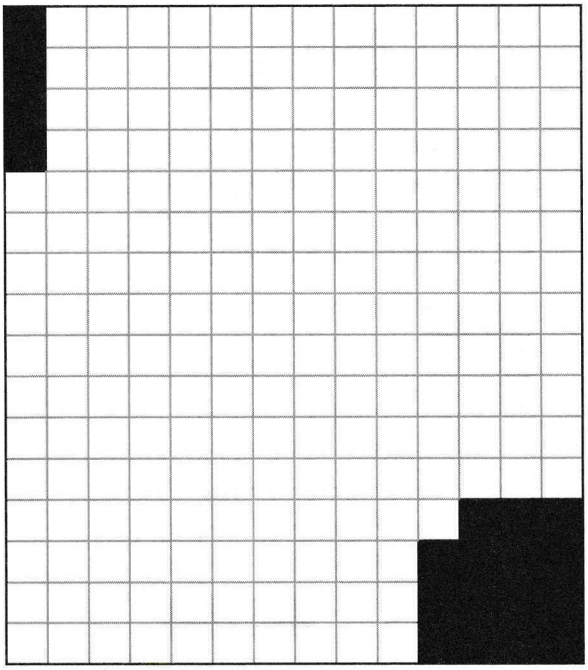
86.
- Four with area 4 squares
- Two with area 9 squares
- One with area 16 squares
- One with area 25 squares



87.
- One with area 4 squares
- One with area 9 squares
- Two with area 16 squares
- One with area 25 squares
- One with area 64 squares



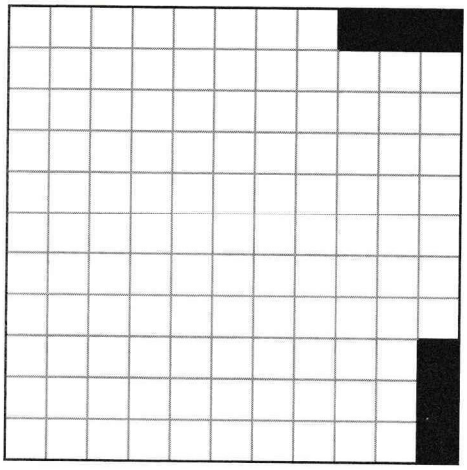
88.
- Two with area 9 squares
- Two with area 16 squares
- One with area 25 squares
- One with area 49 squares
- One with area 81 squares



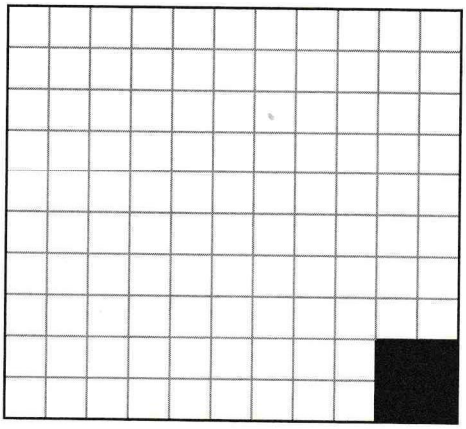
PRACTICE

For the problems below, arrange all of the squares listed to completely cover each grid.

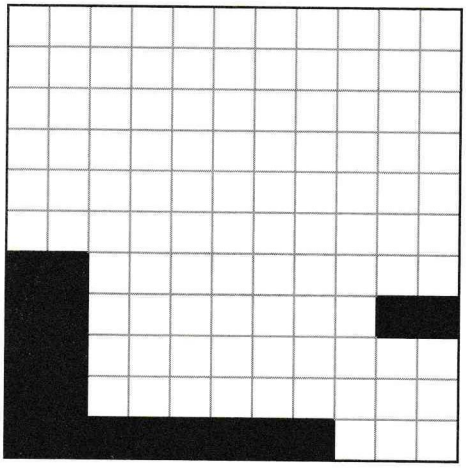
89.
- Two with area 9 squares
- Three with area 16 squares
- One with area 49 squares



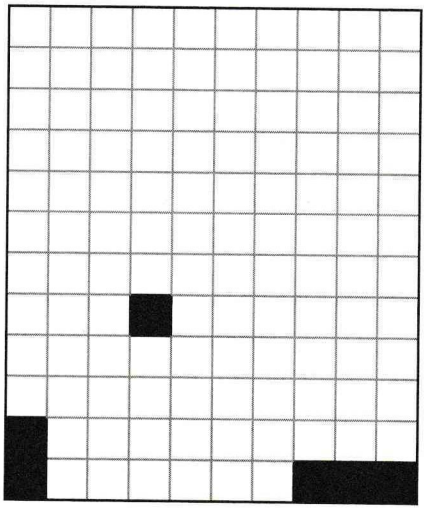
90.
- One with area 4 squares
- One with area 16 squares
- Two with area 25 squares
- One with area 36 squares

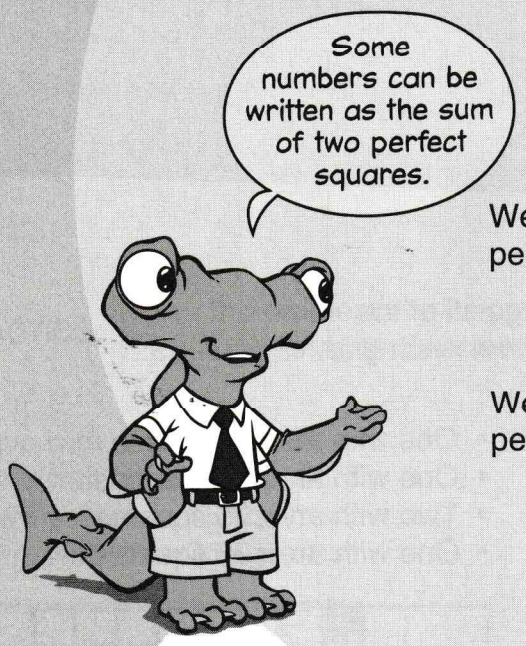


91.
- Two with area 4 squares
- Two with area 9 squares
- One with area 16 squares
- One with area 25 squares
- One with area 36 squares



92. ★
- Three with area 4 squares
- Four with area 9 squares
- One with area 16 squares
- Two with area 25 squares





We can write 98 as the sum of two perfect squares:

$$98 = \mathbf{49+49}.$$

We can write 50 as the sum of two perfect squares in two ways:

$$50 = \mathbf{49+1} \text{ and } 50 = \mathbf{25+25}.$$

PRACTICE | Write each number below as the sum of two perfect squares.

93. $20 =$ _____ + _____

94. $17 =$ _____ + _____

95. $90 =$ _____ + _____

96. $37 =$ _____ + _____

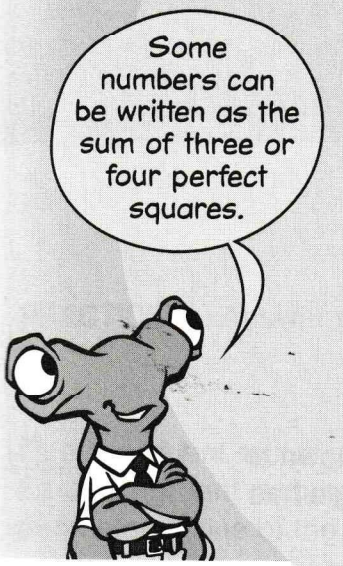
97. $41 =$ _____ + _____

Write each number below as the sum of two perfect squares in ***two ways***:

98. $65 =$ _____ + _____ and $65 =$ _____ + _____

99. $85 =$ _____ + _____ and $85 =$ _____ + _____

Adding Squares



We can write 14 as the sum of three perfect squares:

$14 = \mathbf{9+4+1}$.

We can write 77 as the sum of three perfect squares in ***two*** ways:

$77 = \mathbf{64+9+4}$ and
$77 = \mathbf{36+25+16}$.

We can write 7 as the sum of four perfect squares:

$7 = \mathbf{4+1+1+1}$.

PRACTICE | Write each number below as the sum of three perfect squares:

100. $6 =$ _____ + _____ + _____

101. $22 =$ _____ + _____ + _____

102. $24 =$ _____ + _____ + _____

103. $56 =$ _____ + _____ + _____

104. $70 =$ _____ + _____ + _____

105. $91 =$ _____ + _____ + _____

Write each number below as the sum of three perfect squares in ***two*** ways:

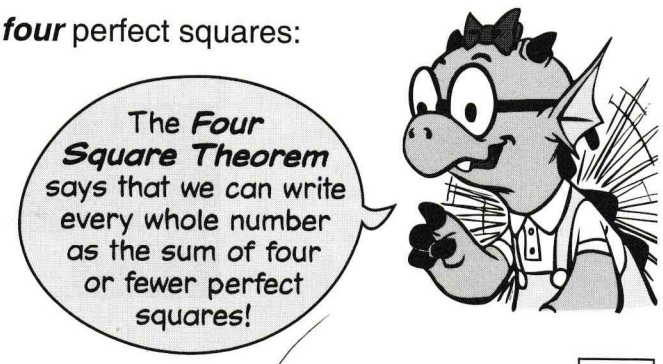
106. $33 =$ _____ + _____ + _____ and $33 =$ _____ + _____ + _____

107. $62 =$ _____ + _____ + _____ and $62 =$ _____ + _____ + _____

These numbers can be written as the sum of ***four*** perfect squares:

108. $15 =$ _____ + _____ + _____ + _____

109. $23 =$ _____ + _____ + _____ + _____

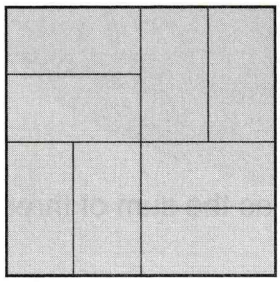


PERFECT SQUARES

PRACTICE | Answer each problem below.

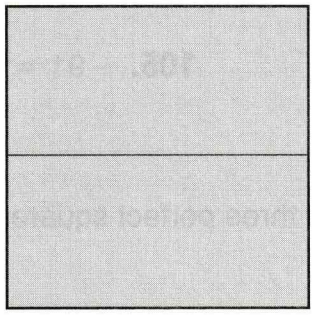
110. Eight congruent rectangles are arranged as shown to make a square. The short side of each rectangle has length 15. What is the area of the square?

110. _____



111. Two congruent rectangles are attached as shown to create a square with perimeter 200. What is the area of one of the congruent rectangles?

111. _____



112. Alex attaches 7 rectangles as shown to make a square. The three shaded rectangles are congruent, and the four white rectangles are congruent. The short side of each shaded rectangle has length 1. What is the length of the long side of one shaded rectangle?

112. _____