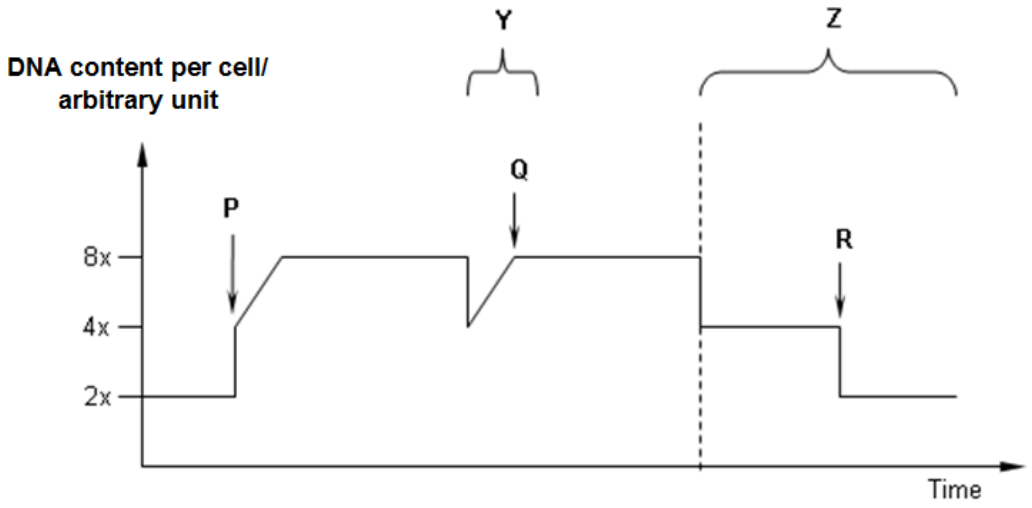
2018 Cell and Nuclear Division MCQ

2018 / H2 / AJC PRELIM / P1 Q17

1 The graph represents the changes in the DNA content within a cell at different stages in the cycle.



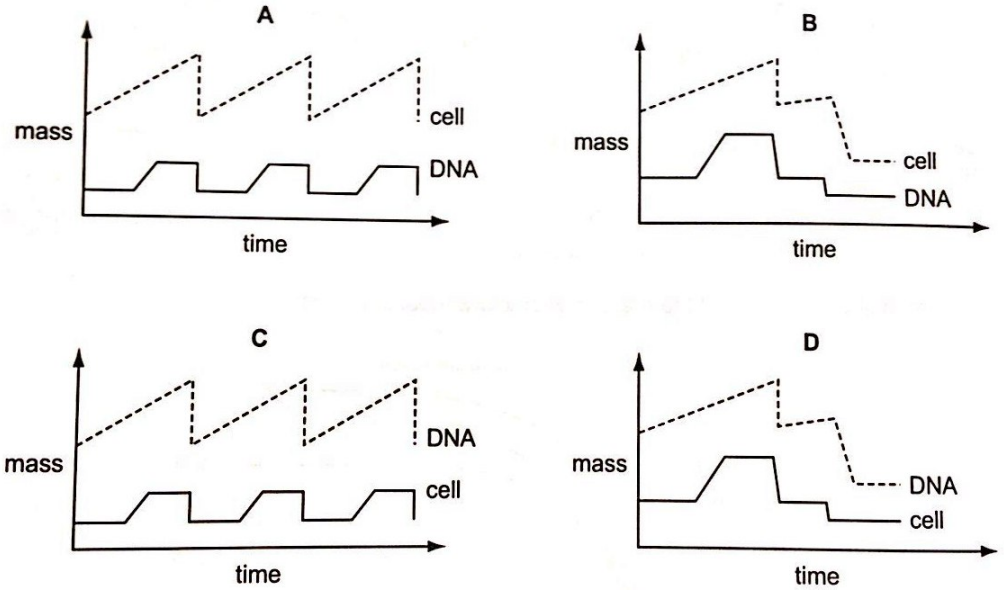
Name the events occurring at **P**, **Q**, **R** and identify the stage where meiosis is occurring.

	P	Q	R	Meiosis occurring at
A	S phase	fertilisation	cytokinesis	Y
B	fertilisation	interphase	cytokinesis	Z
C	S phase	prophase	telophase	Y
D	fertilisation	metaphase	Telophase	Z

2018 / H2 / DHS PRELIM / P1 Q7

2 Cell division is the means of almost all growth and reproduction.

Which graph correctly represents a form of cell division that maintains genetic stability at expense of variation?



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3 The diagram shows the chromosomes of one cell which has been squashed during mitosis.

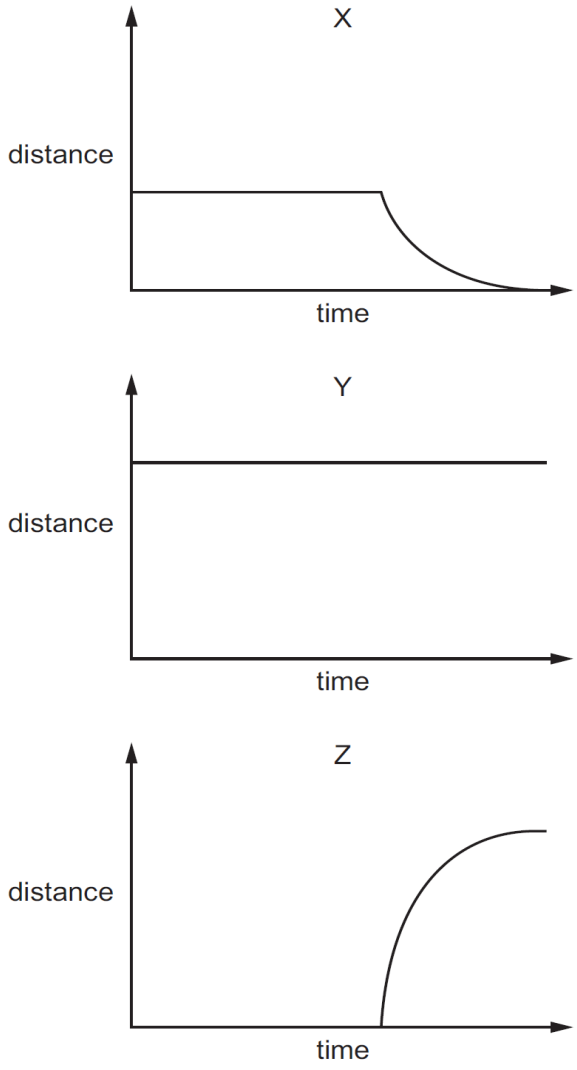
Which stage of mitosis is shown and what is the haploid chromosome number in this species?

	stage of mitosis	haploid chromosome number

A	anaphase	5
B	anaphase	10
C	metaphase	5
D	metaphase	10

2018 / H2 / JJC PRELIM / P1 Q15

4 The graphs show various distance measurements taken from metaphase of mitosis onwards. The graphs are to scale when compared to one another.



Which row correctly identifies the distance measurement for each graph?

	X	Y	Z
A	distance between	distance between	distance of centromeres

	poles of spindle	sister chromatids	from poles of spindle
B	distance between poles of spindle	distance of centromeres from poles of spindle	distance between sister chromatids
C	distance of centromeres from poles of spindle	distance between poles of spindle	distance between sister chromatids
D	distance of centromeres from poles of spindle	distance between sister chromatids	distance between poles of spindle

2018 / H2 / MJC PRELIM / P1 Q10

QUESTION 5
In plants, dinitroaniline herbicides are thought to prevent the formation of microtubules from the protein, tubulin. These microtubules form the spindle of cells undergoing mitosis.

The herbicides appear to have no effect on mammalian cells, but do affect parasitic protoctists that cause diseases in humans, such as malaria. Protoctists are eukaryotes.

Which statement is consistent with this information?

A Dinitroaniline herbicides are most likely to act in the G1 and G2 phases of the cell cycle.

B Dinitroaniline herbicides prevent plant cells from entering the M phase of the cell cycle.

C Plant cells and protoctists have similar enzymes controlling the formation of microtubules from the protein, tubulin.

D There are more similarities in spindle formation in mammals and protoctists than in protoctists and plants.

2018 / H2 / MJC PRELIM / P1 Q11

QUESTION 6
Which statement helps to explain how genetically identical cells are produced during the mitotic cell cycle?

A There is only one origin of replication, which ensures that DNA replication begins at a controlled site.

B Checkpoints of cell division are carefully regulated.

C Complementary base pairing occurs during DNA replication.

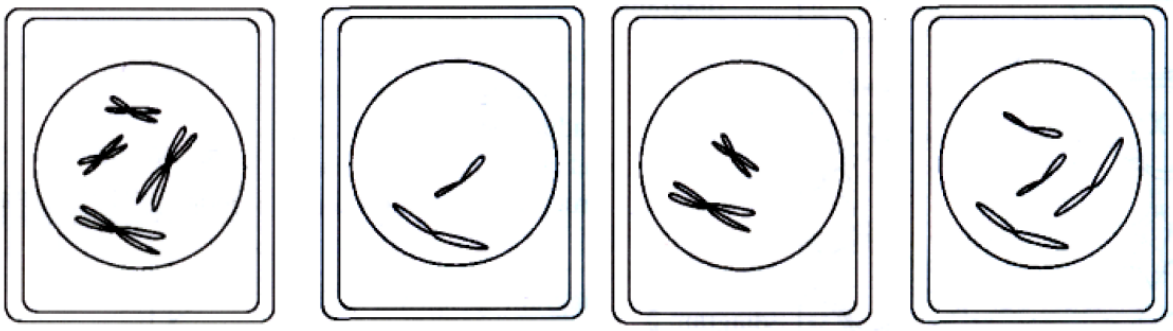
D RNA polymerase can correct some mistakes during transcription.

2018 / H2 / NJC PRELIM / P1 Q12

7 A diploid cell contains four chromosomes.

Which diagram shows the nucleus at prophase of mitosis after a meiotic cell cycle?

A **B** **C** **D**



2018 / H2 / NYJC PRELIM / P1 Q5

8 Which statement about the consequences of producing genetically identical cells is **not** correct?

A All cells will have the same phenotypes.

B All diploid cells will have the same alleles at the same loci.

C All genes will be passed to the daughter cells.

D All the coding sections of DNA will be preserved.

2018 / H2 / NYJC PRELIM / P1 Q6

9 Which statements refer to roles of meiosis in humans?

1 It reduces the number of chromosomes.

2 It leads to the production of gametes.

3 It results in cells that contain identical sets of chromosomes.

4 It ensures that a fertilized cell has the diploid number of chromosomes.

A 1, 2, 3 and 4

B 1, 2 and 4 only

C 1 and 3 only

D 2 and 4 only

2018 / H2 / PJC PRELIM / P1 Q10

10 Nocodazole is a chemical used in the study of mitosis. It causes all mitotic cells to stop dividing at metaphase.

Which statements correctly identify how this chemical might work?

1 inhibits chromatin condensing in the nucleus
2 prevents replication of the centrioles
3 stops sister chromatids from migrating to opposite poles.

A 1, 2 and 3

B 1 and 2 only

C 1 and 3 only

D 3 only

2018 / H2 / RI PRELIM / P1 Q6

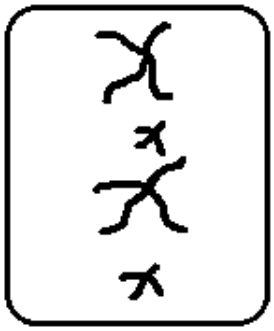
11. The amount of DNA present in the nucleus of a cell at the beginning of interphase is *x* picograms.

Which of the following combinations reflects the amount of DNA, in picograms, in the nucleus during the various stages of cell division?

	End of interphase	End of mitosis	End of meiosis I	Anaphase II
A	*x*	*½x*	*½x*	*½x*
B	*x*	*½x*	*½x*	*¼x*
C	*2x*	*x*	*x*	*x*
D	*2x*	*x*	*x*	*½x*

2018 / H2 / SAJC PRELIM / P1 Q5

11 The diagram below shows metaphase of mitosis in a cell of an organism.



Each homologous pair of chromosomes in this organism contains 4 gene loci. This organism was genotyped and found to be heterozygous at all gene loci. The organism reproduces sexually via the production of millions of gametes by meiosis.

What is the maximum possible number of genetically different gametes that can be produced by this organism, assuming crossing over does not occur during meiosis in all cells?

A 2
B 4
C 16
D 256

2018 / H2 / TJC PRELIM / P1 Q6

At prophase of mitosis, a eukaryote chromosome consists of two chromatids.

What is the structure of a single chromatid?

A one molecule of single-stranded DNA coiled around protein molecules

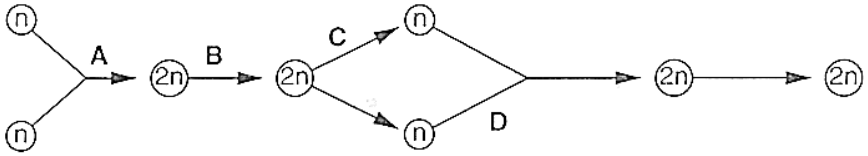
B two molecules of single-stranded DNA each coiled around protein molecules

C one double helix of DNA coiled around protein molecules

D two double helices of DNA each coiled around protein molecules

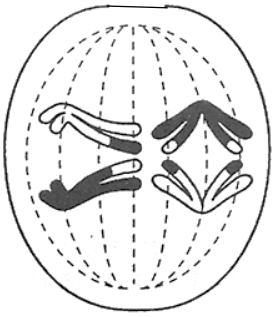
2018 / H2 / TJC PRELIM / P1 Q7

1 The diagram represents the life cycle of an animal.
3
At which stage in the life cycle does mitosis occur?



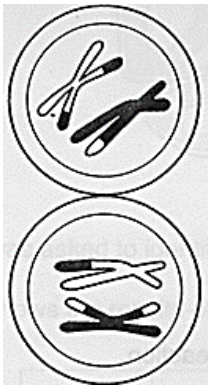
2018 / H2 / TJC PRELIM / P1 Q8

1 The diagram shows anaphase I of meiosis.
4

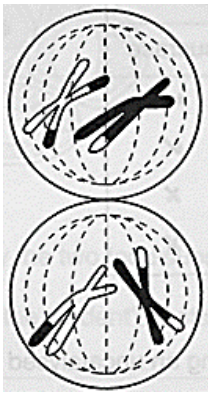


Which diagram shows metaphase II as meiosis continues in this cell?

A

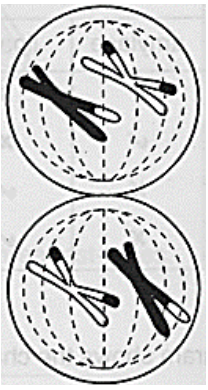


B



C

D



2018 Cell and Nuclear Division MCQ ANS			
Question	**Answer**	**Question**	**Answer**
1	**B**		
2	**A**		
3	**C**		
4	**C**		
5	**C**		
6	**C**		
7	**C**		
8	**A**		
9	**B**		
10	**D**		
11	**C**		
12	**B**		
13	**C**		
14	**B**		
15	**B**		