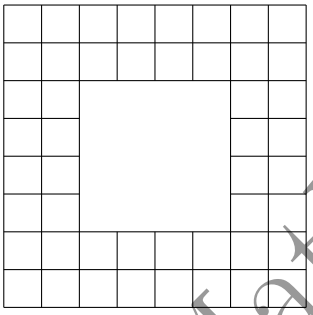
3.2 Basic counting practices (part 5)

1. How many squares are determined by the grid lines shown below if the 48 smaller quadrilaterals are congruent squares?



2. A $5 \times 5 \times 5$ wooden cube is painted blue on all faces and then broken up into 125 smaller cubes. How many of these smaller cubes are painted on 0 faces? 1 face? 2 faces? 3 faces? 4 faces?

3. What is the maximum number of points of intersection among 2 circles, a square and 3 lines?

4. Bob has a choice of toppings for his ice cream. He must choose one of caramel, hot fudge, and marshmallow, two of pecans, walnuts, and almonds, and three of strawberry, M&Ms, Butterfinger, sprinkles, and Snickers.

   (a) How many different ice cream cones could he get?

   (b) Bob decides that he does not want to get both walnuts and caramel at the same time. How many different ice cream cones could Bob get?

5. How many different 5-letter codes can be made by using each of the letters in the word `HELLO` exactly once?

6.4 Practice problems on statistical terms (part 4)

1. Tamara knows that the arithmetic mean of her five quiz scores is 95%. However, she has misplaced one of these quizzes. The ones she can find have scores of 100%, 100%, 99% and 98%. What is her score on the misplaced quiz?

2. Alula has the following quiz scores: 17, 10, 9, 14, 16, 8 and 10. What must the sum of her next three quiz scores be in order to have an overall average of 14?

3. Joshua has taken four tests. His median score is 80 points and the difference between his greatest score and his least score is 12 points. What is the maximum possible value of the mean of his scores?

4. A set of 7 positive integers has a unique mode of 1, a mean of 5 and a median of 6. What is the largest possible value for any of the integers in the set?

5. What is the arithmetic mean of all of the positive two-digit integers with the property that the integer is equal to the sum of its first digit plus its second digit plus the product of its two digits?