

This Resource:

Includes a teacher guide & student worksheet activities

Contributes to:

Stage 2 (Years 3-4)

- **HS2-GE0-01** - describes how people connect to, use and value places and environments
- **HS2-GE0-02** - explains how people influence places, including design and construction
- **HS2-GE0-03** - uses geographical tools (maps, observation, sketching) to investigate places

Teacher Resource Guide

Designing & Exploring Towers

In this resource, students investigate famous towers from around the world and explore the built environment of Sydney through observation, mapping and design-based thinking. Students examine how buildings are constructed, the purpose they serve and the ways design influences how people interact with spaces.

Students are encouraged to:

- identify and locate significant global and local structures
- explore how buildings are used in different environments
- observe and describe the features of the built environment
- investigate how shapes contribute to structural design
- understand how buildings are planned and constructed over time
- interpret timelines and historical development of structures
- apply geographical skills through mapping and sketching
- design and create their own model using creative problem-solving
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This resource supports students in developing an understanding of how people design and construct buildings to meet the needs of communities, while encouraging creativity, observation and real-world connections.

Please Note:

This resource has been designed to support Stage 2 students and aligns with the NSW Curriculum in HSIE, Mathematics and English. It is intended to be used as pre-visit and post-visit learning for excursions to the Sydney Tower Eye.

Teacher Resource Guide

Answers

Section 1 – Towers of the World

Tower examples (likely models students see):

- Sydney Tower Eye – Sydney, Australia
- Eiffel Tower – Paris, France
- Burj Khalifa – Dubai, UAE
- Empire State Building – New York, USA
- Tokyo Tower – Tokyo, Japan

(Students answers may vary depending on models shown – accept reasonable alternatives)

Map task

Students should:

- Mark approximate global locations
- Show basic continent awareness
- Identify Australia, already marked

Sketch task

(No fixed answer – assess:

- effort
- shape accuracy
- key features)

Short answer questions

1. Purpose of buildings/towers
 - Work (offices)
 - Living (apartments)
 - Tourism (observation decks)
 - Communication (telecommunications)
2. Where are they found?
 - Cities
 - Urban areas
 - Tourist destinations
3. What are they made of?
 - Steel
 - Concrete
 - Glass
 - Reinforced materials
4. What makes a building stand out?
 - Height, Unique design, Shape, Function, Location

Favourite building: (Subjective – accept justified responses)

Section 2 – Buildings and Shapes

Common shapes:

- Rectangles (most common)
- Cylinders (towers)
- Triangles (structural support)
- Curved shapes (e.g. Sydney Opera House)

Most popular shape: Rectangles / straight lines

Why?

- Strong and stable
- Easy to construct
- Cost-effective
- Maximises usable space

Section 3 – Timeline Understanding

Students should understand:

1970–1975 → Planning + early construction

1975–1981 → Tower structure built

1981 → Opened to public

Key concept: Buildings are constructed in stages using engineering planning, materials, and machinery.

Section 4 – True or False

Answers:

TRUE – turret capacity & levels

TRUE – 309 metres height

TRUE – lifts access

FALSE – (1504 stairs is exaggerated/incorrect)

TRUE – window cleaning system “Charlie”

TRUE – water tank stabiliser

TRUE – 56 cables stabilise tower

TRUE – spire used for telecommunications

TRUE – never officially Centrepont Tower

TRUE – first dawn / last dusk

TRUE – official naming explanation

Section 5 – Model Task

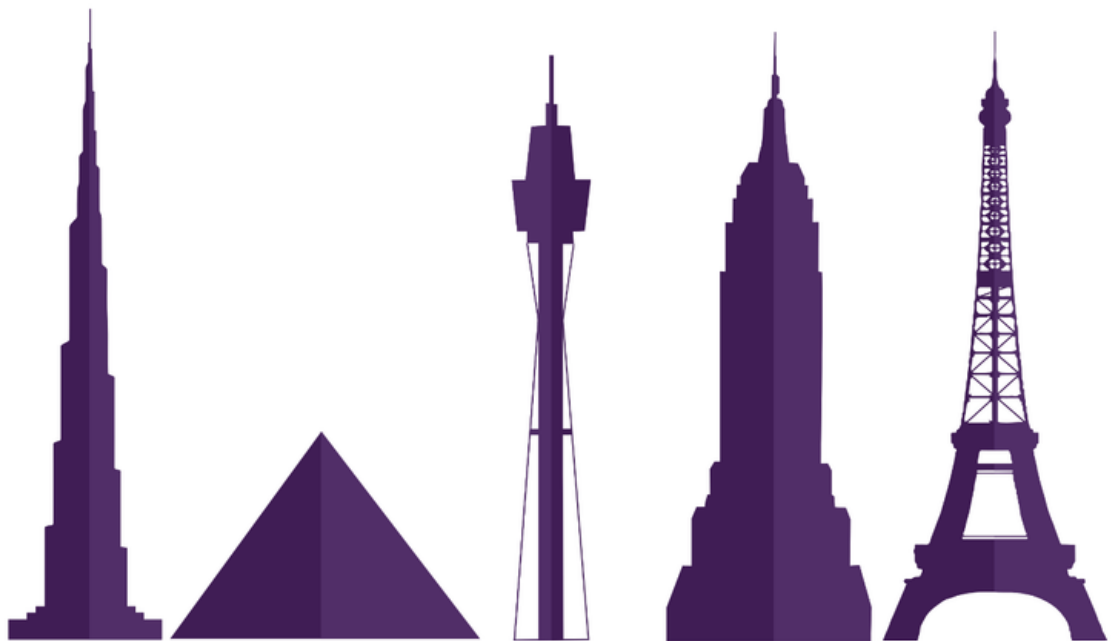
(No fixed answer – assess: structure, effort, resemblance, creativity)

Student Worksheet

Activity 1: Towers of the world

Take a look at the tower models located in the Sydney Tower Eye pre-show area.

These towers are famous structures from all over the world. Write the name of the building and the city where we can find these structures.



Name of tower

Location of tower

Student Worksheet

Refer to the markers below and write down on the world map where these towers are located.
Sydney Tower Eye has already been done for you.

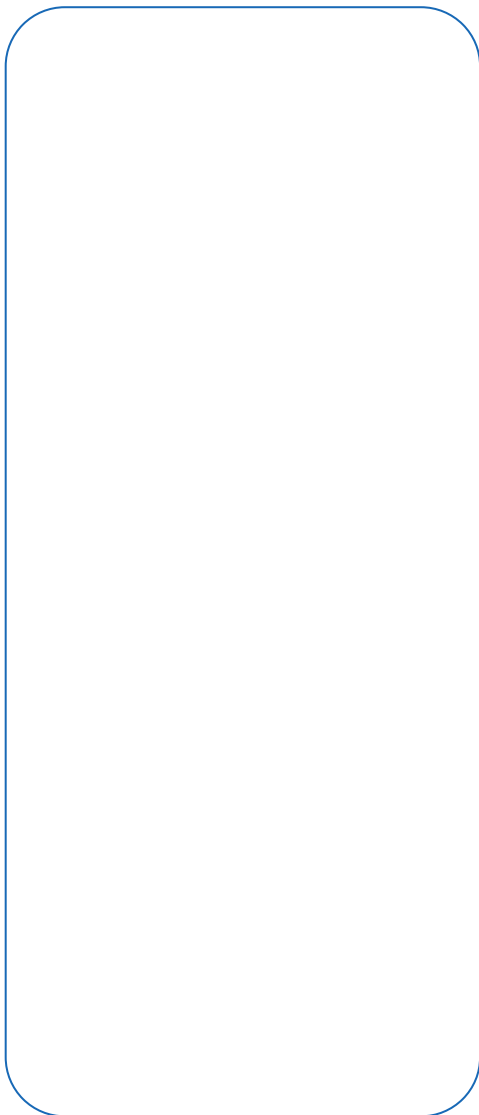
Have you visited any of these countries before?



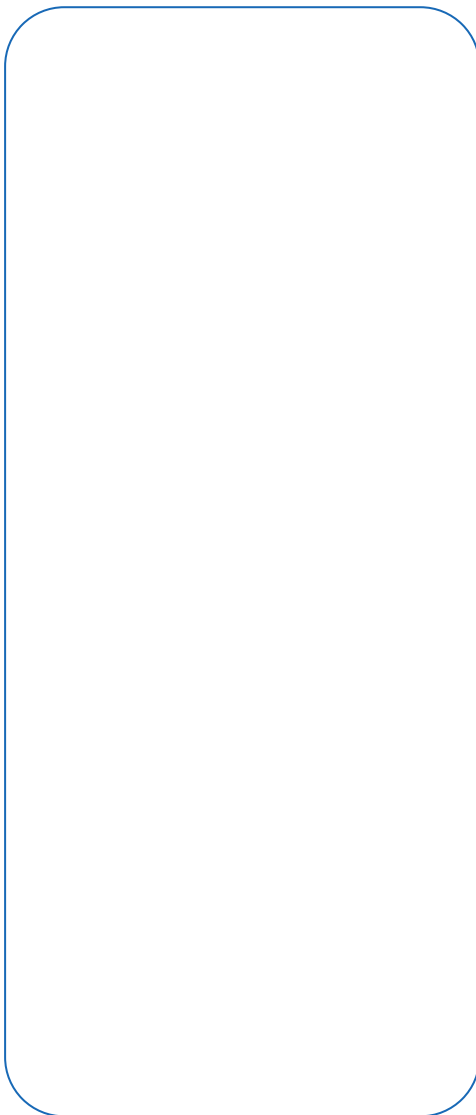
Student Worksheet

The city of Sydney is also home to some amazing buildings and man-made structures. Go to the observation deck and have a look outside the windows. Find 3 different towers or buildings and sketch what they look like in the space below:

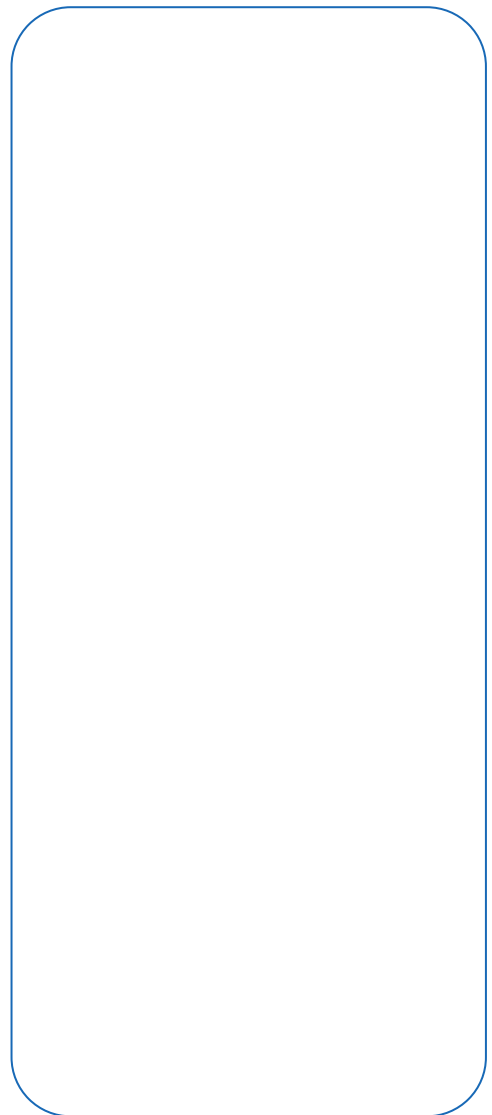
Building 1



Building 2



Building 3



Student Worksheet

Answer the following questions.

What is the main purpose of a building or tower? What do people use them for?

.....

.....

Where can you find buildings or towers?

.....

.....

What are buildings or towers made of?

.....

.....

What makes a good building or tower stand out from the rest?

.....

.....

What has been your favourite building or tower that you've seen today? Why?

.....

.....

Student Worksheet

Activity 2: Buildings and Shapes

[Excursion activity]

Shapes play an important part to help make the design of a building or structure memorable. Look out of the window and find the following buildings mentioned in the table,

Building/Structure	Shapes used in the design
Sydney Tower Eye	
Kirribilli House	
Sydney Opera House	
St. Mary's Cathedral	
Sydney Harbour Bridge	
Chifley Tower	
Australia Square	
Meriton World Tower	
MLC Centre	

What is the most popular shape used in these buildings? Why do you think this shape is used the most?

.....

.....

Student Worksheet

Activity 3: Sydney Tower Eye construction timeline

[Excursion activity]

Shapes play an important part to help make the design of a building or structure memorable. Look out of the window and find the following buildings mentioned in the table,

First stage of Sydney Tower Eye shopping centre was constructed.

1970

The first 52 shops in the shopping centre opened

1972

The second stage of the build, the office component, was completed

1974

1975

The construction of Sydney Tower is an interesting tale of engineering and quality construction.

Pre-made individual barrel units formed the shaft of the tower and the four levels of the turret structure were constructed at the base of the shaft and raised to the top as work progressed.

The shaft supporting the turret is made up of 46 barrels units, each weighing 27 tonnes. These were brought on to the site in seven pieces and welded together. Once the first three sections were in place, a gantry crane was erected to hoist the remaining 43 barrel units.

Each barrel unit was completed with lift rails, stairwells and hydraulic risers before hoisting. The shaft contains two sets of fire stairs, fire, electrical and plumbing ducts in one half and the lift shafts in the remainder.

Once the tower structure was complete, the spire was erected. This was done in two parts, by placing one half and then lifting the top section onto the bottom section. The crane did not have the reach to lift the spire from the top, so it was lifted from the side. This was achieved despite the difficulties of maintaining adequate balance.

The final stage of the Sydney Tower was completed and opened to the public in August 1981.

1981



Student Worksheet

Activity 4: True or False

Is this true or false? Write next to each statement if you think this is true or false.

- The golden turret has a capacity of 960 persons and contains two levels of restaurants, an Observation Deck, two telecommunication transmission levels and three plant levels
- The height of Sydney Tower from the bottom to the very tip of the spire is 309 metres
- Three double deck lifts provide access to the Sydney Tower Eye Observation Deck and restaurants
- The 1504 fire-isolated sets of pressurised stairs, closely monitored by security, allow patrons direct access to street level, in case of an emergency
- The 420 windows of the tower are cleaned by a semi-automatic window cleaning machine name 'Charlie'. 'Charlie' recycles and filters 50 litres of water and takes two days to clean all the windows
- A 162,000 litre water tank, the tower's primary damping system also acts as a stabiliser for the tower
- 56 cables stabilise the tower, and if the strands of these cables were laid end to end, they would reach from Sydney to Alice Springs or from Sydney to New Zealand
- The spire located above the Tower is used for telecommunications and navigation purposes
- Contrary to popular belief, Sydney Tower was never officially named Centrepont Tower
- Sydney Tower is the first to see the Sydney dawn, and the last to see its final dusk
- Sydney Tower retains its original name today as simply 'Sydney Tower', with the Sydney Tower Eye being the name of the viewing attraction located on the upper level, providing the best views from the highest point in the city

Student Worksheet

Activity 5

Back at school either using a 3D printer, construction material like LEGO® or paper, make a 3D model of the Sydney Tower Eye. Take a picture of it and send it to us to share with other schools!

education@merlinentertainments.com.au

