

Activities

3 In your exercise book, copy and complete the sentences with the word *gene(s)* or *allele(s)*.

- A(n) _____ is the unit of genetic transmission.
- _____ occur in pairs.
- _____ are different versions of the same _____.
- _____ can be classified as dominant or recessive.
- Sometimes _____ are co-dominant.

4 In your exercise book, copy and match the words to the definitions.

- genotype
- phenotype
- homozygous
- heterozygous

- is an individual's complete hereditary information.
- when an individual has two different alleles for a trait.
- is an individual's observable characteristics, morphology (shape, size or colour), development or behaviour.
- when an individual has identical alleles for a trait.

5  In your exercise book, copy and complete the text. Then listen and check your answers.

What factors dictate observable traits in all living things?

The observable traits of all living things are expressed by the _____ and _____ conditions.

Environmental conditions include:

- the environment within the _____
- the _____ environment
- the interaction with other _____ in the cell.

6 True or false? Copy the sentences in your exercise book and correct the false ones.

- Mendel's principle of uniformity: if there is dominance between alleles, the offspring will show an intermediate trait.
- Mendel's principle of segregation explains genetic transmission from the first generation parents to the second generation offspring.
- Mendel's principle of independent assortment explains the transmission of more than two traits.

7 In your exercise book, copy and complete the definition.

When two alleles have an _____ capacity to express a trait, they are called _____ alleles and they produce an _____ trait.



8 Look at the images above. Then in your exercise book, draw a diagram of the morning glory flower colours that demonstrates how the principle of uniformity works in this case.

- Use the same flower colours to illustrate Mendel's principle of segregation.
- How many genotypes appear and in what proportion?
- How many phenotypes appear and in what proportion?

9 Look at the diagram on page 90 that explains the principle of assortment and discuss these questions with a partner:

- Why do we use four letters to label the picture of each seed? (e.g. AALL)
- Why do we use two letters for the gametes? (e.g. AL)

10 Look at the picture and answer the questions in your exercise book.



- What is the phenotype of this guinea pig's hair colour?
- What are its potential genotypes?
- What could be the possible genotypes and phenotypes of its parents?

11 In your exercise book, answer the following questions:

- According to Mendel's principle of assortment, how many types of gametes can individuals from the F_1 generation produce?
- According to Mendel's principle of segregation, what proportion of individuals in the F_2 generation would have dominant phenotypes?

12 Mendel used rigorous scientific methodology to conduct his experiments. In your exercise book, copy and choose the statements below that you think indicate this.

- He proposed a hypothesis.
- He used control groups to compare his findings.
- He chose random traits to study.
- He recorded all his findings precisely.
- He made assumptions based on instinct.