

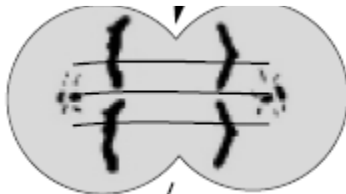
## Science 10F – Reproduction Review

1. Outline the process of mitosis

2. Number following pictures of meiosis in order



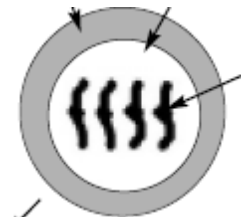
A



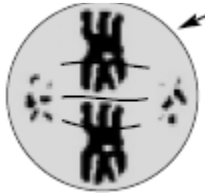
B



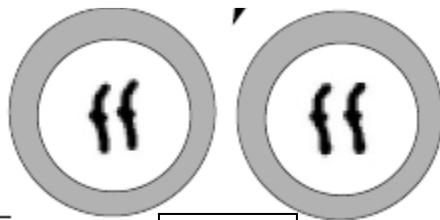
C



D



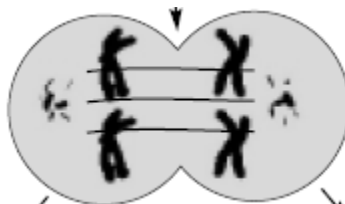
E



F



G



H

Name: \_\_\_\_\_

3. What is the difference between asexual and sexual reproduction?
  
4. What are the 5 different types of asexual reproduction
  - a.
  - b.
  - c.
  - d.
  - e.
  
5. Describe how *budding* works
  
- ~~6. List 2 advantages that asexual reproduction has over sexual reproduction~~
  - ~~a.~~
  - ~~b.~~
  
7. Where are the gamete cells produced? (General term)
  
8. What is a diploid cell?
  
9. What is a haploid cell?
  
10. How many *pairs* of chromosomes do humans have?
  
11. How many chromosomes in *total* do humans have in a cell that is in the middle of mitosis?
  
12. Why can't 2 different species reproduce together?

Name: \_\_\_\_\_

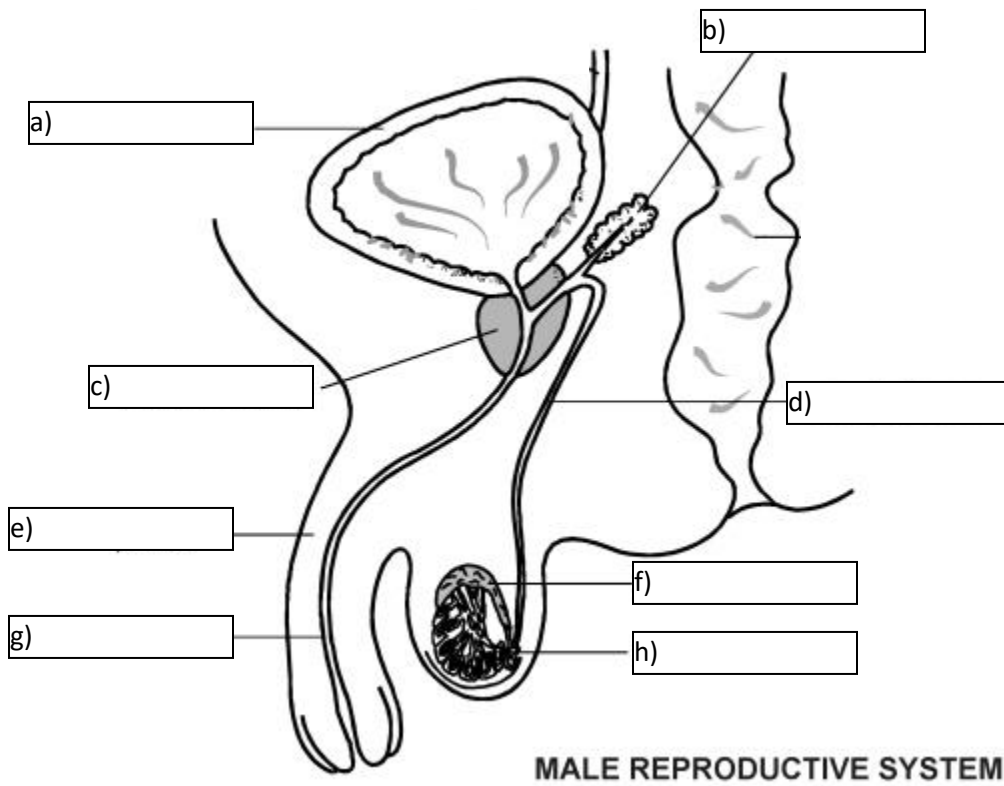
13. Show how a male is responsible for the offspring being male or female.

14. What are the 2 chromosomes that make up the 23<sup>rd</sup> pair in humans?

15. What is the purpose of the prostate gland?

16. What is the cervix?

17. Label the parts in the following diagram



Name: \_\_\_\_\_

18. What is the purpose of FSH in both males and female?
  
19. At what age does FSH start to be released into the body?
  
20. What hormone do the testes create?
  
21. What part of the body releases the hormone LH?
  
22. Outline the menstruation cycle. (What are the major events and what day(s) do they occur on)
  
  
  
  
  
  
  
  
  
  
23. When a female reaches puberty, approximately how many eggs does she produce each day?
  
  
  
  
  
  
  
  
  
  
24. What type of fertilization do fish use to reproduce? Why can't humans use this type of fertilization?
  
  
  
  
  
  
  
  
  
  
25. What are 3 reasons why a couple may not be able to reproduce?

Name: \_\_\_\_\_

26. For each of the following, complete a punnett square and answer the questions

a. **Flower Colour:** Purple is dominant (P), White is recessive (p), A PP father and a Pp mother cross pollinate

- i. What colour(s) are the parents?
- ii. What colour(s) are the children?

b. **Seed Colour:** Yellow is dominant (Y), Green is recessive (y), A Yy father and a yy mother cross pollinate

- i. What colour(s) are the parents?
- ii. What colour(s) are the children?
- iii. What are the chances that the children will be green?

27. Define the following

- a. Homozygous
- b. Recessive
- c. Sex-Linked traits
- d. Genotype

In fruit flies, eye colour is a sex linked trait. Red is dominant to white

28. What are the sexes and eye colours of flies with the following genotypes:

$X^R X^r$  \_\_\_\_\_       $X^R Y$  \_\_\_\_\_       $X^r X^r$  \_\_\_\_\_

$X^R X^R$  \_\_\_\_\_       $X^r Y$  \_\_\_\_\_

29. What are the genotypes of these flies:

White eyed, male \_\_\_\_\_      Red eyed Female (Heterozygous) \_\_\_\_\_

White eyed, female \_\_\_\_\_      Red eyed, Male \_\_\_\_\_

30. Show the cross of a white eyed female with a red-eyed male

Name: \_\_\_\_\_

31. Show a cross between a pure red eyed female and a white eyed male

- a. What are the genotypes of the parents
- b. How many offspring are
  - i. White eyed male
  - ii. White eyed female
  - iii. Red eyed male
  - iv. Red eyed female

32. Show the cross of a red eyed female (heterozygous) and a red eyed male.

- a. What are the genotypes of the parents?
- b. How many offspring are
  - i. White eyed male
  - ii. White eyed female
  - iii. Red eyed male
  - iv. Red eyed female
- c.

## Science 10F – Reproduction Review (ANSWERS)

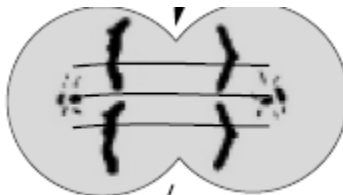
1. Outline the process of mitosis

- *Chromosomes replicate*
- *Chromosomes line up in the center/spindle fibers begin to form*
- *Spindle fibers join with centromere/nucleus disintegrates*
- *Spindle fibers pull apart chromosomes / cell begins to pinch into 2 cells*
- *Cell fully pinches apart and nucleus reforms in both cells*

2. Number following pictures of meiosis in order



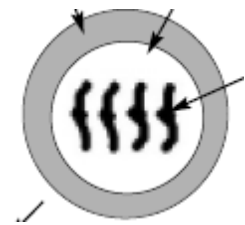
A 2



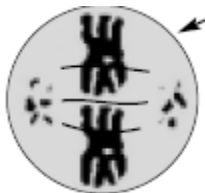
B 7



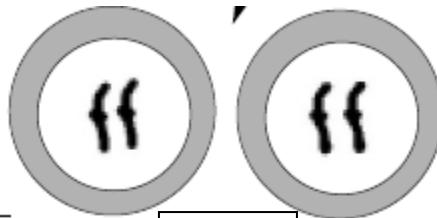
C 6



D 1



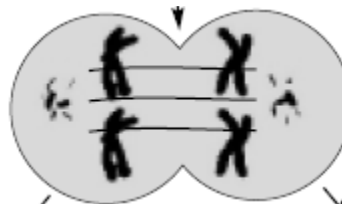
E 4



F 8



G 3



H 5

3. What is the difference between asexual and sexual reproduction?

**Sexual:** *2 individuals needed; meiosis occurs; offspring are genetically unique*

**Asexual:** *1 individual needed; mitosis occurs; offspring are genetically identical to parent*

4. What are the 5 different types of asexual reproduction
  - a. *Binary Fission*
  - b. *Budding*
  - c. *Sporulation*
  - d. *Vegetative Propagation*
  - e. *Regeneration*
  
5. Describe how *budding* works
  - *Parent begins to grow a bud of a miniature version of itself*
  - *Bud eventually detaches*
  - *Bud grows into full adult*
  
6. ~~List 2 advantages that asexual reproduction has over sexual reproduction~~
  - ~~a. *Do not need to expend energy looking for mate*~~
  - ~~b. *Generally faster*~~
  - ~~c. *Offspring need less time to mature*~~
  - ~~d. *Offspring well adapted to environment*~~
  - ~~e. *No STI's*~~
  - ~~f. *More individuals*~~
  - ~~g. *Others...*~~
  
7. Where are the gamete cells produced? (General term)

*Gonads*
  
8. What is a diploid cell?

*A cell with a full complement of chromosomes*
  
9. What is a haploid cell?

*A cell with half the number of chromosomes as a normal cell*
  
10. How many *pairs* of chromosomes do humans have?

*23*
  
11. How many chromosomes in *total* do humans have in a cell that is in the middle of mitosis?

*92*
  
12. Why can't 2 different species reproduce together?

*The number and size of chromosomes are different*



Name: \_\_\_\_\_

13. Show how a male is responsible for the offspring being male or female.

		<i>Male</i>	
		<i>X</i>	<i>Y</i>
<i>Female</i>	<i>X</i>	<i>XX</i>	<i>XY</i>
	<i>X</i>	<i>XX</i>	<i>XY</i>

14. What are the 2 chromosomes that make up the 23<sup>rd</sup> pair in humans?

*Male: XY      Female: XX*

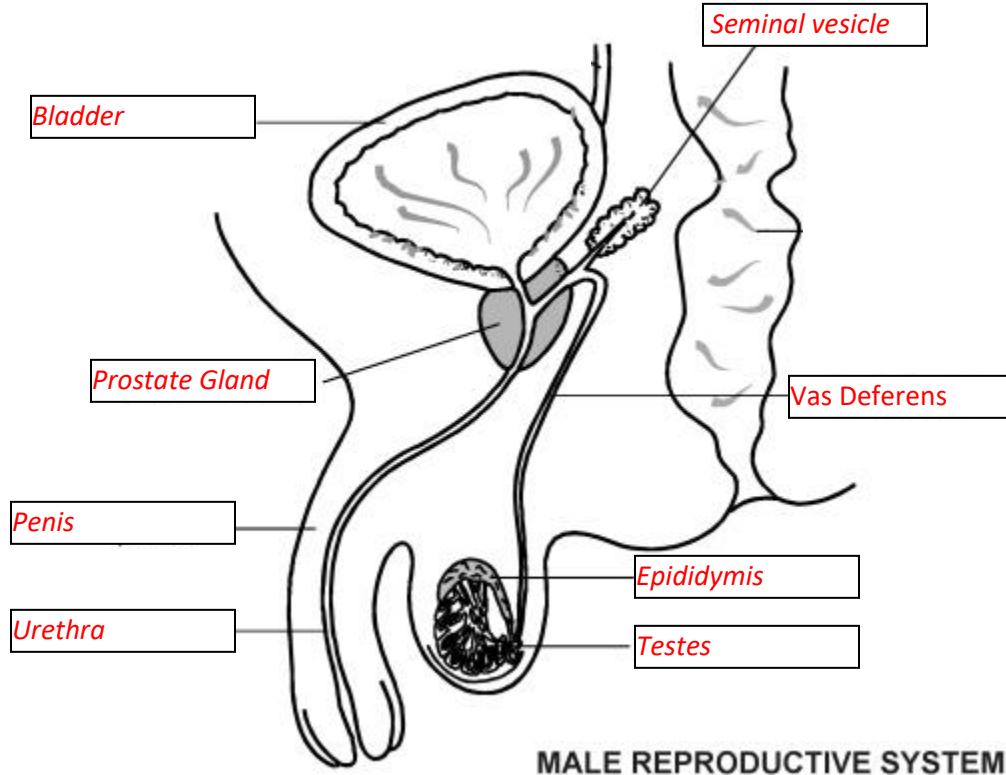
15. What is the purpose of the prostate gland?

*Provides protective fluid for the sperm so they can survive longer inside the female reproductive organs. Provides ~25% of total fluid*

16. What is the cervix?

*A strong muscle that keeps the uterus closed during pregnancy. Opens when the baby is ready to be born*

17. Label the parts in the following diagram



18. What is the purpose of FSH in both males and female?

*Start the process of puberty. Stimulates the gonads to begin production of other hormones*

19. At what age does FSH start to be released into the body?

*Early to Mid-teens (on average)*

20. What hormone do the testes create?

*Testosterone*

21. What part of the body releases the hormone LH?

*Pituitary gland (base of the brain)*

22. Outline the menstruation cycle. (What are the major events and what day(s) do they occur on)

- *Uterine lining begins to shed on day 1 with a drop in estrogen and progesterone*
- *A rise in estrogen at around day 10-12 causes a spike in LH which causes ovulation at around day 14*
- *Progesterone begins to rise around day 20 which causes thickening of the uterine lining → peaks at around day 28*

23. When a female reaches puberty, approximately how many eggs does she produce each day?

*1 every 28 days (on average)*

24. What type of fertilization do fish use to reproduce? Why can't humans use this type of fertilization?

*External fertilization*

*Humans cannot develop outside the uterus*

25. What are 3 reasons why a couple may not be able to reproduce?

- *Sperm never meet the egg*
- *Zygote does not implant into uterus*
- *Genetic problems*
- *Female hormonal imbalances cause disruption to menstrual cycle.*

26. For each of the following, complete a punnett square and answer the questions

- a. **Flower Colour:** Purple is dominant (P), White is recessive (p), A PP father and a PP mother cross pollinate

- i. What colour(s) are the parents? *Both are purple*  
 ii. What colour(s) are the children? *All are purple*

	P	P
P	PP	PP
P	PP	PP

- b. **Seed Colour:** Yellow is dominant (Y), Green is recessive (y), A yy father and a yy mother cross pollinate

- i. What colour(s) are the parents? *Both green*  
 ii. What colour(s) are the children? *All Green*  
 iii. What are the chances that the children will be green? *100%*

	y	y
y	yy	yy
y	yy	yy

27. Define the following

- a. Homozygous *means that both of your genes for a trait are the same*  
 b. Recessive *genes that are only expressed if no dominant genes are present*  
 c. Sex-Linked traits *Traits that have genetic information on the XY chromosomes*  
 d. Genotype *is the term for the genes that an organism has*

In fruit flies, eye colour is a sex linked trait. Red is dominant to white

28. What are the sexes and eye colours of flies with the following genotypes:

$X^R X^r$  *Female: Red*

$X^R Y$  *Male: Red*

$X^r X^r$  *Female: White*

$X^R X^R$  *Female: Red*

$X^r Y$  *Male: White*

29. What are the genotypes of these flies:

White eyed, male  $X^rY$

Red eyed Female (Heterozygous)  $X^R X^r$

White eyed, female  $X^r X^r$

Red eyed, Male  $X^R Y$

30. Show the cross of a white eyed female with a red-eyed male

	$X^R$	$Y$
$X^r$	$X^R X^r$	$X^r Y$
$X^r$	$X^R X^r$	$X^r Y$

31. Show a cross between a pure red eyed female and a white eyed male

a. What are the genotypes of the parents *Male:  $X^r Y$  Female:  $X^R X^R$*

b. How many offspring are

- i. White eyed male *0%*
- ii. White eyed female *0%*
- iii. Red eyed male *50%*
- iv. Red eyed female *50%*

	$X^r$	$Y$
$X^R$	$X^R X^r$	$X^R Y$
$X^R$	$X^R X^r$	$X^R Y$

32. Show the cross of a red eyed female (heterozygous) and a red eyed male.

a. What are the genotypes of the parents? *Male:  $X^R Y$  Female:  $X^R X^r$*

b. How many offspring are

- i. White eyed male *25%*
- ii. White eyed female *0%*
- iii. Red eyed male *25%*
- iv. Red eyed female *50%*

	$X^R$	$Y$
$X^R$	$X^R X^R$	$X^R Y$
$X^r$	$X^R X^r$	$X^r Y$