CLICKERS Mitosis Meiosis

1 In sexually reproducing species, the chromosome number remains stable over time because \_\_\_\_\_ and   
 \_\_\_\_\_ always alternate.

A meiosis ... fertilization

B meiosis ... mitosis

C mitosis ... fertilization

D meiosis ... interphase

E meiosis I ... meiosis II

2 Which of the following statements about homologous chromosomes is correct?

A They are found in animal cells but not in plant cells

B They have genes for the same traits at the same loci.

C They pair up in prophase II

D They are found in haploid cells

E They are found in the cells of human females but not in human males.

3 When we say that an organism is haploid, we mean that \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

A its cells each have one chromosome

B it has one half of a chromosome

C its cells have a single set of chromosomes

D its cells have two sets of chromosomes

E none of the above

4 Spores and gametes are different in that \_\_\_\_\_\_\_\_\_\_\_

A gametes never resemble spores morphologically

B gametes are always haploid while spores are diploid

C gametes can fuse to form a zygote, but spores can develop into independent organisms without   
 first forming a zygote

D only the formation of gametes contributes to genetic variation

E gametes are derived directly from sporophytes to form gametophytes

5 Somatic cells in humans contain \_\_\_\_\_\_\_ set(s) of chromosomes and are therefore termed \_\_\_\_\_\_\_\_\_.

A one . . . diploid

B two . . . haploid

C one . . . haploid

D two . . . diploid

E three . . . triploid

6 The egg (ovum) of a rabbit contains 22 chromosomes. How many chromosomes are in the somatic (body)   
 cells of a rabbit?

A 11

B 22

C 44

D 88

E 132

7 Synapsis occurs during \_\_\_\_\_\_\_\_\_\_\_

A anaphase I

B prophase I

C cytokinesis

D prophase II

E metaphase I

8 During anaphase I \_\_\_\_\_\_\_\_\_\_\_\_\_\_

A homologues separate and migrate toward opposite poles

B sister chromatids separate and migrate toward opposite poles

C nuclei reform

D chromosomes line up in one plane

E the cell is haploid

9 Crossing over occurs during \_\_\_\_\_\_\_\_

A cytokinesis

B metaphase I

C prophase II

D metaphase II

E prophase I

10 Regions of chromosomes where nonsister chromatids cross over are called \_\_\_\_\_\_\_\_\_\_\_\_.

A inversions

B homologues

C kinetochores

D chiasmata

E tetrads

11 In a male mammal, every cell that undergoes meiosis gives rise to \_\_\_\_ sperm.

A one

B two

C four

D no set number

12 Which function below makes meiosis more complicated than mitosis?

A decreasing the chromosome number to haploid

B introducing genetic variation among the daughter cells

C ensuring that each daughter cell gets a single, complete set of chromosomes

D undergoing two rounds of cytokinesis

E all of the above

13 Which of the following does NOT contribute to genetic variation in sexually reproducing species?

A crossing over

B independent assortment

C random fertilization

D synapsis

E segregation

14 The diploid number of chromosomes in a certain animal is 8 (2n=8). How do the four pairs of homologous   
 chromosomes align and separate during meiosis?

A All of the maternal chromosomes always move to one pole, and all the paternal chromosomes   
 always move to the other pole

B All 16 chromatids move together

C Exactly two maternal and two paternal chromosomes always move to each of the two poles

D The first to move influences all the other

E They align and assort independently to form any of 16 different combinations

15 Which of the following is a reason cells undergo meiosis?

A repair injuries

B growth of organism

C produce gametes

D replace worn out cells

16 Which of the following is TRUE about crossing over?

A Crossing over happens in spermatogenesis but not oogenesis.

B Crossing over happens in mitosis but not meiosis

C Crossing over happens during prophase II

D Crossing over results in different combinations of maternal and paternal alleles together on chromatids

E Crossing over results in different combinations of maternal and paternal chromosomes together in

different daughter cells

17 Bacteria reproduce using \_\_\_\_\_\_\_\_\_

A meiosis

B binary fission

C sexual reproduction

D random fertilization

E budding and regeneration

18 All of the following happen in meiosis but not mitosis EXCEPT \_\_\_\_\_\_\_\_

A segregation

B crossing over

C independent assortment

D DNA synthesis during interphase II

E synapsis

19 Independent assortment happens during \_\_\_\_\_\_\_\_ of meiosis.

A Prophase I

B Prophase II

C Anaphase I

D Anaphase II

E Telophase I

20 Sperm and eggs could also be called \_\_\_\_\_\_\_\_.

A polar bodies

B spores

C diploid cells

D somatic cells

E gametes

21 After cytokinesis I of meiosis, the chromosomal makeup of each daughter cell is \_\_\_\_\_\_\_\_.

A diploid and chromosomes are composed of a single chromatid

B diploid and the chromosomes are composed of two chromatids

C haploid and the chromosomes are composed of a single chromatid

D haploid and the chromosomes are composed of two chromatids

E tetraploid and the chromosomes are composed of tetrads

22 In animals\_\_\_\_\_\_\_\_\_\_ are produced by mitosis and \_\_\_\_\_\_\_ are produced by meiosis.

A somatic cells ; gametes

B spores ; gametes

C gametes ; somatic cells

D zygotes ; gametes

E haploid cells ; diploid cell

23 In plants and fungi, gametes are produced by \_\_\_\_\_\_\_\_\_\_ and spores are produced by \_\_\_\_\_\_\_\_.

A meioisis ; mitosis

B mitosis ; meiosis

C fertilization ; binary fission

D mitosis ; fertilization

E meiosis ; budding

24 Genes that are far apart on a chromosome have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ crossover frequency than  
 ones that are close together.

A higher  
 B lower

25 High levels of cyclin proteins activate cyclin dependent kinases (CdK’s) and cause cells to  
 A stop at the metaphase checkpoint  
 B pass through the restriction checkpoint

C Add phosphates onto telomeres to shorten them  
 D stop dividing and enter into G0  
 E unwind chromosomes into chromatin

26. Cancer cells have lost control of their cell cycle. They are immortal and keep dividing because they have lost  
 all of the following EXCEPT  
 A response to apoptosis signal

B contact inhibition

C density dependent inhibition  
 D telomerase activity

27. What role do actin proteins play in cell division?  
 A They make up the mitotic spindle.  
 B They encircle the cell and contract to make the cleavage furrow  
 C They attach spindle fibers to the kinetochores  
 D They attach homologous chromosomes together during synapsis  
  
 28 All of the following happen during prophase of mitosis EXCEPT

A centrosomes appear and move to opposite poles

B spindle fibers attach to kinetochore proteins  
 C chromatin condenses into chromosomes

D nuclear membrane fragments

E homologous chromosomes form tetrads

**ANSWER KEY Mitosis Meiosis Clicker review**

1 A

2 B

3 C

4 C

5 D

6 C

7 B

8 A

9 E

10 D

11 C

12 E

13 D

14 E

15 C

16 D

17 B

18 D

19 C

20 E

21 D

22 A

23 B

24 A

25 B

26 D

27 B

28 E