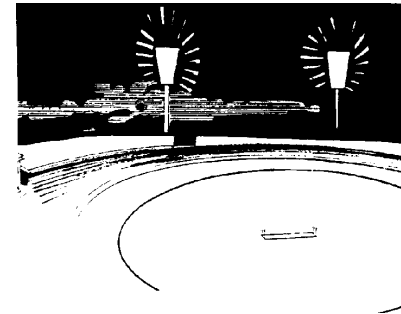
Sports Lights

A sports ground is approximately a circle of 156 metres diameter. At the edge of the circle, light towers are to be erected for night-time events at the ground. The lights are 64 metres high. At night a person 185 cm tall stands in the middle of the field.



(a) How long will the person's shadow be?

(b) What happens to the length of shadow (l) as;

(i) the size of the ground (s) changes;

(ii) the height of the tower (h) changes

(iii) using two appropriate graphs, show the changes to the length of the shadow in relation to the ground and tower.