TR: 58 Listen and Read 2 See Student Book pp. 78–79.

TR: 59 3 **Learn new words.**

adaptation	Physical adaptations helped birds become better fliers.
capability	Bats are the only mammals with flight capability.
early	Early insects were the first animals to fly.
evolve	All species evolve over time.
feature	Ancient birds had some of the same features as dinosaurs.
flap	Animals flap their wings to fly.
flight	Flight developed first in insects.
glide	Many species developed the ability to glide.
hollow	Birds have light, hollow bones that allow them to fly.
limited	Millions of years ago, all life was limited to land and water.
soar	Large birds can soar when they spread their wings.
weight	An animal's weight can affect how it flies.
wingspan	The wingspan of the largest pterosaur was over ten meters.

TR: 60 5 How did flight happen? Physical adaptations have taken place in species such as birds and bats, allowing them to become skilled fliers. Both are capable of true powered flight. One example of these adaptations is wing structure. Birds gradually lost the claws their ancestors had. Bats still have all their long clawed fingers, which support the membranes of their wings.

TR: 61 5 **Learn new words.**

allow	Their hollow bones and light bodies allow birds to fly.
powered	Bats are the only mammals capable of powered flight.
skilled	Both birds and bats are skilled fliers.
support	Insects' wing structures support them when they fly.

TR: 62 Speaking Strategy See Student Book p. 81.

TR: 63 7

S1: Hi, Alex. **S2**: Hey, Jakub. How did your presentation on birds go?

S1: Pretty good, though not everybody believed me when I said that birds evolved from dinosaurs. **S2**: What makes you think that it's true?

S1: Well, I've done a lot of research, and most scientists support the idea that birds evolved from dinosaurs. The first birds shared a lot of features with them. **S2**: Yes, but what about modern birds? Most of them live in trees, but dinosaurs didn't. I think that birds had to come from ancestors who lived in trees.

S1: But look at how much time has passed between the earliest birds and modern birds! 150 million years! They live in trees now, but that doesn't mean they always did. I'm sure you agree that a lot of small adaptations happen as a species evolves. It doesn't happen all at once! **S2**: Well, maybe you're right.

TR: 64 Grammar See Student Book p. 82.

TR: 65 11 1. By the time the Chinese experimented with the first kites more than 2,500 years ago, flight in animals had existed for many millions of years.

2. Long before the Chinese turned to flying kites, it's likely that early humans had tried to imitate birds by running and flapping their arms.

3. The Chinese had already used kites for measuring and signaling by the time people tried to use kites for transportation.

4. Though the Chinese later used kites for fun and entertainment, they had originally designed them for military uses, such as spying.

5. Only the Chinese royal family and rich people had enjoyed flying silk kites before the invention of paper, which made kites cheaper and available to the public.

TR: 66 13 Many people consider Leonardo da Vinci to be one of the first people to really experiment with flight. He produced over 6,000 pages and 500 drawings related to the flight of birds and bats. He also studied the forces that affect objects in the air, and worked on flying machines. Long before Veranzio designed his parachute in 1595, da Vinci had drawn a sketch of one. Long before Cayley flew his gliders in the 1800's, da Vinci had designed one. In order to fly, it needed only a small change to make the glider's movement stable, as was proved later. And long before modern helicopters existed, da Vinci had drawn several versions. His "aerial screw" allowed his machine to ascend into the air and descend to the ground the same way modern helicopters do.

TR: 67 14 **Learn new words.**

ascend	An airplane ascends into the air at an angle.
descend	A helicopter descends slowly when it lands.
force	Gravity is the force that keeps objects from staying in the air.
parachute	Skydivers use parachutes when they jump out of planes.
prove	Scientists examine theories, and look for ways to prove them.
stable	A stable glider or airplane does not move from side to side as it flies.

TR: 68 17 **Learn new words.**

engine	Modern airplanes have powerful engines.
fuel	An airplane loses power when it runs out of fuel.
land	When the plane lands, you arrive at the airport.
pilot	A pilot controls an airplane.
take off	You have to be seated before the plane will take off.

TR: 69 While you read. 18 See Student Book pp. 84–85.

TR: 70 Grammar See Student Book p. 88.