The minute hand of a clock is 10 cm long. Find its displacement and the distance covered from 10 am to 10:30 am.

Solution:

From the time 10 am to 10:30 am minute hand rotates 180 degrees from the 0 minutes position to 30 minutes position.

Hand displacement equals twice the length of hand (hand turned in the opposite position):

$$S = 2 * R = 2 * 10 \; cm = 20 \; cm$$

Distance covered from 10 am to 10:30 ($\alpha = 180^o = \pi$):

$$L = R * \alpha(rad) = 10cm * \pi = 10cm * 3.14 = 31.4 \; cm$$

Answer: Displacement: $20 \; cm$

Distance: $31.4 \; cm$