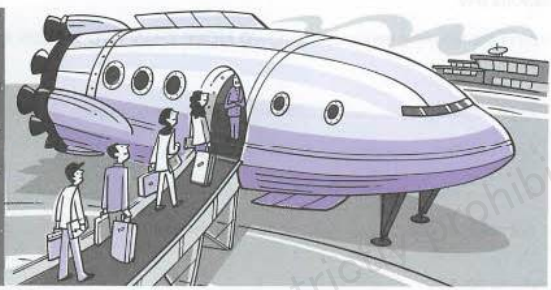
10 Rocket science

Space, physics

Space



1.1 **Read the following opinions. Do you agree with them? For each one, reply with your own opinion. Use the phrases on the right to begin your replies.**

Space doesn't concern me. There are too many problems here on earth.

I'm fascinated by the idea of life on another planet.

If I had the chance, I would definitely go into space.

They should stop spending such enormous amounts of money on space exploration. It's totally unjustified.

I find the very idea of outer space pretty scary.

- I couldn't agree more, ...
- I wouldn't say that ...
- I can't say I've thought much about it ...
- Absolutely, I'm pretty curious about ...
- I don't agree with that ...
- No, I would never consider ...
- I disagree, I imagine it would be ...
- Well, I seriously doubt that ...
- Yes, me too. I think ...
- Well, I suppose ...
- Really? I must admit I'm not the least bit ...

1.2 **Use a dictionary to check the meaning of any of the words in the box that you don't know. Then answer the questions below and use the words in the box to help you expand your ideas.**

communications satellites space debris unmanned spacecraft weightlessness
moon landings public investment space technologies space tourism military applications

1 Why are children so interested in outer space?
2 What are the benefits of space exploration?
3 Would you like to go into space on holiday? (Why? / Why not?)
4 Is it important for countries to have a space programme? (Why? / Why not?)
5 Should government funding for space missions be spent on other things? (Why? / Why not?)

2 **Use a dictionary to check the meaning of any of the words in the box that you don't know. Then complete the passage with the correct words.**

planets	impact	debris	eclipse	surface	moons	spins	
gravity	sustain	climatic	penetrate	rotational			

You might witness it once, or if you're particularly lucky or very long-lived, perhaps twice. But a total solar [1]_____ is worth the wait. At the height of totality, the fit of the sun and the moon is so perfect that beads of sunlight can only just [2]_____ the rugged valleys on the lunar [3]_____, creating the stunning 'diamond ring' effect. It's all thanks to a striking coincidence. The sun is about 400 times as wide as the moon but it is also 400 times further away. The two therefore look the same size in the sky – a unique situation among our solar system's eight [4]_____ and 188 known [5]_____. Earth is also the only known planet to [6]_____ life. Our moon is different, but how did it form? Planetary scientists believe that, in the first 100 million years of our solar system, a Mars-sized object smashed into Earth. The [7]_____ radically changed our planet, expelling a huge amount of [8]_____ that eventually congealed into our oversized moon. Such a big moon is a big boon for life on Earth. As Earth [9]_____ on its own axis, it has a natural tendency to wobble, owing to the varying pull from other bodies such as the sun. The unseen hand of the moon's [10]_____ gently reduces that wobble, preventing [11]_____ instabilities which would otherwise have caused dramatic changes in Earth's [12]_____ zones over time. Such instabilities would have made it much trickier for life to get started on our planet.

Error warning

Earth is the name of our planet so it has a capital letter: *It would be amazing to look down on Earth from space.* (NOT *look down on ~~earth~~...*)

Be careful with the spelling of *satellite* and *exploration*.

3.1 **Do the adjectives in the box mean a *big* or *small* amount or size?**

vast	imperceptible	astronomical	enormous	minuscule	infinitesimal
immense	immeasurable	colossal	microscopic	minute	

3.2 **Do the adjectives in this box refer to a *long* or *short* time?**

brief	fleeting	prolonged	sustained	transient	protracted
lengthy	momentary	enduring	lasting	instant	

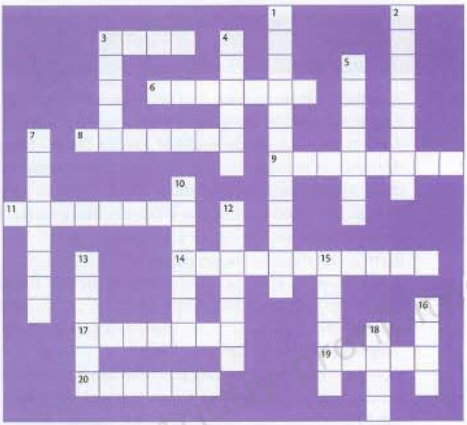
3.3 COLLOCATION **Now choose the correct adjective to complete the sentences.**

1 The shooting star was only visible for a very *transient / brief* period before it disappeared.
2 Space programmes require *vast / imperceptible* sums of money.
3 It is made up of *microscopic / immense* particles that are invisible to the naked eye.
4 Space exploration, with its rockets and robots, has an *enduring / protracted* appeal for children.
5 There was a *lengthy / lasting* investigation into the failure of the launch system.
6 The surface of the planet is covered in *colossal / astronomical* volcanoes, much larger than any on Earth.
7 The camera shows the planet's rings in *fleeting / minute* detail.
8 We've had two years of *sustained / prolonged* growth in science funding.

Physics

4 **The words in the box are used to talk about scientific processes. Use a dictionary to check the meaning of each word and then complete the crossword. You may need to change the form of the words.**

absorb	activate	attract	boil	burst
collide	condense	dilute	dissolve	evaporate
expand	explode	gravity	magnet	melt
pierce	reflect	release	repel	solid	spin



Across

3 When water reaches 100°C, it starts to _____.
6 bombs do this
8 A negative charge will _____ a positive one.
9 to become solid
11 Sugar will _____ when placed in a hot liquid.
14 the process that causes a puddle to dry up
17 We use a mirror to _____ something.
19 the opposite of 8 across
20 to become larger

Down

1 the process that causes a vapour to change to a liquid
2 able to attract iron or steel
3 to suddenly break open
4 to make a substance weaker by adding water
5 to crash into
7 to cause something to start
10 to emit or let out
12 the force that makes things fall to the ground
13 to make a hole in something with a sharp object
15 A sponge will _____ a liquid.
16 when a solid becomes a liquid
18 to rotate or revolve quickly

5.1 ▶19 PRONUNCIATION **The following words all end in the weak sound /ʒən/ or /ʃən/. Listen to the recording and decide whether the words end in /ʒən/ or /ʃən/.**

collision	propulsion	rotation
evaporation	erosion	attraction
condensation	penetration	illusion
persuasion	navigation	reflection
dimension	situation	magnification
explosion	corrosion	division

5.2 **Practise saying the words, paying particular attention to the endings.**

Listening Section 4

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Questions 1–10

Complete the table below.

Write ***NO MORE THAN TWO WORDS*** *for each answer.*

Teaching physics			
Experiment	**Equipment and method**	**Results**	**Real world application**
Brazil nut effect	• put a marble and some **1** ..... in a jar and shake	• students assume the marble will **2** ....., but the opposite is true	making sure **3** ..... made of powders are accurately mixed
Unpoppable balloon	• a balloon, a pin and some **4** ..... • pierce the balloon with the pin	• students believe balloons make a loud noise when the air is **5** ..... • there is no loud bang	checking how **6** ..... a material is
Arm **7**	• a swivel chair and hand weights • students hold the weights and spin on the chair • they use the weights to control their **8**	• students can **9** ..... by making themselves narrower	can be seen in **10** .....

Test tip

For table completion items, make sure you read the heading of each column so you know what information to listen for, and use the other information in each row to help follow the talk.