



Nelson's Column is the focal point of Trafalgar Square. Admiral Nelson was one of Britain's best-loved heroes, who fought valiantly for his country and won four notable naval battles, at the personal cost of losing an arm and one eye. Nelson's last and most famous battle was fought off the Spanish cape of Trafalgar on October 21st, 1805, when he defeated Napoleon and the French and Spanish fleets, but during which he lost his life, dying aboard H.M.S. Victory.

Begun in 1840, it took three years to erect this magnificent memorial. The granite column is 151 feet high surmounted by a statue of Lord Nelson. At the base are four bronze relief panels cast from armaments captured from the French. At the four corners of the monument sit the superb lions.

<http://www.aboutbritain.com/NelsonsColumn.htm>

and Wikipedia

Read the following extract from the book "Why Do Buses Come in Threes?"<sup>1</sup> and answer the questions.

1 If you stand near the base of the plinth and strain your neck you can  
2 see all of Nelson but he will appear stunted because the viewing angle is  
3 small. So you start to walk backwards, avoiding other tourists, and pi-  
4 geons. As you do, you begin to get a better view of the admiral because  
5 the angle increases. However this doesn't go on indefinitely. As you re-  
6 treat down Whitehall, you get a better side-on view of the statue but he  
7 becomes so remote that you begin to need binoculars to see him. There  
8 is an optimal point somewhere in your walk at which Nelson presents  
9 himself at the largest possible angle.

## I. A few conversions

At the top of its column, Nelson's statue measures 18 feet.  
1 foot is equal to 0.3048 metres.

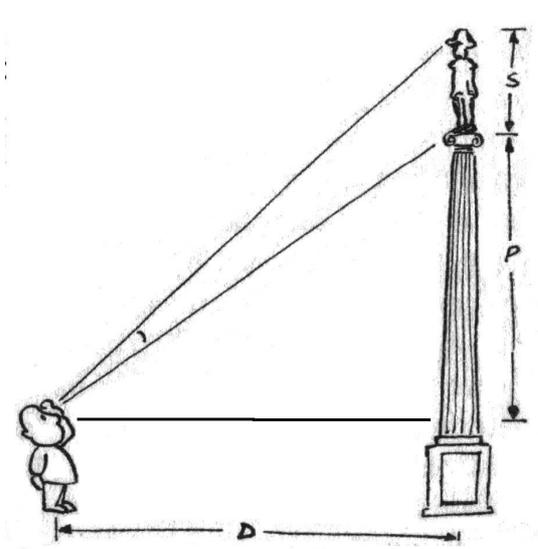
---

1. Rob Eastaway & Jeremy Wyndham

1. Give the size of the column and the statue in metres.
2. Trafalgar square measures about  $100 \text{ m} \times 100 \text{ m}$ .  
How many square feet does that make?

## II. Finding $\theta$

1. Describe the sketch bellow.  
Give the values of  $P$  and  $S$  (in feet).



2. Suppose you are standing 100 feet away from the statue ( $D = 100$ ).
  - a) Can you work out the angles  $\alpha$  and  $\beta$ ?
  - b) In that case what is the value of  $\theta$ ?
3. Same questions if you stand 200 feet away from the statue.
4. Same questions if you stand 300 feet away from the statue.

## III. How far back should one stand?

The book says :

The formula for the distance  $D$  to stand from a statue of height  $S$  and a plinth height  $P$  is :

$$D = \sqrt{S \times P + P^2}$$

Find out how far away one should stand to have the best possible view.  
Round off your result to one decimal place.

#### IV. Where is that on the map ?

Find a few places on the map where you could stand to have the best view of Admiral Nelson.

