



National 5 Biology

Unit 1

Cell Biology

Ink Exercise Three

Cell Division and DNA

Name: _____

Class: _____

1. Which part of a cell controls cell division?

- a. Membrane
- b. Nucleus
- c. Cell wall
- d. Cytoplasm

2. How many chromosomes are found in a human diploid cell?

- a. 23
- b. 46
- c. 69
- d. 92

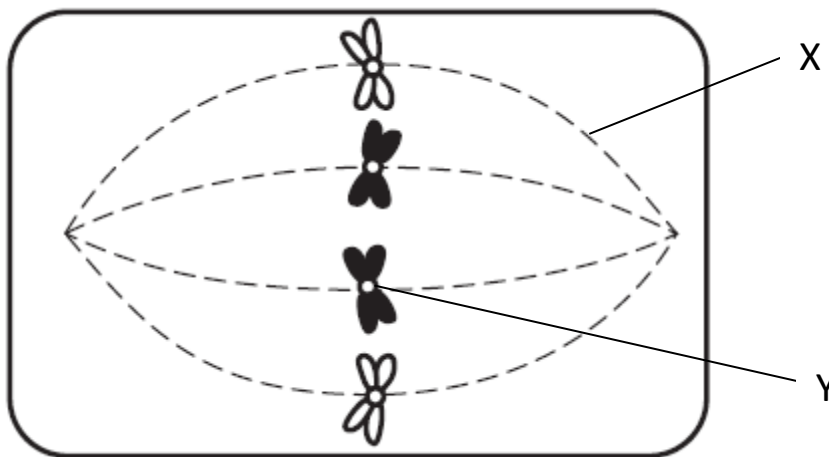
3. After fertilisation an egg cell divides many times. The table shows the increase in cell number after each division.

Number of divisions	0	1	2	3	4	5	6
Number of cells	1	2	4				

What would be the number of cells after 6 divisions?

- a. 12
- b. 64
- c. 32
- d. 16

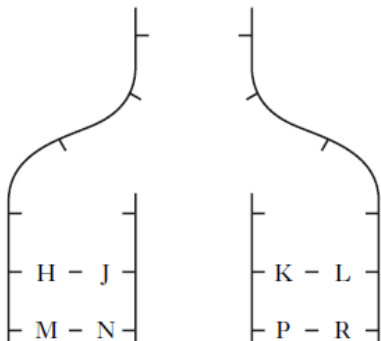
4. The diagram shows a cell during mitosis.



Which line in the table correctly identifies X and Y

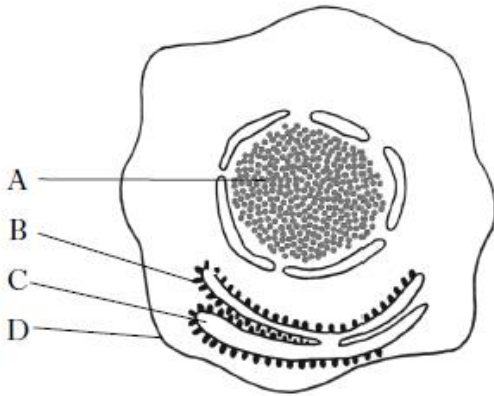
	X	Y
A	spindle fibre	chromosome
B	chromatid	chromosome
C	spindle fibre	centromere
D	cytoplasm	chromatid

5. An onion cell has a chromosome complement of 16. It divides to form daughter cells, who divide again. How many chromosomes will these new cells have?
- 2
 - 4
 - 8
 - 16
6. DNA is found in which part of the cell?
- Cytoplasm
 - Ribosomes
 - Nucleus
 - Cell membrane
7. The DNA base, (A) adenine, pairs with what other base?
- (A) Adenine
 - (T) Thymine
 - (C) Cytosine
 - (G) Guanine
8. The diagram shows DNA during replication. Base H represents thymine (T) and base M represents guanine (G). Which letters represent the base cytosine (C)?



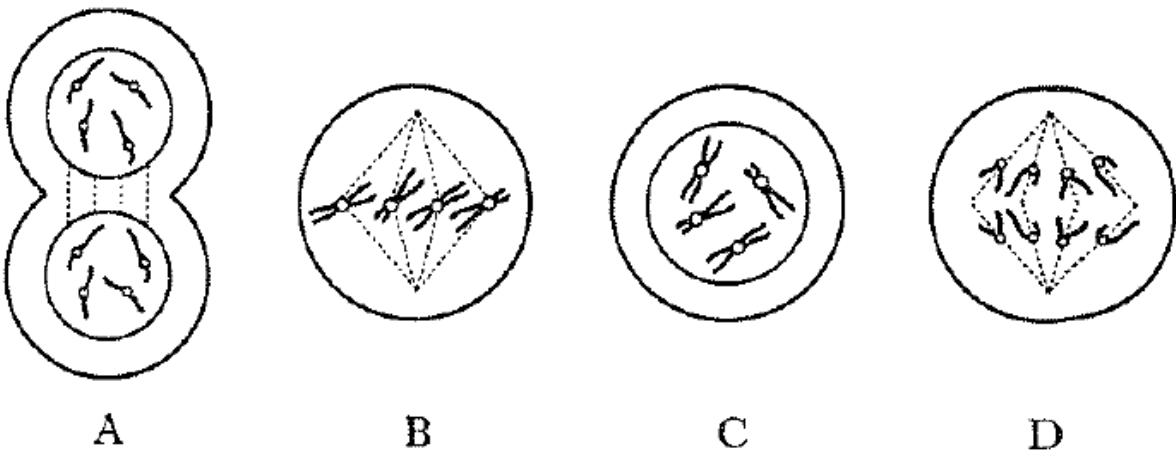
- J and K
 - J and L
 - N and P
 - N and R
9. A DNA molecule consists of 4000 nucleotides of which 20% contain the base adenine (A). How many of the nucleotides in this DNA molecule will contain guanine (G)?
- 800
 - 1000
 - 1200
 - 1600

10. The diagram below shows parts of an animal cell.



Where does synthesis of mRNA take place?

11. The following diagrams show four stages of cell division but not in the correct order.



a) Arrange the letters from the diagram to put the stages in the correct order. The first stage has been provided

Stage 1 C

Stage 2

Stage 3

Stage 4

1

b) Describe what is happen in stages B and D

Stage B

1

Stage D

1

c) Daughter cells produced by mitosis each have the same chromosome complement as the original cell. Why is this important?

1

d) A cell divides every 20 minutes. How many cells would be produced from one original cell at the end of two hours?

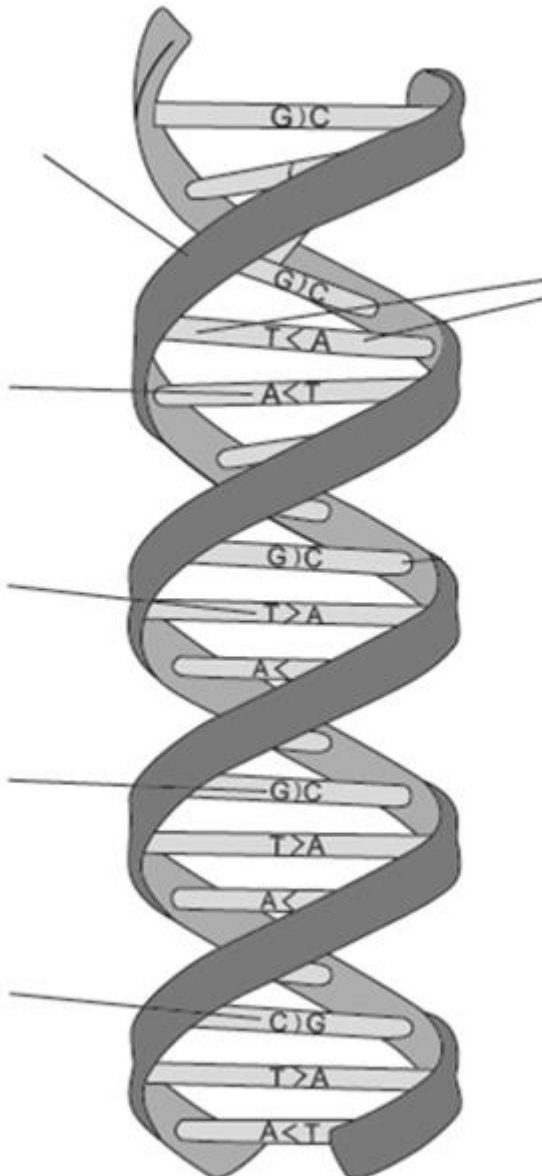
Space for calculation

_____ cells

1

12. Below is a diagram of DNA.

a) Label the diagram of DNA



4

a) Explain how this molecule controls cell activities

2

13. The sentence below describes the function of DNA.

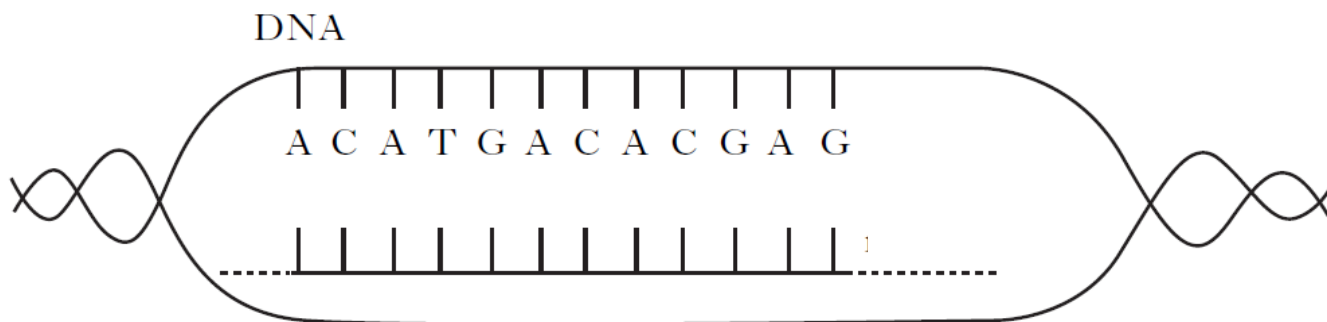
Underline **one** option in each set of brackets to make the following sentence correct.

The $\left\{ \begin{array}{l} \text{number} \\ \text{order} \end{array} \right\}$ of DNA $\left\{ \begin{array}{l} \text{bases} \\ \text{genes} \end{array} \right\}$ in a chromosome encodes information

for the structure of a $\left\{ \begin{array}{l} \text{carbohydrate} \\ \text{protein} \end{array} \right\}$.

1

14. The diagram below shows the beginning of protein synthesis



a) Give the complimentary strand to the DNA strand shown

1

b) From the diagram above, name the molecule being produced from DNA

1

c) Where does the mRNA go when it leaves the nucleus?

1

Areas I need to work on: