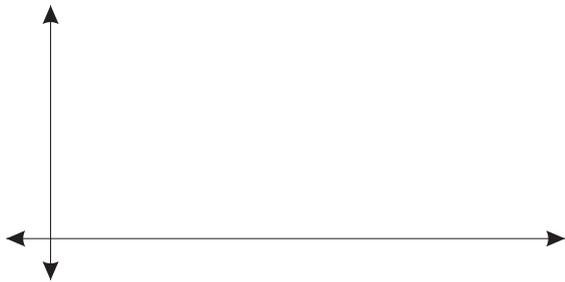


Name: _____

1. A footballer kicks a ball that follows a parabolic trajectory. The ball just clears a 25 m high pole at the top of its trajectory. The pole is 30 m from the footballer.

(a) Draw the ball's trajectory on the coordinate axes below using the origin as the point where the ball was kicked. Clearly show all known points.

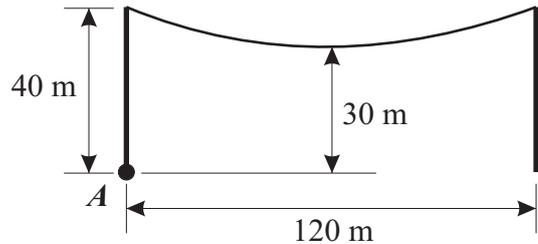


(b) Find the equation of the trajectory in turning point form:

$$y = a(x - h)^2 + k$$

(c) Find the height of the ball 24 metres from where it was kicked.

2. A cable hangs between two pylons. The pylons are 40 metres high and 120 metres apart. The lowest point of the cable is 30 metres above the ground.



(a) Using point *A* as the origin, find the equation of the parabolic shape of the cable in turning point form.

(b) Find the height of the cable above the ground for the following distances from *A*. Give answers correct to one decimal place.

(i) 10 m

(ii) 70 m