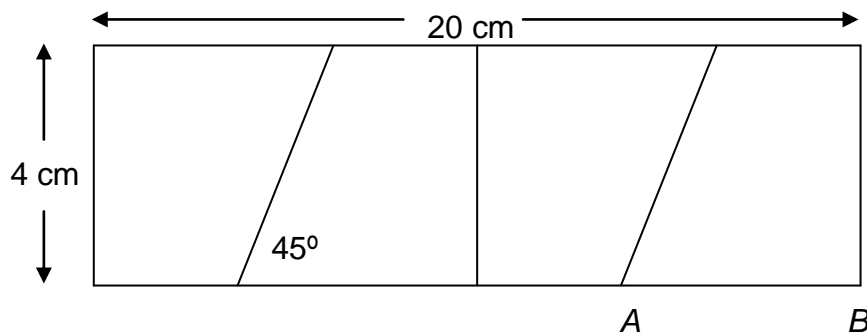
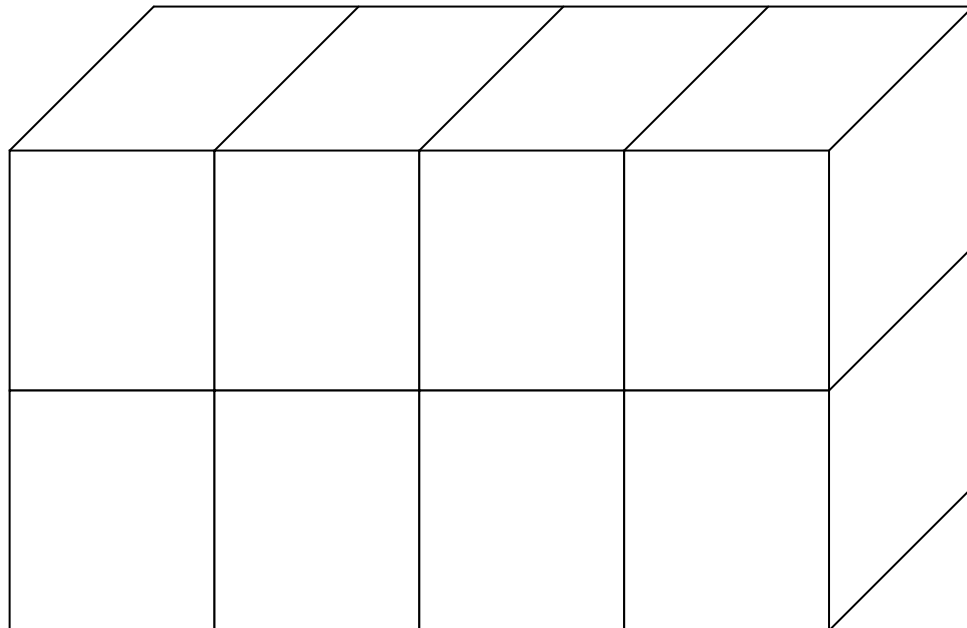


- Suppose we have three jars, each containing marbles. One jar contains only blue marbles, one only red marbles, and another contains a mixture of both red and blue marbles. It is known that each jar is labeled incorrectly. How can we place our arm in only one container without looking, pick out of it one marble, and deduce immediately how to re-label each container correctly?
- I have two empty buckets with no markings in my hand, one with a three-gallon capacity and the other with a five-gallon capacity. How can I walk to a nearby stream with these two buckets and return with exactly one gallon of water?
- Determine the distance from A to B if each of the smaller four diagrams in the following picture are congruent (believe the numbers, not the image):



- Eight cubes are collected to create a larger rectangular solid as depicted in the following picture. Each cube has only one face painted. What is the smallest portion of the exterior of the rectangular solid that can be painted? What is the greatest portion of the exterior of the rectangular solid that can be painted?



- What is the probability that at least two of us have the same birthday?