Name: _____ Group: _____ Date: _____

STUDENT BOOK:	**Chapter 5, pp. 131–135**
CONCEPTS:	MITOSIS
	MEIOSIS
METHOD:	MODELLING

MULTIPLICATION AND DIVISION

Cell division is an essential process for the perpetuation of species. Two types of division are involved: mitosis and meiosis. With one type, the cells multiply. With the other, they produce gametes. You will visualize these processes in this activity.

IDENTIFYING THE PROCESS TO MODEL

Before modelling mitosis and meiosis, you need to clearly understand the differences between the two types of cell division and the phases involved.

Read pp. 131–135 in your student book for help in answering questions 1–7.

1. What is mitosis?

_____

_____

_____

2. What is a diploid cell?

_____

_____

_____

3. What is meiosis?

_____

_____

_____

4. What is a haploid cell?

_____

_____

_____

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5. What are the differences between mitosis and meiosis in terms of:

a) the number of cells resulting from division?

b) the number of phases involved?

6. In the process of cell division:

a) What is the name of the rod-like structures in the nucleus?

b) What shape is normally used to represent these structures?

PLANNING A MODEL

In this activity, you will model mitosis and meiosis (I and II) for an animal organism having three pairs of chromosomes, meaning that the parent cell has two copies of three different chromosomes ($2n = 6$).

7. In the tables on the following pages:

a) Name each of the phases of mitosis and meiosis.

b) Describe briefly how you will represent the chromosomes for each phase.

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Description of mitosis

MITOSIS	Interphase	Indistinct chromosomes in cell nucleus
Phase 1		
Phase 2		
Phase 3		
Phase 4		

Description of meiosis

MEIOSIS I	Interphase	Indistinct chromosomes in nucleus of parent cell
Phase 1		
Phase 2		
Phase 3		
Phase 4		

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Description of meiosis (*continued*)

MEIOSIS II	Interphase	Indistinct chromosomes in nucleus of parent cell
Phase 1		
Phase 2		
Phase 3		
Phase 4		

8. Using pipe cleaners of different colours:

a) Explain how you will model cell division.

b) Explain what each pipe cleaner represents.

_____

_____

_____

_____

_____

_____

_____

9. Make a list of the materials you will need to model mitosis and meiosis, including the number and colour of pipe cleaners.

Mitosis

- _____
- _____
- _____
- _____

Meiosis I

- _____
- _____
- _____
- _____

Meiosis II

- _____
- _____
- _____
- _____

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DESIGNING THE MODEL

10. Create your models according to these instructions:

- Write the name of each phase in the proper place.
- Glue your structures (pipe cleaners) inside the lines.

Model of mitosis

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Model of meiosis

Name: _____ Group: _____ Date: _____

VALIDATING THE MODEL

11. Does your model improve your understanding of the processes studied? Explain your answer.

12. How could you improve your model?