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Name: _____ Class: _____ Date: _____

PRIMARY 5 · SCIENCE · REPRODUCTION IN PLANTS AND HUMANS

Reproduction in Plants and Humans

Theory and worked examples

Living things reproduce

All living things grow old and die one day. Living things reproduce: they make new living things of their own kind, called offspring. Reproduction ensures the continuity of their kind. If a kind of living thing stopped reproducing, it would die out one day. Plants make seeds or spores, and animals give birth to young or lay eggs.

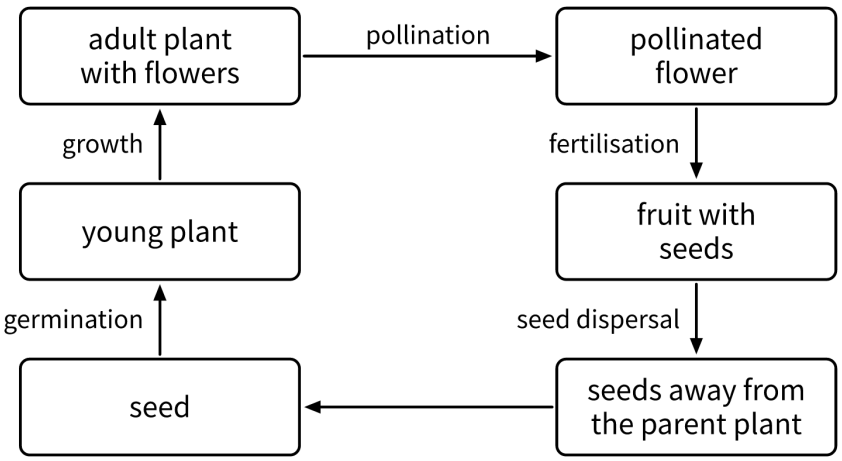
KEY IDEA

Living things reproduce to ensure the continuity of their kind. The cell is the basic unit of life.

- The cell is the basic unit of life. All living things are made up of one or more cells. Non-living things, such as a stone or a plastic toy, are not made of cells.
- Most cells are too small to be seen with our eyes alone. We use a microscope to see them.
- In flowering plants and in humans, a male reproductive cell fuses with a female reproductive cell (fertilisation). The sperm and the egg of humans are cells.
- The life cycle of a flowering plant (Primary 3 and 4): seed, young plant, adult plant. The adult plant makes seeds, so the cycle goes on.

WORDS TO KNOW

reproduce	to make new living things of the same kind
offspring	the young produced by parents (children, puppies, young plants)
continuity of their kind	their kind keeps going on from one generation to the next
cell	the basic unit of life; all living things are made up of cells



WORKED EXAMPLE

Kumar read that the last few trees of a rare kind in a forest were not producing any seeds.
(a) What will most likely happen to this kind of tree in the forest after many years?
(b) Why is reproduction important to living things?

1. What is the question asking? What happens to a kind of living thing that cannot reproduce, and why reproduction matters.
2. The science idea: all living things die one day. Reproduction makes new living things of the same kind, so their kind goes on.
3. Link: with no seeds, no young trees can grow. When the old trees die, none of their kind is left in the forest.

(a) This kind of tree will die out in the forest, because no new trees grow to take the place of the old trees when they die. (b) Reproduction ensures the continuity of their kind.

TRY THIS

What is the basic unit of life?

Answer: The cell.

Characteristics are passed from parents to offspring

Offspring look like their parents because many characteristics are passed from parents to offspring through reproduction. Examples are the type of hair, dimples, the shape of the earlobes, the colour of an animal's fur and the colour of a plant's flowers. An offspring gets characteristics from both of its parents, so it may have some characteristics of its father and some of its mother. That is why brothers and sisters can look different from one another.

KEY IDEA

Many characteristics are passed from both parents to their offspring through reproduction; learnt skills and injuries are not passed on.

- A characteristic that an offspring has can come from its father or from its mother.
- Some things are NOT passed from parents to offspring: a scar from a fall, dyed hair, a skill or habit that is learnt (riding a bicycle, swimming, speaking a language, a dog that learns to sit when told to).
- To find where a characteristic came from, look for the parent who has the same characteristic.

WORDS TO KNOW

characteristic	a feature of a living thing, such as curly hair or red flowers
passed on (inherited)	given from parents to their offspring through reproduction

Characteristic	Father	Mother	Farah
Hair	straight	curly	curly
Dimples	has dimples	no dimples	has dimples
Earlobes	attached	free	free
Scar on the knee	no	no	yes (from a fall)
Can ride a bicycle	yes	yes	yes (learnt at 6)

WORKED EXAMPLE

The table above shows some characteristics of Farah and her parents.
(a) Which characteristic did Farah most likely get from her father?
(b) Farah's friend said that Farah got the scar on her knee from her parents. Do you agree? Explain your answer.

1. What is the question asking? Which parent passed on a characteristic, and whether a scar can be passed on.
2. The science idea: a characteristic comes from the parent who has it. Injuries and learnt skills are not passed on through reproduction.
3. Link to the table: Farah has dimples, like her father (her mother has none). Her curly hair and free earlobes are like her mother's. The scar came from a fall.

(a) Dimples. (b) No. The scar came from a fall (an injury). It is not a characteristic passed from parents to offspring through reproduction.

TRY THIS

Ravi has straight hair like his mother and dimples like his father. What does this show?

Answer: An offspring gets characteristics from both of its parents.

Plants reproduce from spores or from seeds

Plants reproduce in two main ways. Flowering plants reproduce from seeds: they have flowers, which develop into fruits with seeds inside. Ferns and mosses are non-flowering plants. They reproduce from spores. A fern makes its spores in spore bags, which are brown dots in rows on the underside of its leaves. A moss makes its spores in spore capsules on thin stalks.

KEY IDEA

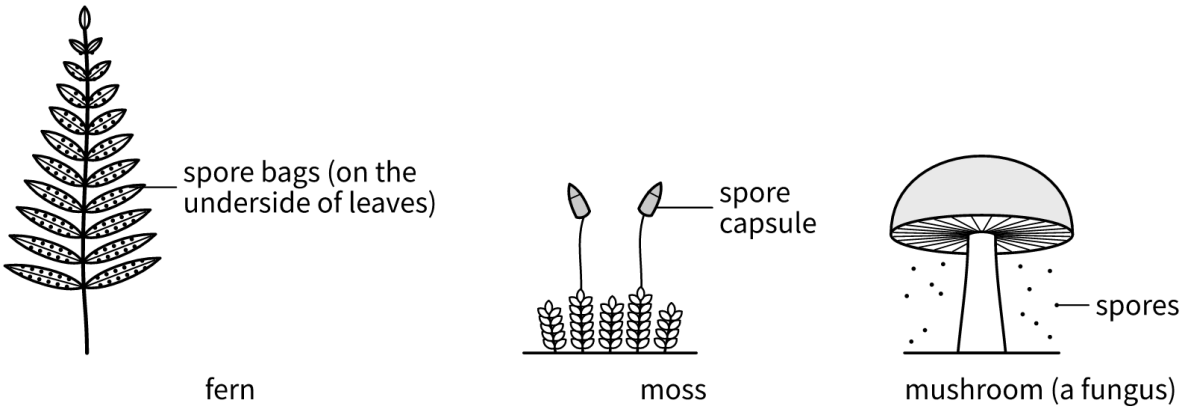
Flowering plants reproduce from seeds; ferns and mosses reproduce from spores.

- A mushroom also reproduces from spores, but a mushroom is a fungus, not a plant.
- Spores are so small and light that the wind can carry them far away.

WORDS TO KNOW

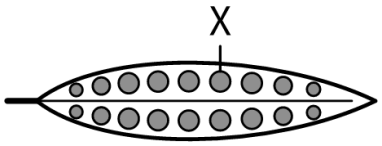
spore	a tiny part made by ferns and mosses that can grow into a new plant
flowering plant	a plant that bears flowers and fruits and reproduces from seeds

	Flowering plants	Ferns and mosses
Reproduce from	seeds	spores
Flowers and fruits	have flowers and bear fruits	have no flowers and no fruits
Where the seeds or spores are made	seeds form inside the fruit	fern: spore bags under the leaves; moss: spore capsules
Examples	hibiscus, balsam, rambutan, mango, coconut, grass	bird's nest fern, moss



WORKED EXAMPLE

Siti found a plant in a shady corner of the school garden. It had no flowers. On the underside of its leaves were many brown dots, X, in rows.
(a) How does this plant reproduce?
(b) What are the brown dots, X?



1. What is the question asking? How a plant with no flowers reproduces, and what the brown dots are.
2. The science idea: ferns have no flowers and reproduce from spores. Their spores are made in spore bags on the underside of the leaves.
3. Link: rows of brown dots under the leaves are spore bags, so this plant is a fern.

(a) It reproduces from spores. (It is a fern.) (b) X are spore bags, where the spores are made.

TRY THIS

Does a moss bear fruits? Explain.

Answer: No. A moss is a non-flowering plant; it reproduces from spores, so it has no flowers to develop into fruits.

CHAPTER 1

Practice Questions

Part 2: Reproduction in Plants and Humans



In the practice questions

25 questions, 66 marks. For each multiple-choice question, write the number of the correct option in the brackets. Write your other answers on the lines given. The answers are on page 224.

- **Section A: Multiple-Choice Questions: 16 questions, 32 marks**
- **Section B: Open-Ended Questions: 9 questions, 34 marks**

Name: _____ Class: _____ Date: _____

PRIMARY 5 · SCIENCE · REPRODUCTION IN PLANTS AND HUMANS

Reproduction in Plants and Humans

INSTRUCTIONS

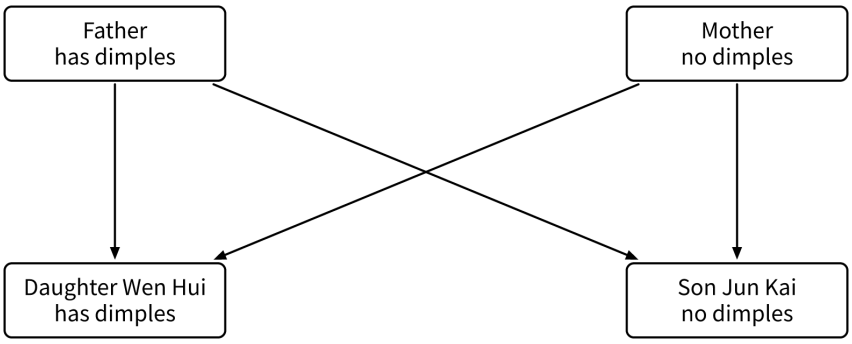
- 25 questions, 66 marks in total.
- Answer all questions in the spaces provided.
- For multiple-choice questions, write the option number in the brackets.
- Write your other answers on the lines given, in full sentences.

Section A: Multiple-Choice Questions

1 Which of the following statements are correct?
A: All living things are made up of cells.
B: An egg is a cell.
C: Living things reproduce to ensure the continuity of their kind. ( ) [2]

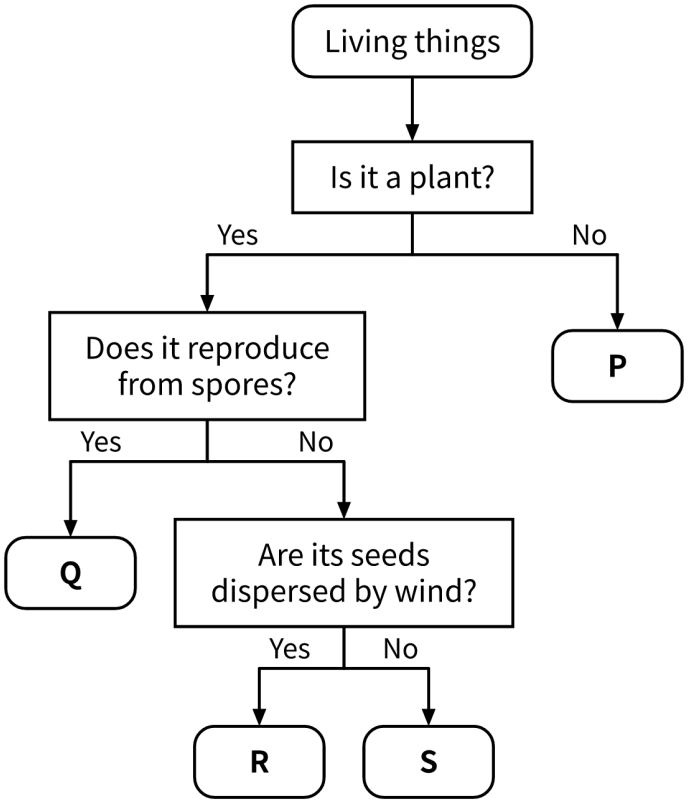
(1) A and B only (2) A and C only (3) B and C only (4) A, B and C

2 The diagram shows a family. The arrows go from the parents to their children.
Which statement best explains the children's characteristics? ( ) [2]



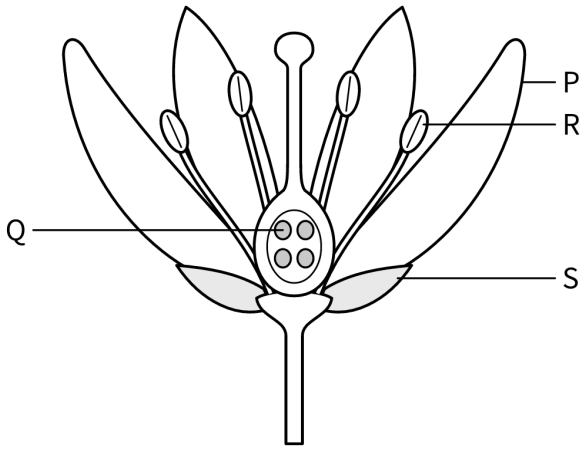
(1) The daughter got her dimples from her mother.
(2) The son got no characteristics from his father.
(3) Each child gets characteristics from both parents, so they can be different.
(4) Dimples can only be passed from a father to a son.

3 Study the flowchart. Which of the following could be Q and S? ( ) [2]



1. Q: mushroom, S: rambutan tree
2. Q: fern, S: angsana tree
3. Q: moss, S: rambutan tree
4. Q: mango tree, S: fern

4 The diagram shows a flower cut in half. Which part develops into a seed after fertilisation? ( ) [2]



1. P
2. Q
3. R
4. S

5 Wei Jie wrote the functions of some parts of a flower in a table. Which row is correct? ( ) [2]

Row	Part of the flower	Function
(1)	filament	receives pollen grains
(2)	stigma	produces pollen grains
(3)	sepal	protects the flower when it is a bud
(4)	ovule	develops into the fruit

(1) Row (1) (2) Row (2) (3) Row (3) (4) Row (4)

6 Hui Min looked closely at flower K and wrote down what she saw. How is flower K most likely pollinated, and why? ( ) [2]

Part of flower K	What Hui Min saw
Petals	small, green, no scent
Anthers	hang outside the flower on long filaments
Stigma	large and feathery, hangs outside the flower
Pollen grains	many, small and light

(1) By insects, because its petals attract insects
(2) By wind, because its feathery stigma can trap pollen grains in the air
(3) By insects, because its anthers hang outside to touch the insects
(4) By water, because its pollen grains are small and light