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