

# 11 Design and innovation

## Building, engineering

### Building

#### 1.1 Which adjectives best describe your home?

- A old traditional modern
- B concrete brick steel timber
- C single-storey two-storey multi-storey / high rise



#### 1.2 Complete the sentences using the words in brackets in the correct order.

- 1 It's a ..... house. (brick, traditional)
- 2 I live in a ..... apartment. (high-rise, lovely)
- 3 I'd rather live in a ..... cottage. (small, country)

#### 1.3 Now make a similar sentence about your own home.

I live in ..... but I'd rather live in .....



#### Vocabulary note

If we use more than one adjective they are normally in the following order: opinion, size, age, shape, colour, origin, material, type: An **ugly, old, brown, plastic shopping** bag. However, more than four adjectives together can sound awkward. NOT *An ugly, big, old, rectangular, brown, Italian, plastic bag.*

#### 2.1 Listen to three people describing their homes and complete the table below.

	Type of building	Material(s) used	Favourite feature	Adjectives used to describe it
A				
B				
C				

#### 2.2 Listen again and answer the questions. Include the words from the recording that give you your answers.

Speaker A

- 1 Where did the stone come from?  
.....
- 2 What makes the ceilings ornate?  
.....
- 3 Is the house large or small?  
.....

Speaker B

- 1 Is the computer system new or old?  
.....
- 2 What makes the apartment functional?  
.....

- 3 Are the bedrooms large or small?  
.....

- 4 Are the buildings around it tall?  
.....

Speaker C

- 1 Is this house different from those around it?  
.....
- 2 Which room does the speaker say is bright?  
.....
- 3 What shape is the bottom of the staircase?  
.....

**Error warning!**

We say that you *build a house / a hospital* etc, NOT ~~*build a building*~~. *Build up* is not used to talk about construction. It refers to increasing or developing something: *He went to the gym to **build up** his muscles. We are trying to **build up** a relationship with a company in Japan. I had to **build up** the confidence to apply for the manager's job.* NOT ~~*We need to build up a hospital.*~~



## Engineering

### 3.1 Scan the article and underline these words.

invented hoisted hauling platforms storage steel lift shaft tension  
trigger device internal frame construction skyscrapers landmarks

#### The elevator

Next time you are in a lift, look for the name of the people who made it. Chances are it will be the Otis Elevator Company. It was Elisha Otis who invented the gadget that made the modern passenger lift possible. The concept of elevation was already well established. Louis XV of France disliked stairs so much that he was regularly hoisted skywards in a 'flying chair' by several strong men hauling on ropes. In Otis's time, warehouses commonly used moving platforms to transport goods between floors. However, elevating anything further than one floor or weighing more than 70 kilograms would have been considered far too dangerous.

Otis worked for a bed manufacturer who was keen to expand his business but needed to find a way to move his beds to an upper floor for storage. The inventive Otis soon had a solution to the safety problem: a tough steel spring system that meshed with ratchets on either side of the lift shaft so that if the rope gave way the sudden loss of tension would trigger the device, stopping the lift from falling.

At the 1854 World Trade fair in New York, Otis unveiled his invention and orders began to pour in, including one from the United States Assay Office which at that time was constructing one of the first buildings with an internal steel frame to support the exterior walls. This was the same construction method that skyscrapers would use. If not for lifts, the towering landmarks which feature so prominently in today's architecture would have been impossible and the character of our cities would be entirely different.

### 3.2 Decide if the following statements are true or false. Write the words you have underlined that helped you.

- 1 Elisha Otis came up with the idea that made elevators safe for people. True (invented = came up with the idea)
- 2 Louis XV was lifted into the air by men pulling ropes. ....
- 3 Warehouses in Otis's time used boxes to move their goods to different levels. ....
- 4 Otis's boss wanted to move beds to a higher level for delivery. ....
- 5 Otis made his springs out of plastic. ....
- 6 The ratchets were located on the inside of the lift. ....
- 7 If a rope became slack this activated the contraption. ....
- 8 The US Assay Office building had its support structure on the outside. ....
- 9 The US Assay Office used a similar building technique to today's tall buildings. ....
- 10 The writer believes that skyscrapers can help you find your way around a city. ....



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### 3.3 Match the verbs (1–8) in column A with the definitions (A–H) in column B.

A	B
1 condemn	A build something on a piece of land
2 demolish	B build again
3 develop	C repair and make new again
4 devise	D knock down
5 maintain	E live in or use a space
6 occupy	F judge a building not to be safe
7 reconstruct	G keep in good condition
8 renovate	H invent

### 3.4 Choose the correct words.

- We can't move into the house until they have *developed* / *renovated* it.
- No one has been allowed to occupy the building since it was *condemned* / *reconstructed*.
- The architect *devised* / *demolished* a clever way of keeping the house cool in summer.
- The tenants were offered a reduced rent if they agreed to *maintain* / *occupy* the property.

### 3.5 WORD BUILDING Complete the table.

Noun/person	Verb	Adjective or past participle
builder / building	build	
		constructed
	design	
engineer		
innovation		
	invent	
	occupy	
structure		

### 3.6 Complete the text with words from 3.5.

A group of (1)i..... architecture students has won this year's Timber Bridge Competition. The students' (2)d..... beat 17 others. The team used an (3)i..... approach to their bridge which was (4)b..... entirely out of timber. They used traditional (5)c..... methods to avoid using nails or screws. The students demonstrated a good knowledge of fundamental (6)e..... principles. They (7)c..... a working model of the bridge, which (8)o..... an entire car park. This allowed them to test the bridge and ensure that the (9)s..... was sound.

### 4 PRONUNCIATION 11b Tick the correct sound for each of the letters underlined. Listen and check your answers, then practise saying the words correctly.

1	de <u>s</u> ign	s	z	6	hou <u>s</u> ing	s	z
2	plea <u>s</u> e	s	z	7	fa <u>s</u> ten	s	z
3	devi <u>c</u> e	s	z	8	de <u>s</u> truction	s	z
4	devi <u>s</u> e	s	z	9	u <u>s</u> e (n)	s	z
5	resi <u>d</u> ence	s	z	10	u <u>s</u> e (v)	s	z