In a certain lava plain on the Moon, there are about 7,000 impact craters larger than 1 kilometer in diameter per million square kilometers of surface area. The age, determined from radioisotope dating, of the lava in this plain is about 3.2 billion years. In all parts of this problem, craters larger than 1 kilometer in diameter are meant.

(a) If a square has an area of a million square kilometers, what are the lengths of its sides?

(b) Find the average formation rate of craters larger than 1 kilometer in diameter on the Moon during the past 3.2 billion years. That is, how many craters of this size have formed, per million years, per million square kilometers?

(c) Now assume the same crater formation rate applies to Mars. In a heavily crater-covered upland region of Mars, 3000 craters per million square kilometers are counted. Estimate the age of this region.

(d) In another region of Mars, only 10 craters per million square kilometers are found. Estimate the age of this region.

(e) Now you learn that the rate of crater formation on Mars is 1.6 times greater than that on the Moon. In general, how will this information change your answers to parts (c) and (d)?