# Chapter 1 Heredity in Living Things

## Notes

**Fill in each blank with the correct word.**

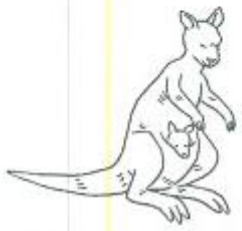
## 1.1 Passing on of characteristics from parents to young

1. Living things reproduce to ensure the _____ of their species.

2. During reproduction, parents pass on their _____ to their young.

3. The transmission of characteristics or traits from the parents to their young is called _____.

4. The young of living things have some characteristics _____ to their parents.



An adult kangaroo and its young

A young plant and an adult plant

## 1.2 Heredity in humans

1. We inherit our characteristics from both of our _____.

2. Hereditary information is contained in the nucleus of the sperm of our _____.

3. Hereditary information is also contained in the nucleus of the egg of our _____.

4. Some characteristics that we _____ from our parents are easily observed while some are not.

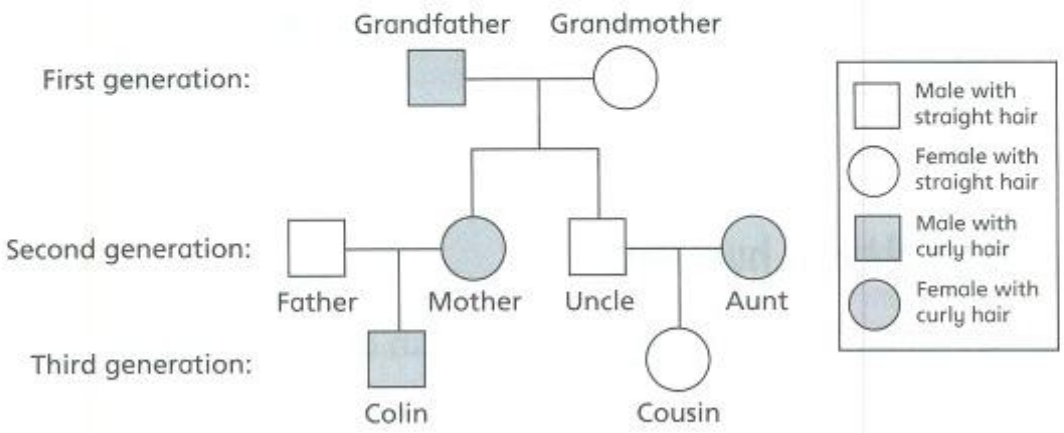
5. Characteristics that can be easily observed are parts of our _____ such as height, skin and hair colours, type of thumb, presence of dimples and double or single eyelids.

6. Characteristics that cannot be _____ are blood type and genetic diseases.

7. Characteristics such as dyed hair, surgically modified dimples and eyelids _____ be passed on from parents to their young.

8. Some characteristics such as our fingerprints and voice patterns are _____ to us.

9. A _____ _____ can be used to show the occurrence of a characteristic from one generation to the next.




Family tree

## 1.3 Heredity in plants

1. Plants also pass on their _____ to their young.

2. A young plant _____ its parents.

3. A young plant _____ the shape, size, colour of flowers and fruit, taste of fruit and type of seeds of its parents.

4. A plant always bears flowers, fruit and seeds of _____ type to its parents.

Young adult plant

Old adult plant

5. A plant that produces white flowers will have young that produces _____ flowers.

6. A plant that produces _____ fruit will have young that produces sour fruit.

7. A plant that has round seeds will have young that produces _____ seeds.

## Practice Questions

### Section A: Multiple-choice questions

**For each question, 4 options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Write your answer in the brackets provided.**

1. How do living things ensure the continuity of their species?
   (1) They grow.
   (2) They reproduce.
   (3) They move from place to place.
   (4) They feed on other living things. ( )

2. Which statement is correct?
   (1) Both living things and non-living things reproduce.
   (2) The young of living things have some characteristics similar to their parents.
   (3) During reproduction, the young pass on their characteristics to their parents.
   (4) The passing on of characteristics from the parents to their young is called growth. ( )

3. Which statement about reproduction in humans is **incorrect**?
   (1) We inherit our traits from both of our parents.
   (2) We do not inherit bad traits such as genetic diseases.
   (3) Hereditary information is contained in the egg of our mother.
   (4) Hereditary information is contained in the sperm of our father. ( )

4. Which characteristics that we inherit from our parents are easily observed?
   A Height
   B Blood type
   C Skin colour
   D Presence of dimples

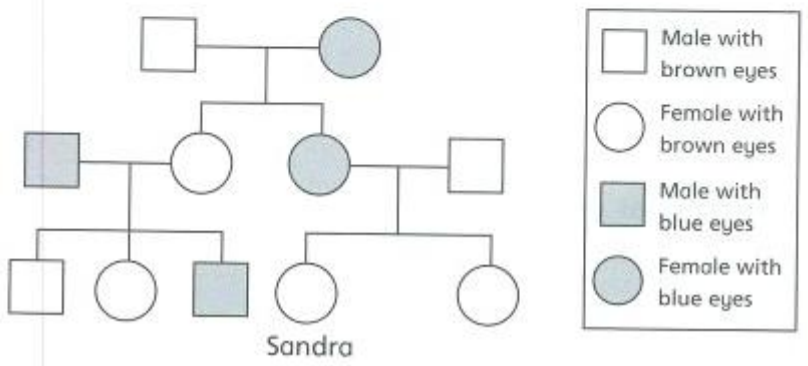
   (1) A and D only
   (2) B and C only
   (3) A, C and D only
   (4) A, B, C and D ( )

5. Which characteristics **cannot** be passed on from parents to their young?

A Hair colour
B Fingerprints
C Voice pattern
D Surgically modified eyelids

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

*Study Sandra's family tree below and answer questions 6 to 8.*




6. How many people in Sandra's family are males?

(1) 7
(2) 6
(3) 5
(4) 4 ( )

7. How many people in Sandra's family have brown eyes?

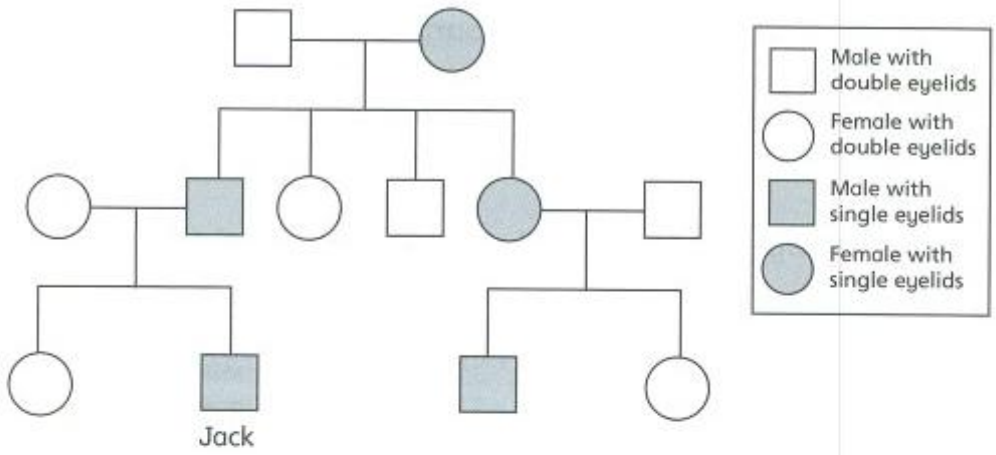
(1) 7
(2) 6
(3) 5
(4) 4 ( )

8. What is the eye colour of Sandra's parents?

| | Father | Mother |
|---|---|---|
| (1) | Blue | Blue |
| (2) | Blue | Brown |
| (3) | Brown | Brown |
| (4) | Brown | Blue |

( )

*Study Jack's family tree below and answer questions 9 to 11.*




9. How many couples are there in Jack's family?
   (1) 6
   (2) 5
   (3) 3
   (4) 4 ( )

10. How many people in Jack's family are females with double eyelids?
   (1) 5
   (2) 2
   (3) 3
   (4) 4 ( )

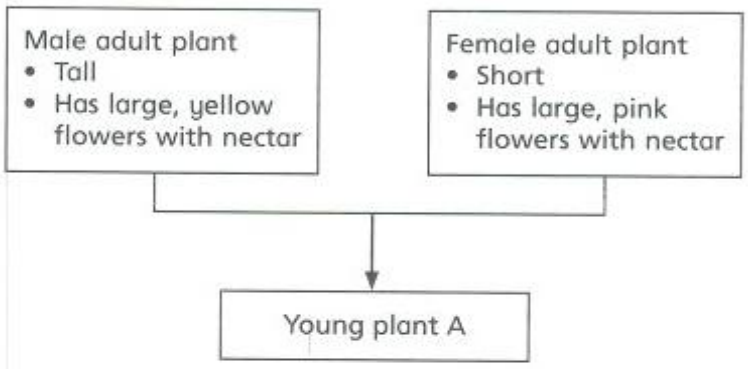
11. What type of eyelids do Jack's cousins have?

| | Male cousin | Female cousin |
|---|---|---|
| (1) | Single | Single |
| (2) | Single | Double |
| (3) | Double | Single |
| (4) | Double | Double |

( )

12. Which statement about reproduction in plants is **false**?
    (1) A young plant resembles its parents.
    (2) Plants reproduce to ensure that their kinds continue to exist.
    (3) During reproduction, adult plants pass on their traits to their young.
    (4) Plants reproduce to ensure that the animals depending on them can continue to survive. (  )

*Study the following diagram and answer questions 13 and 14.*




13. Which of the following must be a characteristic of young plant A?
    (1) Tall
    (2) Has pink flowers
    (3) Has large flowers
    (4) Has yellow flowers (  )

14. Which of the following could **not** be young plant A?

| | Height | Type of flowers |
|---|---|---|
| (1) | Tall | Has pink flowers |
| (2) | Tall | Has blue flowers |
| (3) | Short | Has yellow flowers |
| (4) | Short | Has flowers with nectar |

(  )

## Section B: Open-ended questions

**Write your answers in the spaces provided.**

1. Study the living things below.

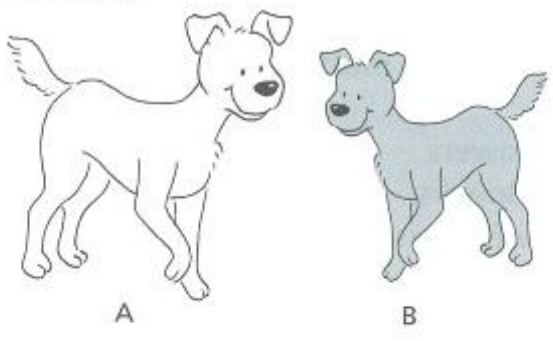
(a) Why do living things reproduce?

_____

(b) What is the passing on of characteristics from the parents to their young known as?

_____

2. Study the animals below.



A B

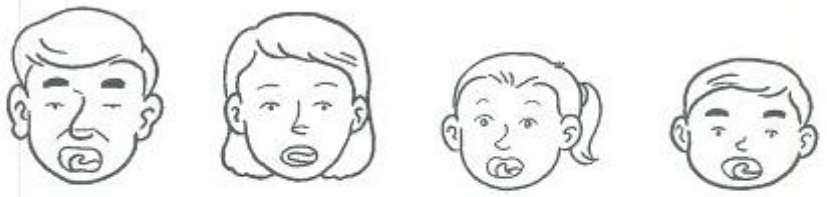
W X Y Z

Which puppy, W, X, Y or Z, is not the offspring of dogs A and B? Explain your answer.

_____

_____

3. Mr and Mrs Gan have two children, Amy and Alan, as shown below.



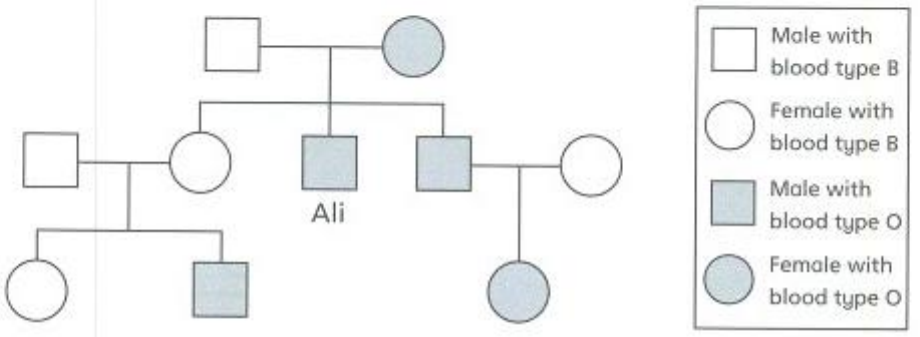

(a) What two characteristics did Amy inherit from her mother?

_____

(b) From which parent(s) did Alan inherit his characteristics?

_____

4. Study Ali's family tree below.




(a) How many siblings does Ali have?

_____

(b) Can Ali's parents have a child with blood type A? Explain your answer.

_____

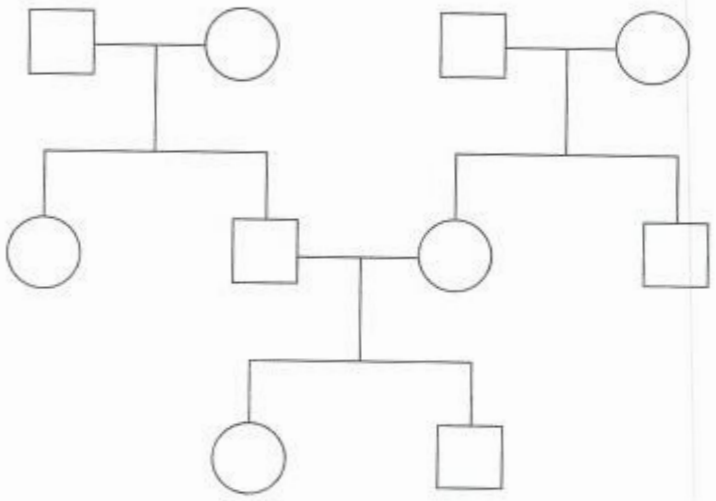
_____

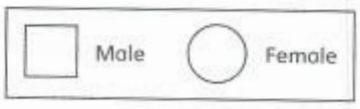
(c) Both Ali's sister and brother-in-law have blood type B. However, they have a son with blood type O. How is this possible?

_____

_____

5. Ella is married to John and their family tree is shown below. Ella has a brother while John has a sister.

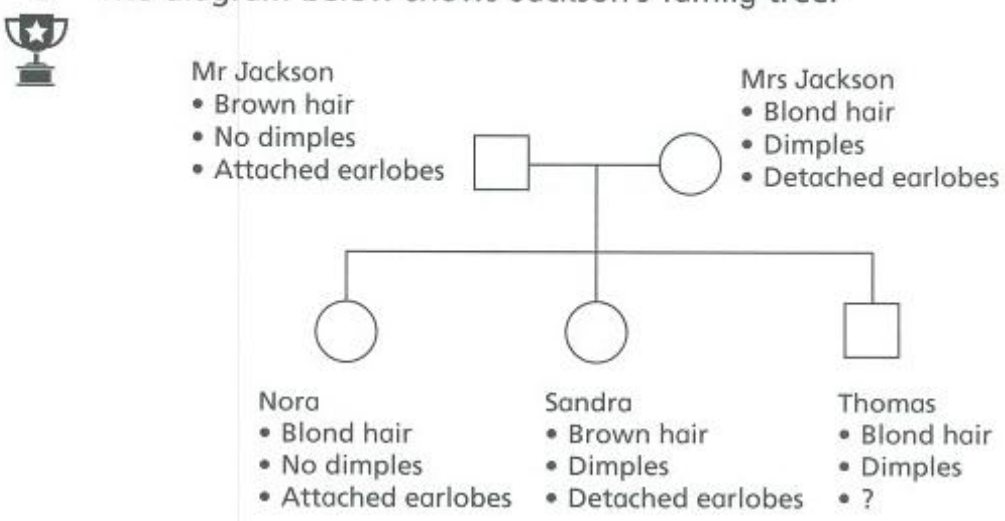




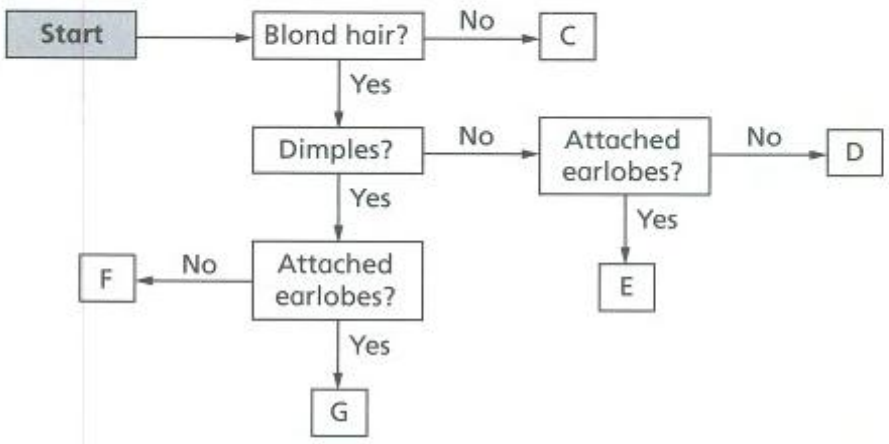

(a) On the family tree above, write the letters 'E' to represent Ella and 'J' to represent John.

(b) John's sister married Victor and they have a son, Nicholas. Draw on the family tree to show Victor and Nicholas.

6. The diagram below shows Jackson's family tree.




Study the flow chart below.




(a) Identify the letters that represent Nora and Sandra.

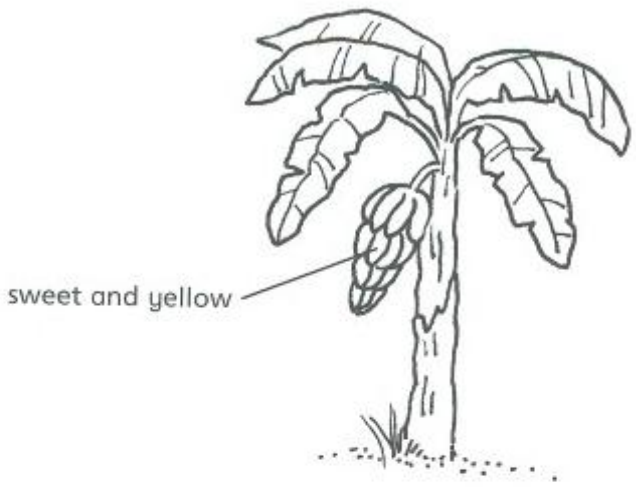
Nora: _____

Sandra: _____

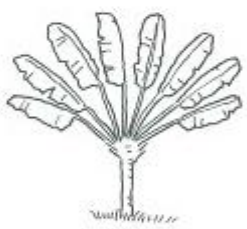
(b) If Thomas inherited at least one characteristic from each parent, which letter represents Thomas?

_____

7. Study the plants below.




H



R

S

T

(a) Which young plant, R, S or T, is the offspring of adult plant H?

_____

(b) What type of fruit is the offspring in (a) likely to bear?

_____

8. The table below shows the characteristics of four plants J, K, L and M.

| | Plant J | Plant K | Plant L | Plant M |
|---|---|---|---|---|
| Flowers | Small and white | Large and purple | Large and red | Small and purple |
| Fruits | Sweet | Semisweet | Sweet | Sour |
| Seeds | Round | Round | Angular | Angular |

(a) A gardener wants to produce a new plant with large flowers. Which two plants should he crossbreed? What is the likely colour of the flowers of the new plant?

_____

(b) A young plant is produced by crossbreeding plants J and K. What characteristic does the gardener want the young plant to inherit?

_____

(c) A young plant has large and purple flowers, semisweet fruit and angular seeds. Could it be produced by crossbreeding plants L and M? Explain your answer.

_____

_____

_____