

# ANSWERS

## Challenge 1: Metals and States of Matter

1.

	1	M	E	R	C	U	R	Y	
2	L	E	A	D					
3	S	T	E	E	L				
4	C	A	L	C	I	U	M		
5	A	L	U	M	I	N	I	U	M

2.

melt      boil  
freeze      condense

## Super Challenge 1: Science and Areas of Study

1.

A	N	Y	Z	O	R	A	N	E
M	B	I	O	L	O	G	Y	G
E	O	B	O	T	A	N	Y	E
E	C	O	L	O	G	Y	A	O
D	E	L	O	G	O	N	Y	L
O	R	I	G	A	M	I	N	O
R	P	H	Y	S	I	C	S	G
A	S	T	R	O	N	O	M	Y

- 2.
- a) Physics
  - b) Biology
  - c) Botony
  - d) Geology
  - e) Zoology
  - f) Astronomy
  - g) Ecology

## Challenge 2: Carbon and other Materials

1.

DIAMOND      GRAPHITE  
CHARCOAL      SOOT

- 2.
- OZONE → Imogen
  - SALT → Oscar
  - RUST → Raj
  - CHALK → Marianne
  - SUGAR → Peter

## Super Challenge 2: Chemical Changes and Solutions

1.

solute	→	describes solids or gases that dissolve
solvent	→	mixture of a liquid with dissolved solid or gas
saturated	→	a liquid that will dissolve a solid or gas
soluble	→	solid or gas that will dissolve in a liquid
solution	→	a solution that will dissolve no more solid

2. The larger sized jar contains more air (oxygen). The oxygen in the air is essential for the candle to burn. More air/oxygen means the candle burns for longer. When all the oxygen in the air is used up the flame goes out.

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## Challenge 3: Plants and Photosynthesis

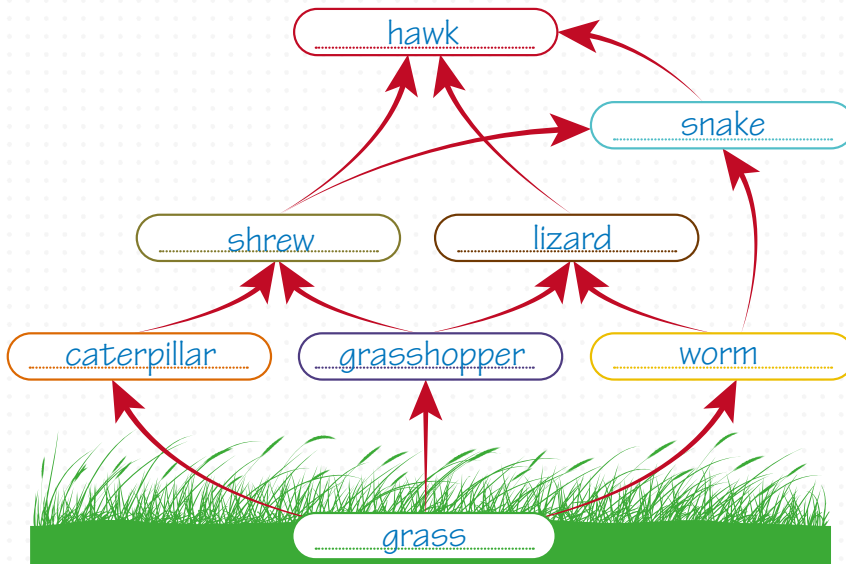
1.

<sup>1</sup> P	O	L	L	E	N
<sup>2</sup> L	E	A	V	E	S
<sup>3</sup> A	N	T	H	E	R
<sup>4</sup> N	E	C	T	A	R
<sup>5</sup> T	I	S	S	U	E
<sup>6</sup> S	T	A	M	E	N

2. The process by which plants make food in their leaves is called **photosynthesis**. Here **water** from the roots reacts with **carbon dioxide** from the air to make **sugar**. It needs energy from **sunlight** to make this happen.

## Super Challenge 3: Food Webs

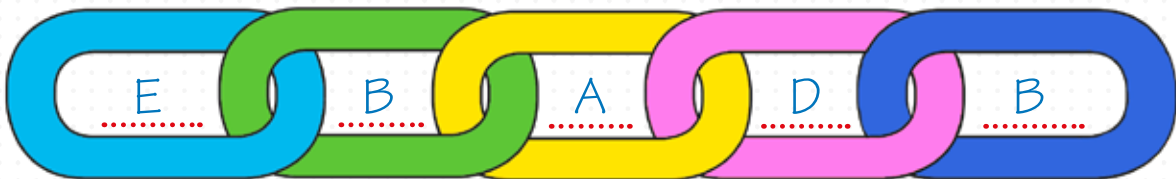
1.



## Challenge 4: Reproduction in Plants

1. petals stigma ovary anthers sepals filament

2.



## Super Challenge 4: Pollination and Fertilisation

1. P O L L E N

5. E V E R G R E E N

2. N E C T A R

6. N A T U R A L

3. R O O T

7. L E A F

4. T I S S U E

8. F L O W E R S

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## Challenge 5: Light and Reflection

1.

TRANSPARENT	TRANSLUCENT	OPAQUE
clear plastic	frosted glass	brick wood paper

2. HAVE YOU COPIED THIS STATEMENT CORRECTLY?

## Super Challenge 5: Light and Sound

### Colour wheel:

The card should appear white (but probably 'off-white'). The six colours are the colours white light is made up of. (There are seven spectral colours as the dark blue represents both the indigo and violet sections of white light.)

### Plastic cup telephone:

Sound travels by vibration. If the string is not taut then sound vibrations will have difficulty travelling along the string and the voice becomes faint and distorted.

## Super Challenge 6: Sound and Vibrations

### Ruler guitar:

Moving the pencils closer together makes the pitch of the sound higher. The smaller the length of the rubber band that is vibrating the higher the pitch/note produced.

### Bottle organ:

The bottle that produces the sound with the highest note is the bottle with the most water in. (Smallest column of air vibrating above the water.) The bottle that produces the sound with the lowest note is the bottle with the least amount of water. (Largest column of air vibrating above the water.)

## Challenge 7: Human Body

1. a) c a p i l l a r y      f) b r a i n  
b) m u s c l e      g) h e a r t  
c) l u n g      h) j o i n t  
d) b l a d d e r      i) n e r v e  
e) s k u l l      j) p u p i l

2. mouth → stomach → intestines → bowel → anus

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## Super Challenge 7: Diseases and Viruses

- diarrhoea** → runny and loose faeces (solid waste) caused by bacteria in the intestines

**cancer** → when cells in the body multiply to form a malignant tumour

**influenza** → disease caused by a virus and is called 'flu' for short

**AIDS** → disease caused by the HIV virus which weakens the body to other infections

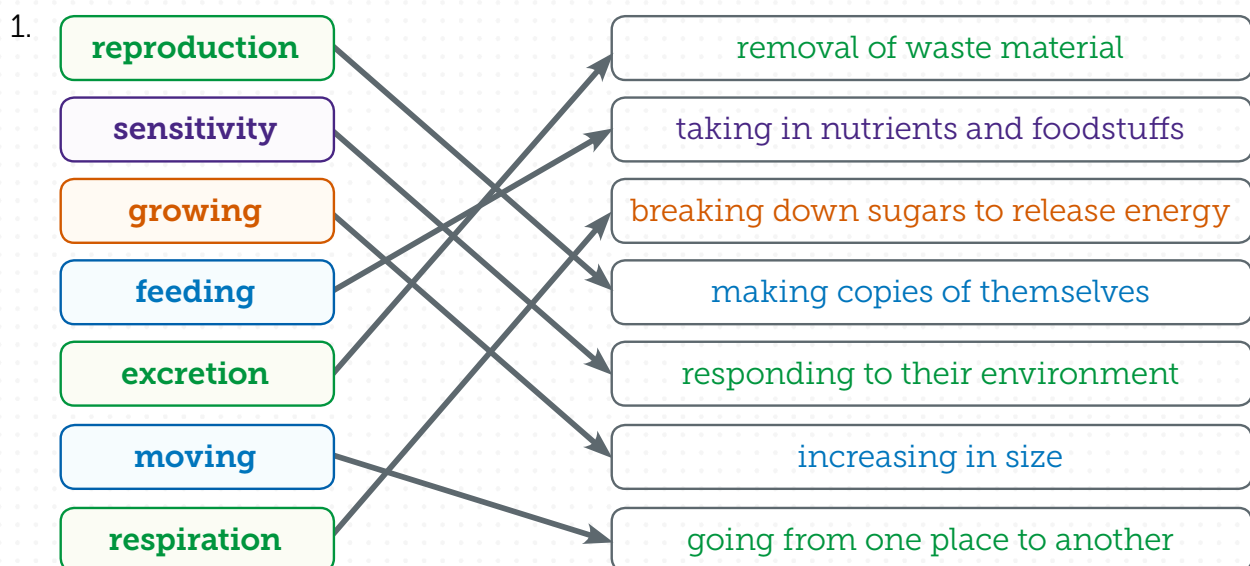
**diabetes** → disease that stops people from digesting sugar properly

- Carbohydrates like sugar and starch are foods that give us energy. Foods like fish and meat contain protein which is essential to build up body tissue. Both of these foods are digested in the body's alimentary canal and then absorbed into the blood.

## Challenge 8: Classification of Living Things

- a) plant    b) fish    c) amphibian    d) reptile    e) bird    f) mammal

## Super Challenge 8: Life Processes



- a) snail    b) crab    c) algae    d) dolphin    e) elephant