



Science

Stage 7

Paper 2

2024

Cambridge Lower Secondary Progression Test

Name

Class

Date

45 minutes

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Write your answer to each question in the space provided.
- You should show all your working on the question paper.

INFORMATION

- The total mark for this paper is 50.
- The number of marks for each question or part question is shown in brackets [].

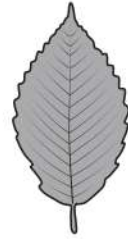
1 The diagram shows leaves from six different species of tree.



species A



species B



species C



species D



species E



species F

(a) Write down the meaning of the term **species**.

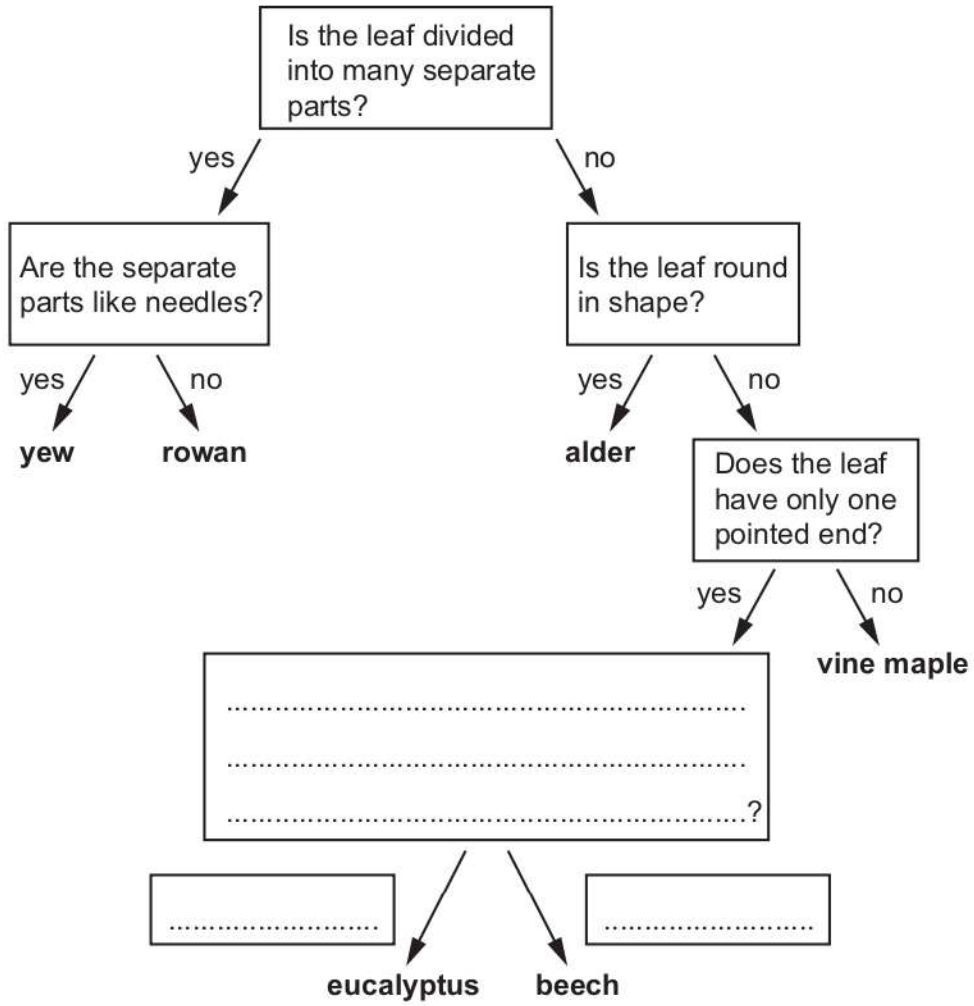
.....

.....

.....

..... [2]

(b) Look at the dichotomous key used to identify different species of tree.



(i) Use the key to identify species **A**.

Species **A** is

[1]

(ii) The dichotomous key is incomplete.

Species **B** is a eucalyptus tree.

Species **C** is a beech tree.

Complete the **three** empty boxes in the key.

[2]

2 Metals and non-metals have different physical properties.

Complete the table about metals and non-metals.

physical property	metal	non-metal
electrical conductivity	low
thermal conductivity	high
melting point	low
density	high

[2]

3 Gravity is a force.

(a) Mike wants to find out if the total mass of two objects affects the force between the objects.

Mike collects information from the internet about the:

- mass of two objects, **A** and **B**
- distance between these two objects
- force between these two objects.

He puts the information in a table.

mass of object A in kg	mass of object B in kg	distance between object A and object B in m	force between object A and object B in N
1	1	1	1
2	1	1	2
2	2	1	3
2	3	1	6
3	3	1	9

(i) Mike says,

'This is a fair test.'

Explain why this is a fair test.

Use information from the table.

.....
 [1]

(ii) Mike notices a mistake with one of the values for the force between objects in N.

This measurement should be 4 N.

Identify the incorrect value.

Explain your answer.

incorrect force between objects in N N

explanation

..... [2]

(b) Complete the sentence to describe gravity.

Choose from the list.

attraction

mass

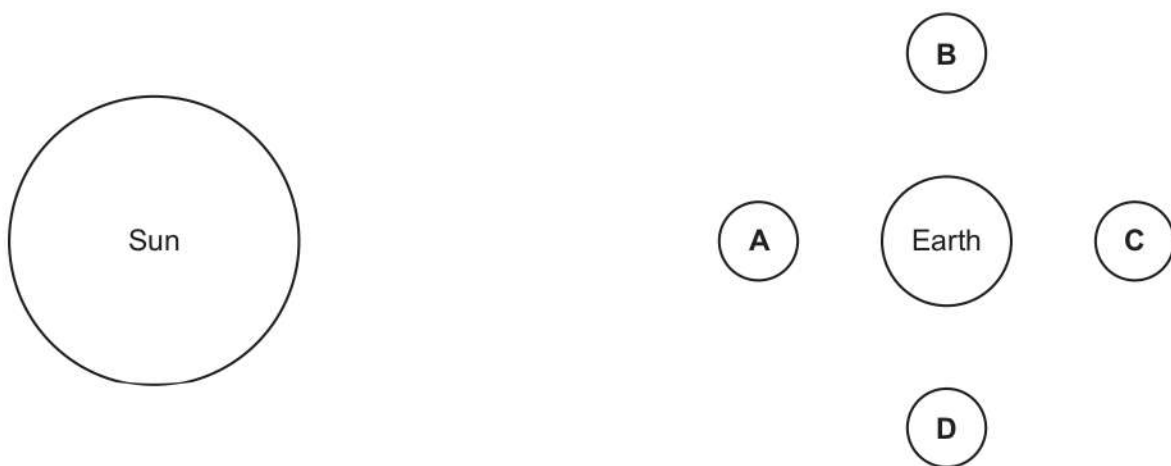
repulsion

weight

Gravity is the force of between two objects.

[1]

4 Several times a year there are solar eclipses on Earth.



NOT TO SCALE

Which position of the Moon causes a solar eclipse?

Circle the correct answer.

A

B

C

D

[1]

5 The diagram shows part of an ocean food chain.



(a) Name a herbivore from the food chain.

..... [1]

(b) Penguins eat small fish.

Whales eat penguins.

Adding penguins to the food chain makes a food web.

Complete the diagram to make this food web.



[2]

(c) Microorganisms are also present in the ocean.

Some microorganisms are decomposers.

What is the function of a decomposer in a food web?

.....
..... [1]

6. This question is about materials.

Draw a straight line to match each material to its correct description.

Material

Description

alloy

a pure substance containing the same type of atom

compound

a pure substance containing different types of atoms bonded together

element

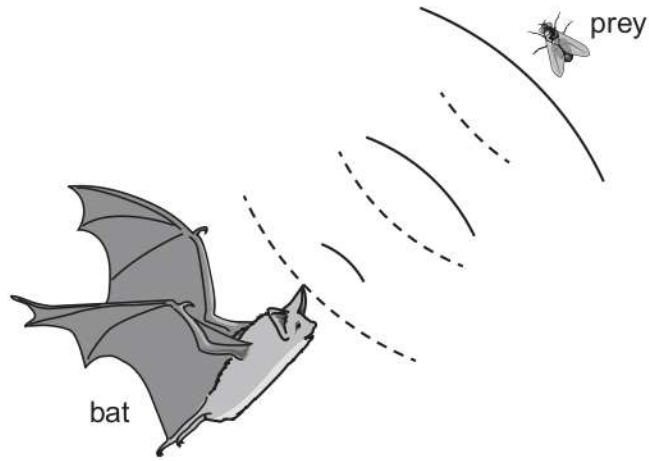
a mixture containing two different types of metal atoms

an impure substance containing the same type of atom

a substance containing atoms that are free to move

[3]

7 Echolocation is used by bats to find their prey.



————— represents sound made by the bat
----- represents sound travelling towards the bat

(a) Explain how the bat uses echoes to find the prey.

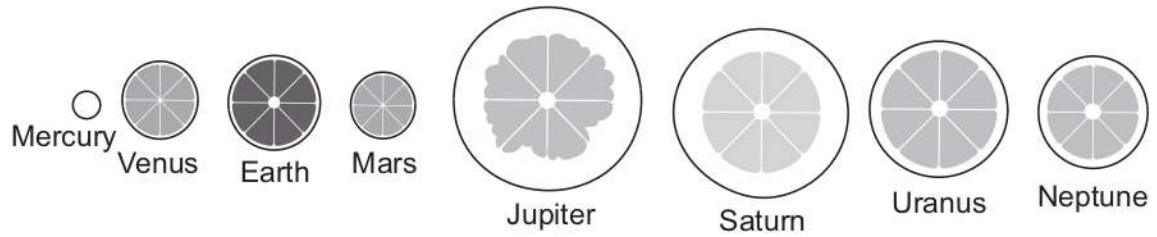
.....
.....
.....
..... [2]

(b) The prey moves closer to the bat.

Describe how the bat knows, using echoes, that the prey is closer.

.....
..... [1]

8 Rajiv uses fruits to model the Solar System.



(a) Write down **two** strengths of this model of the Solar System.

1

2

[2]

(b) Write down **two** limitations of this model of the Solar System.

1

2

[2]

9 Three of the characteristics of living organisms are sensitivity, nutrition and movement.

(a) Draw a straight line to match each **characteristic** to its correct **description**.

characteristic	description
sensitivity	organisms take in and use nutrients
nutrition	organisms increase in number
movement	organisms detect changes and respond to them
	organisms break down nutrients to release energy
	organisms remove nutrients from their bodies
	organisms change their position

[3]

(b) Viruses cause disease.

(i) Write down **one** reason why some scientists think viruses are **living**.

.....
..... [1]

(ii) Write down **one** reason why some scientists think viruses are **non-living**.

.....
..... [1]

10.1. Sound is reflected by hard surfaces.

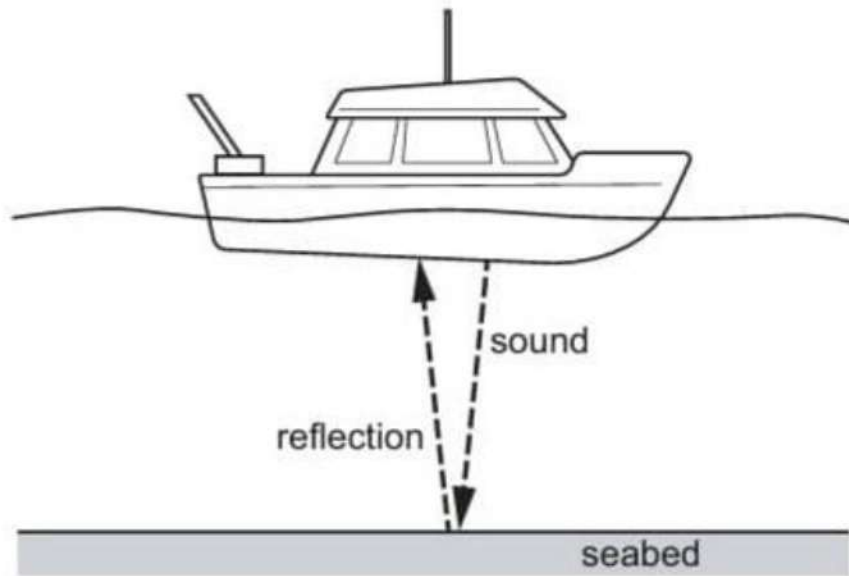
a. What is the name given to a reflected sound?

_____ [1]

b. A ship is using sound to calculate the distance to the seabed.

The ship produces a sound.

The sound travels to the seabed and is reflected back to the ship.



In water, sound travels a distance of 1500 m in one second.

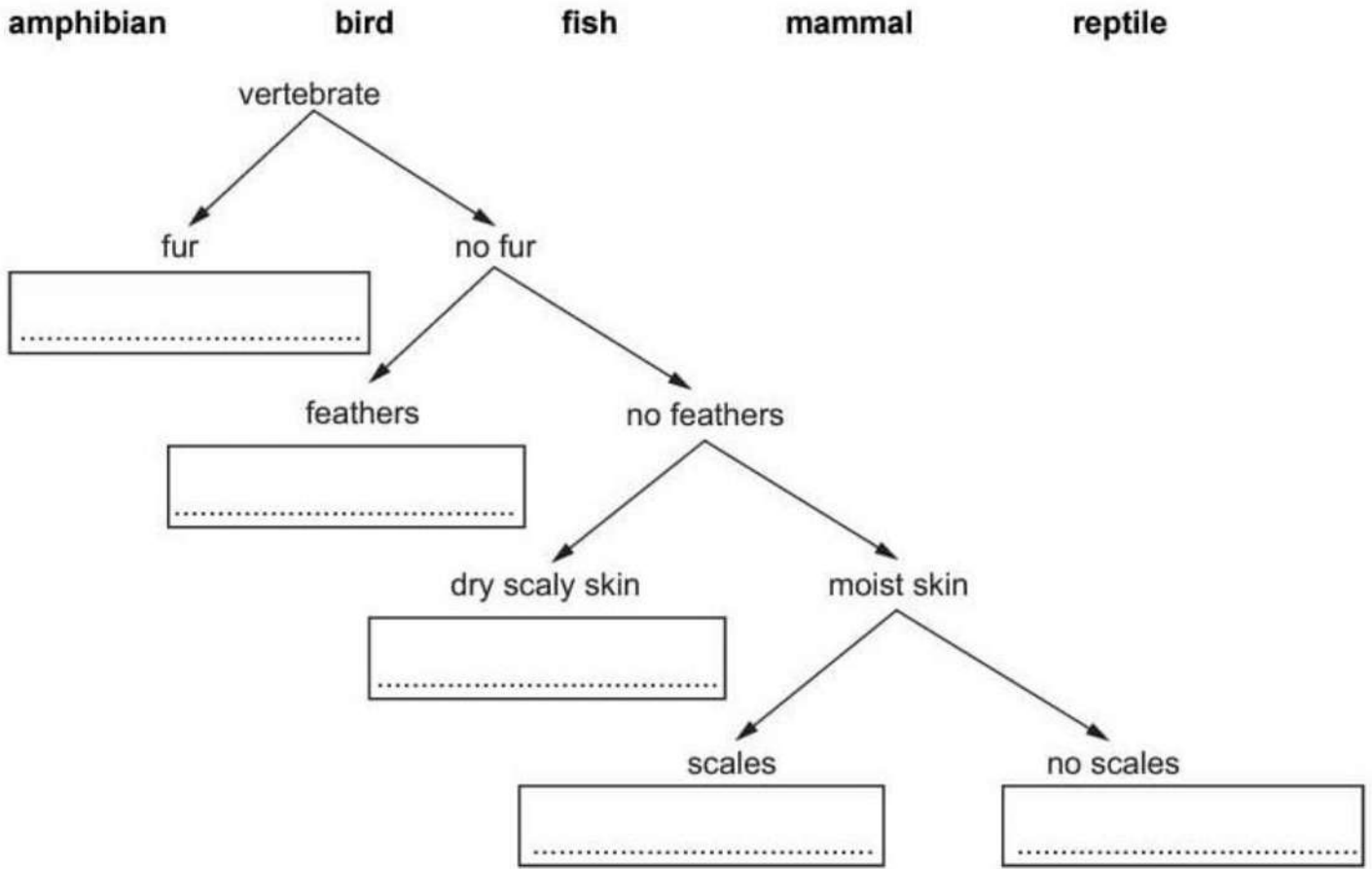
The reflected sound is detected after 4 seconds.

Calculate the distance from the bottom of the ship to the seabed.

_____ m [2]

11. The incomplete dichotomous key shows different features of vertebrates.

Write words from the list in the boxes to complete the key.



[3]

12 The atmosphere contains a mixture of gases.

(a) What is the percentage by volume of nitrogen in clean dry air?

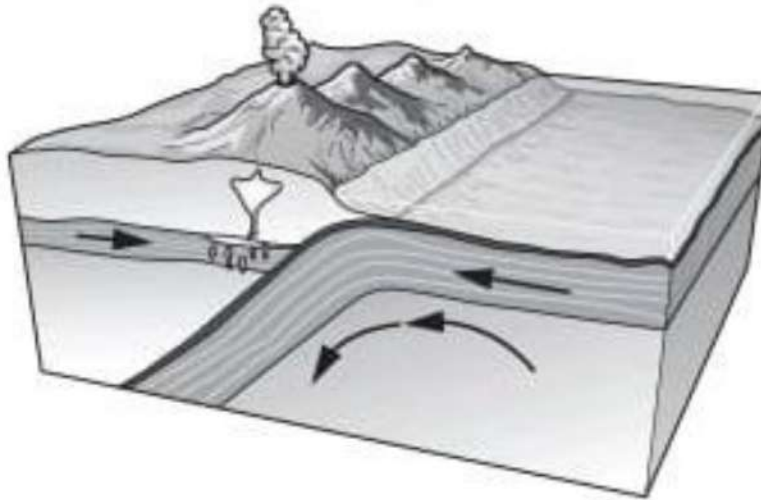
.....% [1]

(b) What is the meaning of the word **mixture**?

.....
.....
..... [2]

13. The solid outer layer of the Earth is made up of large tectonic plates.

Look at the diagram showing a model of what happens when two tectonic plates meet.



a. Write down the name of the two parts of the Earth that form this solid outer layer.

1. _____
2. _____

[2]

b. Write down three different events that happen near the boundaries of tectonic plates.

1. _____
2. _____
3. _____

[3]

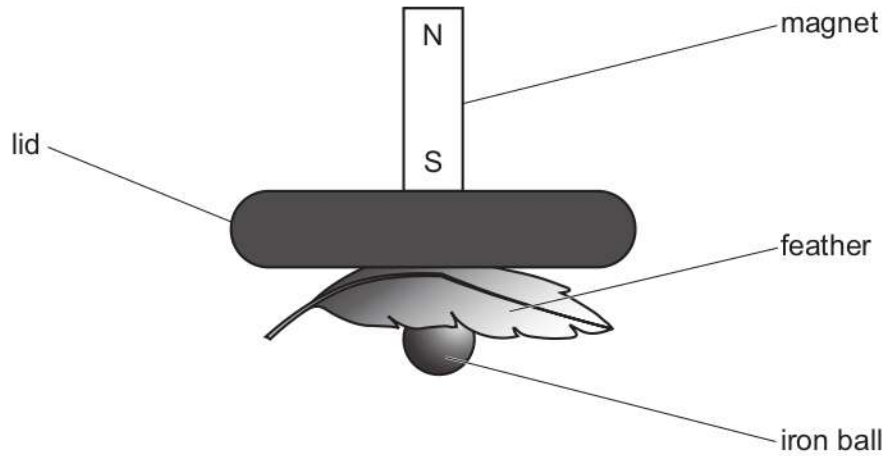
c. Describe the strengths and limitations of this model about the movement of tectonic plates.

[2]

14 Angelique investigates how objects fall.

Angelique:

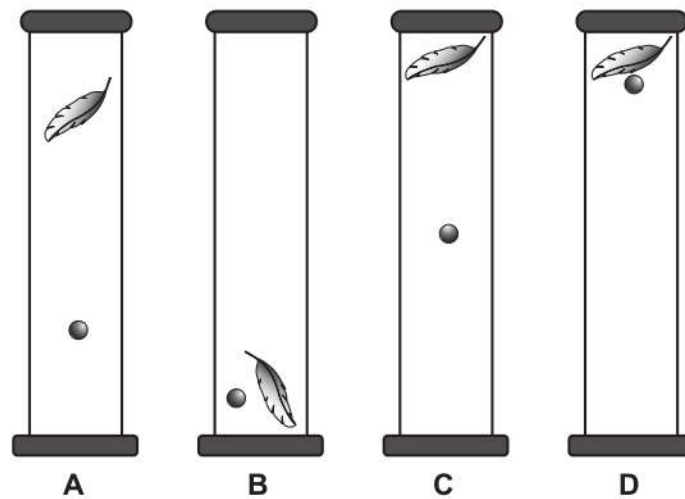
- uses a magnet to attach an iron ball and a feather to the bottom of a lid



- puts the lid on top of a tube to seal the tube
- removes the magnet so the ball and feather fall at the same time
- repeats this with different contents inside the sealed tube.

Angelique takes a photograph of each tube 0.5 s after the magnet is removed.

The position of the ball and feather in the photographs are shown in the diagrams.



(a) One tube is a vacuum, the other tubes contain either **air** or **thick oil** or **water**.

Complete the sentences.

Choose from the list.

air

thick oil

water

One has been done for you.

Tube **A** contains

Tube **B** is a vacuum.

Tube **C** contains

Tube **D** contains

[1]

(b) Explain the results for diagram **B** (the vacuum).

.....
.....
.....

[2]

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The Periodic Table of Elements

		Group															
1	2	3	4	5	6	7	8					8					
		1 H hydrogen 1											2 He helium 4				
3 Li lithium 7	4 Be beryllium 9											9 F fluorine 19	10 Ne neon 20				
11 Na sodium 23	12 Mg magnesium 24											16 O oxygen 16	17 Cl chlorine 35.5	18 Ar argon 40			
19 K potassium 39	20 Ca calcium 40	21 Sc scandium 45	22 Ti titanium 48	23 V vanadium 51	24 Cr chromium 52	25 Mn manganese 55	26 Fe iron 56	27 Co cobalt 59	28 Ni nickel 59	29 Cu copper 64	30 Zn zinc 65	31 Ga gallium 70	32 Ge germanium 73	33 As arsenic 75	34 Se selenium 79	35 Br bromine 80	36 Kr krypton 84
37 Rb rubidium 85	38 Sr strontium 88	39 Y yttrium 89	40 Zr zirconium 91	41 Nb niobium 93	42 Mo molybdenum 96	43 Tc technetium —	44 Ru ruthenium 101	45 Rh rhodium 103	46 Pd palladium 106	47 Ag silver 108	48 Cd cadmium 112	49 In indium 115	50 Sn tin 119	51 Sb antimony 122	52 Te tellurium 128	53 I iodine 127	54 Xe xenon 131
55 Cs caesium 133	56 Ba barium 137	57–71 lanthanoids	72 Hf hafnium 178	73 Ta tantalum 181	74 W tungsten 184	75 Re rhenium 186	76 Os osmium 190	77 Ir iridium 192	78 Pt platinum 195	79 Au gold 197	80 Hg mercury 201	81 Tl thallium 204	82 Pb lead 207	83 Bi bismuth 209	84 Po polonium —	85 At astatine —	86 Rn radon —
87 Fr francium —	88 Ra radium —	89–103 actinoids	104 Rf rutherfordium —	105 Db dubnium —	106 Sg seaborgium —	107 Bh bohrium —	108 Hs hassium —	109 Mt meitnerium —	110 Ds darmstadtium —	111 Rg roentgenium —	112 Cn copernicium —	113 Nh nihonium —	114 Fl flerovium —	115 Mc moscovium —	116 Lv livermorium —	117 Ts tennessine —	118 Og oganeson —

Key

atomic number

atomic symbol

name

relative atomic mass

57 La lanthanum 139	58 Ce cerium 140	59 Pr praseodymium 141	60 Nd neodymium 144	61 Pm promethium —	62 Sm samarium 150	63 Eu europium 152	64 Gd gadolinium 157	65 Tb terbium 159	66 Dy dysprosium 163	67 Ho holmium 165	68 Er erbium 167	69 Tm thulium 169	70 Yb ytterbium 173	71 Lu lutetium 175
89 Ac actinium —	90 Th thorium 232	91 Pa protactinium 231	92 U uranium 238	93 Np neptunium —	94 Pu plutonium —	95 Am americium —	96 Cm curium —	97 Bk berkelium —	98 Cf californium —	99 Es einsteinium —	100 Fm fermium —	101 Md mendelevium —	102 No nobelium —	103 Lr lawrencium —

lanthanoids

actinoids