Chapter 1 Problems

1. Ten chairs are placed in a row; four are labelled with “G”; four are labelled with “B”; the other two are unlabelled. What is the sample space?
   [Food for thought (this not required!)—How many outcomes are in the sample space?]
2. A painter has twelve jars of paint available, exactly one of which is purple. She wants to paint something abstract! So she blindfolds herself, randomly dips her brush, and paints on the canvas. She has an unlimited supply of paint and continues trying paint jars until she finally gets some purple onto the canvas. What is the sample space, if she does not repeat any of the jars? What is the sample space if she allows repetitions?
3. A point is chosen at random inside in the following triangle (the boundary of the triangle is allowed too). What is the sample space? [Please give mathematical expression(s), rather than just saying \((x, y)\) is “in the triangle”.

A point is chosen at random inside the following quadrilateral (again, the boundary is allowed too). What is the sample space? Hint: It might be helpful to give bounds on the \(x\) coordinate and then give bounds on the \(y\) coordinate.
4. On Monday morning, August 16, a student waits for the phone to ring. Each time
the phone rings, the student answers the phone, hangs up immediately, and begins to wait
again. This student is diligent and is willing to wait night and day. On Monday morning,
August 23, the student finally stops (and goes to HONR 399). What is the sample space
that describes the set of times in between the phone calls (i.e., between each call)?
5. Create your own scenario. Describe the problem and the related sample space.
6. Create another scenario. Describe the problem and the related sample space.