

Modeling Mitosis

1. Take one set of fastened cards for you and your partner to share. You should have eight cards in the set. Two should read “ABCD,” two should read “EFG,” two should read “HIJKL,” and two should read “MN.” These represent the chromosomes in one cell of an animal with eight chromosomes per cell, in four homologous pairs. Note that although the same letters appear on two different cards in the set, the letters are not necessarily identical. For example, some read “B” and some read “b.”

a) What do these different letters represent? What do the upper and lower case represent?

2. Fill in the table below by determining the genotype of your animal for each of the 14 traits A—N.

Gene	Homozygous dominant	Heterozygous	Homozygous recessive
A			
B			
C			
D			
E			
F			
G			
H			
I			
J			
K			
L			
M			
N			

3. Copy the letters on each card onto the blank one fastened to it.

b) What does this copying represent?

c) What phase is being modeled?

d) What do the staples represent?

4. Line all the cards up in the middle of the table between you and your partner.

e) What phase is being modeled?

5. You and your partner each grab one half of a fastened pair and the two of you pull them apart. Each of you should now have a pile of single cards.

f) What phase is being modeled?

g) What do you and your partner represent?

h) What was the original diploid number of the mother cell?

i) What was the final diploid number of the 2 daughter cells?

j) Are the daughter cells different in genetic makeup from the mother?

k) Are the daughter cells different in genetic makeup from each other?