

DISTANCES OF MELBOURNE LANDMARKS

Task: Estimate the distance of some of Melbourne's iconic landmarks from the 88th floor of the Eureka Skydeck.

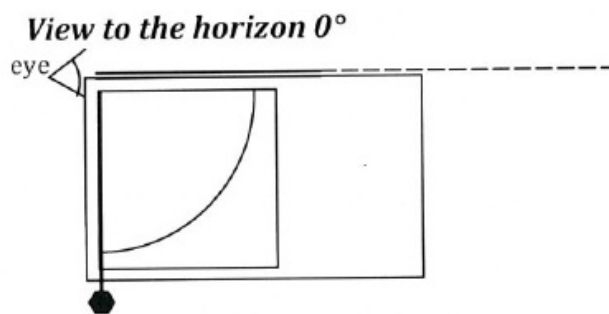
For this activity you will need a scientific calculator and angle measurer.

NOTE: Angle measurers will be provided by the Eureka Skydeck.

Instructions:

Step 1: Find the landmark by using the viewfinders located around the edge of the Skydeck.

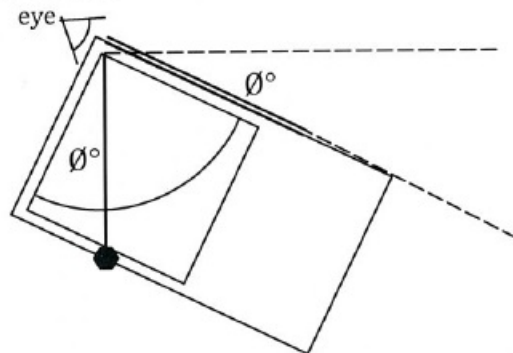
Step 2: Stand near the window and hold the angle measurer as shown.



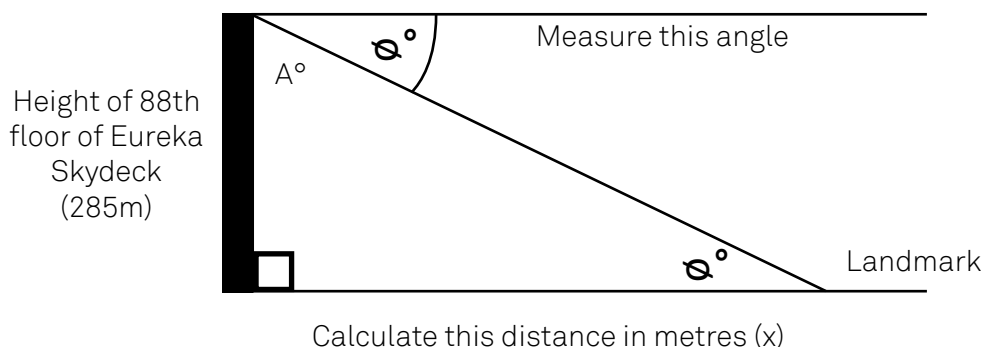
When the top of the angle measurer points to the horizon the angle will read 0°

Step 3: Lower the angle measurer so that it is pointed downwards to the landmark as shown.

Measure an angle of depression θ°



As the angle measurer is pointed downwards to the landmark the angle of depression can be read.



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Step 4: Before you can calculate the distance you need to work out the final angle in the triangle.

$$90^\circ - \alpha^\circ = A^\circ$$

Step 5: Using the information you now have you can calculate the distance to the landmark using the following formula:

The tangent of the angle = $\frac{\text{length of the opposite side}}{\text{length of the adjacent side}}$

$$\tan \alpha^\circ = \frac{\text{Distance to the landmark}}{\text{height of observation deck (285m)}}$$

Step 6: You then need to re-arrange the sum to calculate the distance.

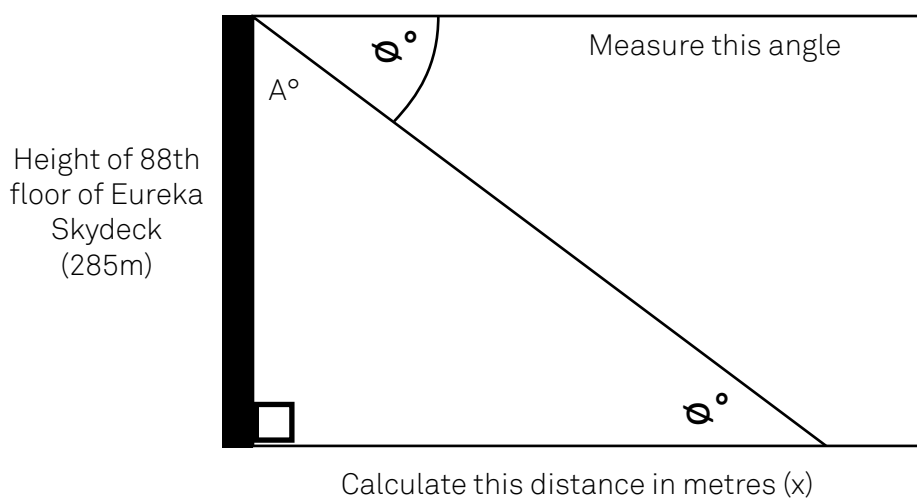
$$\text{Distance to the landmark} = \text{height of observation deck (285m)} \times \tan \alpha^\circ$$

Use the instructions to find the distance from the Eureka Skydeck to the following landmarks. Estimate the tan value and use your calculator if needed.

For convenience you have been provided simplified tan tables.

Angle°	0	5	10	15	20	25	30	35	40	45	50
Tangent	0.000	0.875	0.176	0.268	0.364	0.466	0.577	0.700	0.839	1.000	1.192

Question 1: Find the distance to Westgate Bridge (#5)

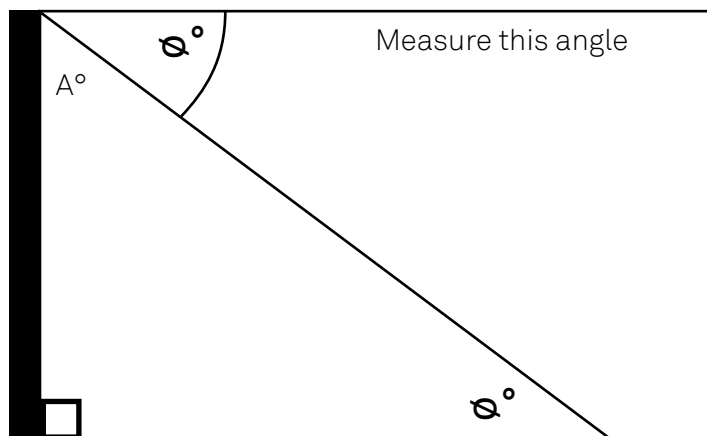


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Question 2: Find the distance to Albert Park Lake & Reserve (#2)

Height of 88th floor of Eureka Skydeck (285m)

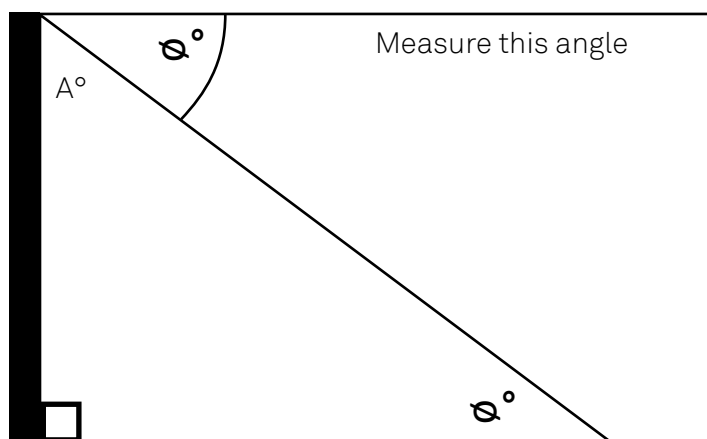


Calculate this distance in metres (x)



Question 3: Find the distance to Shrine of Remembrance (#29)

Height of 88th floor of Eureka Skydeck (285m)

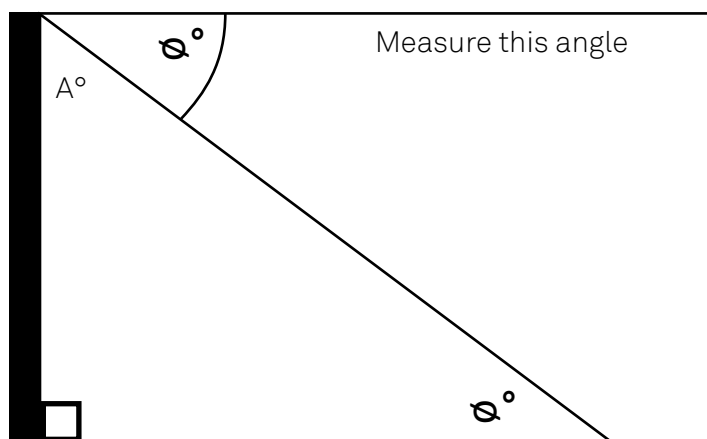


Calculate this distance in metres (x)



Question 4: Find the distance to Flinders Street Station (#19)

Height of 88th floor of Eureka Skydeck (285m)



Calculate this distance in metres (x)

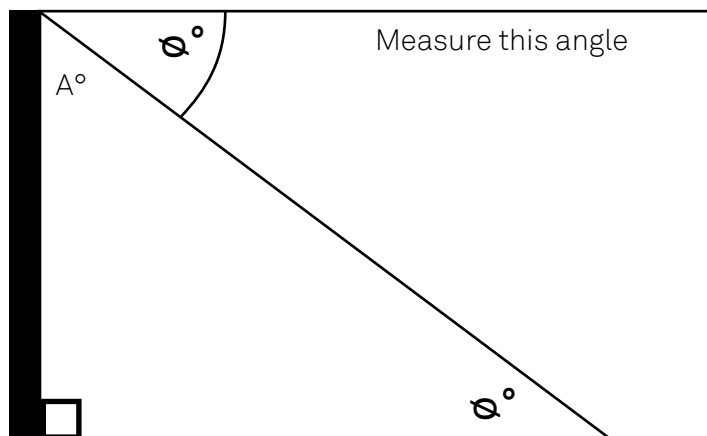


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Question 5: Find the distance to National Gallery of Victoria (#26)

Height of 88th floor of Eureka Skydeck (285m)



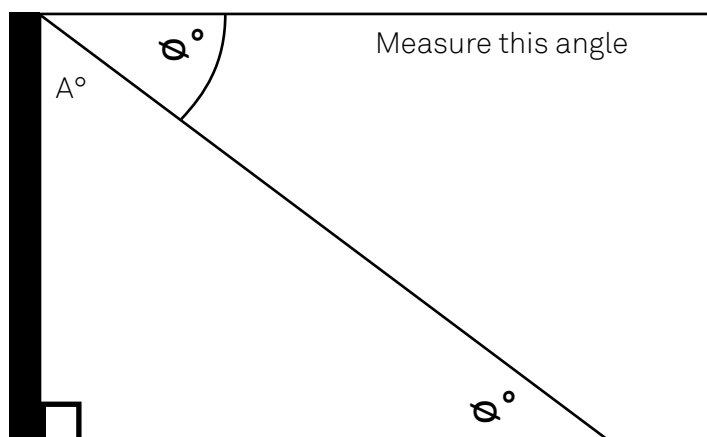
Measure this angle

Calculate this distance in metres (x)



Question 6: Find the distance to Flemington Racecourse (#12)

Height of 88th floor of Eureka Skydeck (285m)



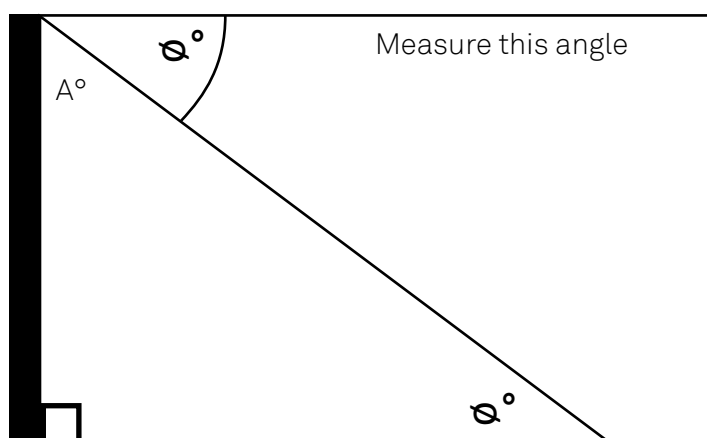
Measure this angle

Calculate this distance in metres (x)



Question 7: Find the distance to Federation Square (#24)

Height of 88th floor of Eureka Skydeck (285m)



Measure this angle

Calculate this distance in metres (x)

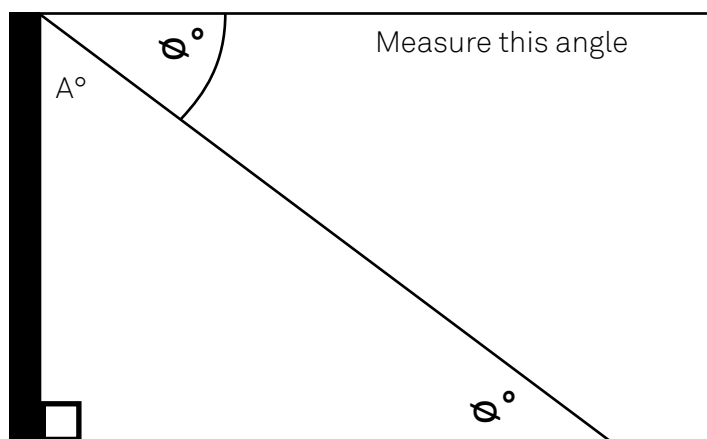


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Question 8: Find the distance to Sea Life Melbourne Aquarium (#11)

Height of 88th floor of Eureka Skydeck (285m)

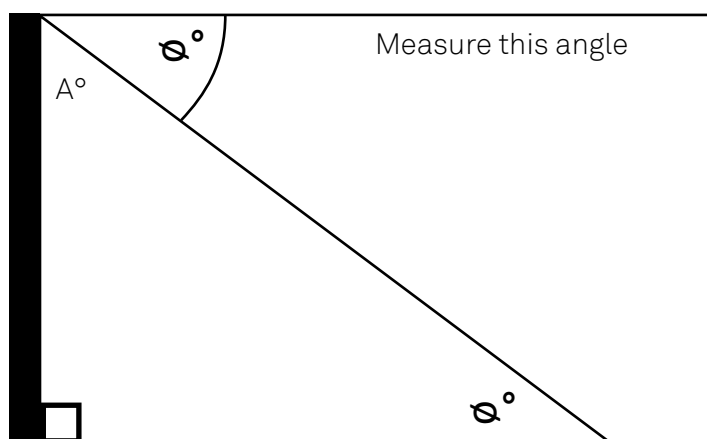


Calculate this distance in metres (x)

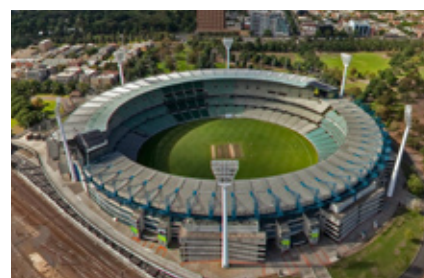


Question 9: Find the distance to Melbourne Cricket Ground (#27)

Height of 88th floor of Eureka Skydeck (285m)

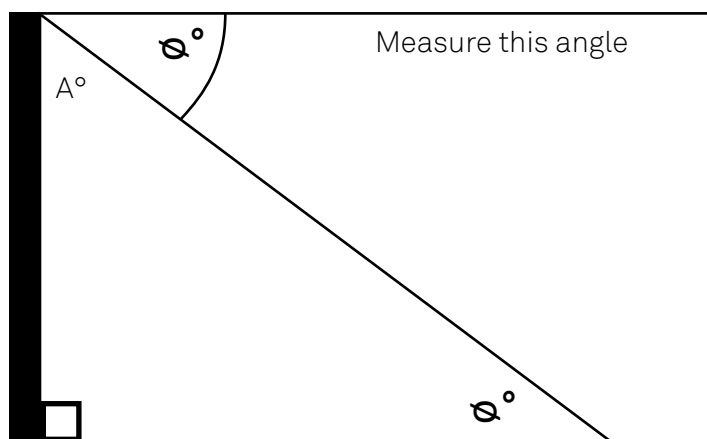


Calculate this distance in metres (x)

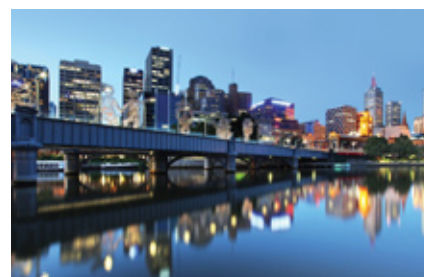


Question 10: Find the distance to Sandridge Bridge (#14)

Height of 88th floor of Eureka Skydeck (285m)



Calculate this distance in metres (x)



Extension:

Confirm the distance using a scale map of Melbourne and surrounds.