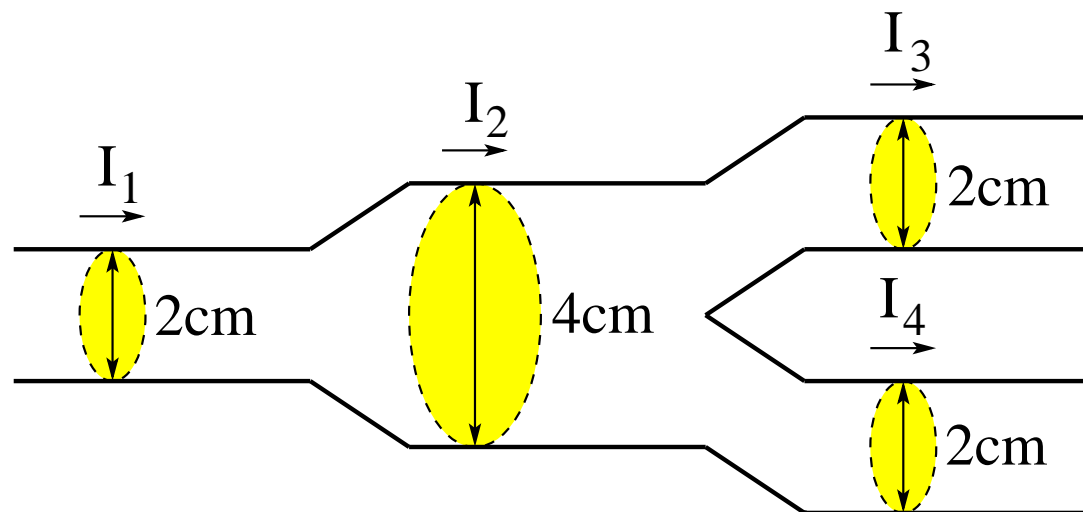A steady current I is flowing through a wire from left to right. The wire first doubles its diameter and then splits into two wires of the original diameter. Both branches on the right carry the same current.

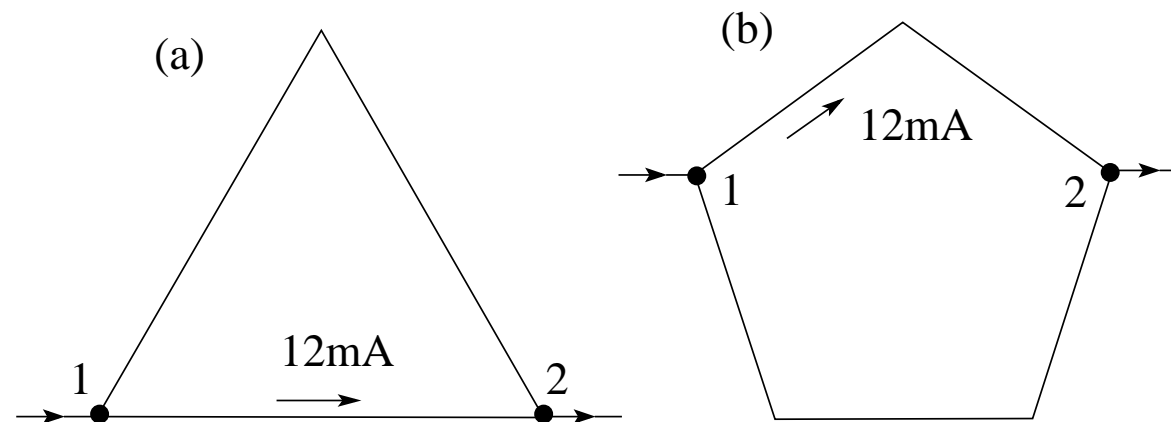Rank the current densities $J_1, J_2, J_3 = J_4$ in the three segments.

Two wires are formed into

(a) an equilateral triangle,

(b) a regular pentagon.

A voltage between points 1 and 2 produces a current of 12mA along the shorter path.

What is the current along the longer path in each case?

Consider three wires made of the same material.

Wire 1 of length 2m and diameter 2mm has a resistance 18Ω.

(a) What resistance does wire 2 of length 4m and diameter 4mm have?

(b) How long is wire 3 of diameter 6mm with a resistance of 18Ω?