مدرسة المدار الدولية
MADAR international school

Total number of pages : **18**

Grade 11

Biology

Term 3	Worksheet	Duration: 45 min
Date:___/ ____ / 2016	**Endocrine System**	

Name: _____ **Section: _____**

NGSS	Learning Objective	mark
HS-LS-1-To help students formulate an answer to the question, "How do organisms live and grow?"	• Identify four major functions of hormones. • Differentiate between endocrine and exocrine glands. • Relate how hormones act only on specific cells. • Summarize how amino-acid-based hormones function. • Summarize how steroid and thyroid hormones function. • Relate how negative feedback is used to regulate hormone levels. • Evaluate the roles of the hypothalamus and the pituitary gland in controlling other hormones. • Summarize the roles of the thyroid and parathyroid hormones. • Compare the roles of the hormones secreted in each area of the adrenal gland. • Relate how each of the two hormones secreted by the pancreas regulates blood glucose levels. • Describe the roles of reproductive hormones and of melatonin.	

_____Hormones travel throughout the body in the bloodstream and can affect *any* cell.
_____Organs and glands that produce most of the hormones in the body make up the endocrine system.
_____Enkephalins are natural pain relievers released by the body in response to pain and stress.
_____The endocrine system in our bodies is all about communication.

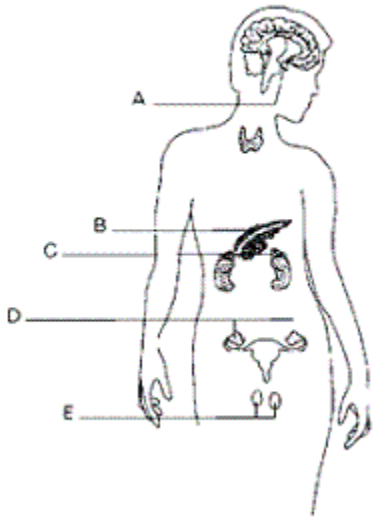
1. The hormone that is found more abundantly in *males* is _____.
2. The hormone that is found more abundantly in *females* is _____.
3. The endocrine glands are differ than exocrine glands because
   _____
4. Hormones are secreted in the _____ _____. There are ____ of these.
5. Functions of hormones include
   a.
   b.
   c.

6. Chemical messengers of the endocrine system are called _____, while chemical messengers of the nervous system are called _____.
7. _____are substances secreted by cells that act to regulate the activity of other cells in the body.
8. The inability of cells to take up glucose from blood is called _____ _____.
9. _____ hormone causes the muscles of the uterus to contract during childbirth.
10. Thyroid hormones regulate _____.
11. Endorphins resemble _____ medication.
12. _____ regulate emotions, pleasure, and improve mood.
13. Pain travels up the _____ _____ to the brain.
14. Endorphins are the body's natural _____.
15. Prostaglandins work _____, meaning only at the site of infection.
16. Examples of when endorphins are released include _____, _____, and _____.
17. _____-_____: is the decrease of hormone receptors which decreases the sensitivity to that hormone
18. _____-_____: is the increase in the number of receptors which causes the cell to be more sensitive to a particular hormone
19. _____ - Area of the brain that coordinates the activities of the nervous and endocrine systems.
20. Pituitary glands regulate _____ _____.
21. _____ control skin pigmentation.
22. Three regions of the pituitary are _____, _____, and _____.
23. _____-_____-_____ hormones send messages from outside the cell.
24. *Excessive* production of thyroid hormones by the thyroid gland is _____.
25. There are 2 _____ glands which sit on top of each _____. They produce _____ and _____.
26. Under production of thyroid hormones by the thyroid gland is _____.
27. Melatonin is secreted by the _____ _____.

1. Enables the cells of certain tissues to take in glucose molecules, and lowers blood glucose levels
    A. Glucagon
    B. cAMP
    C. diabetes
    D. insulin
2. A hormone that causes liver cells to release glucose
    A. insulin
    B. glucagon
    C. cAMP
    D. enkephalin
3. All of the following are hormone-like substances except
    A. Sweat
    B. Enkephalins
    C. Endorphins
    D. Prostaglandins
4. A specific cell on which a hormone acts on
    A. Second messenger
    B. Insulin
    C. cAMP
    D. target cell
5. Glands that deliver substances through ducts are
    A. Endocrine
    B. Hormonal
    C. Exocrine
    D. Pineal
6. Which hormones carry out their function from *within* their target cells.
    A. Amino-acid-based
    B. Steroid
    C. Growth
    D. Sexual
7. High levels of a hormone stimulate the output of even more hormone during
    A. Positive feedback
    B. Negative feedback
    C. Both

8. A hormone that increases the body's metabolic rate is associated with the
    A. Pineal gland
    B. Hypothalamus
    C. Pituitary gland
    D. Thyroid gland
9. A molecule that passes a chemical message from the first messenger to the cell
    A. Steroid messenger
    B. dAMP
    C. cyclic messenger
    D. second messenger
10. released during time of stress formerly called adrenaline
    A. norepinephrine
    B. cAMP
    C. enkephalins
    D. epinephrine
11. When an amino-acid based hormone attaches to a receptor protein,
    A. The shape of the receptor protein changes
    B. The hormones passes through the cell membrane
    C. The hormone is converted to a steroid
12. Hormones are
    A. released into the bloodstream or the fluid around cells.
    B. neurons along which messages travel.
    C. chemicals that stimulate nerve cells during times of stress.
13. All endocrine glands secrete hormones
    A. that affect every cell near the gland.
    B. that go to the pituitary gland.
    C. directly into the bloodstream or fluid around cells.
14. increase in blood-glucose level : glucagon release ::
    A. hyperthyroidism : overproduction of thyroid hormones
    B. hypothyroidism : overproduction of thyroid hormones
    C. oxytocin : production of testes
    D. diabetes mellitus : secretion of prolactin
15. endocrine glands : hormones ::
    a. all cells : neurotransmitters
    b. all cells : hormones
    c. neurons : hormones
    d. neurons : neurotransmitters

16. Since steroid hormones are fat soluble, they
    a. attach only to fat receptor molecules.
    b. pass through the cell membranes of their target cells.
    c. activate only fat cells.
    d. cannot enter the target cell.
17. A hormone receptor protein found inside the cytoplasm of a cell may
    a. synthesize DNA.
    b. combine with a steroid hormone.
    c. attach to cyclic AMP.
    d. act as a second messenger.
18. Hormones produced by the pituitary gland
    A. are produced as the result of stimulation by releasing hormones.
    B. control the activity of other endocrine glands.
    C. are regulated by secretions from the hypothalamus.
    D. All of the above.



19. A is the _____
20. B is the _____
21. C is the _____
22. D is the _____
23. E is the _____

مدرسة المدار الدولية
MADAR international school

Total number of pages : **18**

Grade 11

Biology

Term 3	Worksheet	Duration: 45 min
Date:___/ ____ / 2016	**Endocrine System**	

Name: _____ **Section: _____**

NGSS	Learning Objective	mark
HS-LS-1-To help students formulate an answer to the question, "How do organisms live and grow?"	• Identify four major functions of hormones. • Differentiate between endocrine and exocrine glands. • Relate how hormones act only on specific cells. • Summarize how amino-acid-based hormones function. • Summarize how steroid and thyroid hormones function. • Relate how negative feedback is used to regulate hormone levels. • Evaluate the roles of the hypothalamus and the pituitary gland in controlling other hormones. • Summarize the roles of the thyroid and parathyroid hormones. • Compare the roles of the hormones secreted in each area of the adrenal gland. • Relate how each of the two hormones secreted by the pancreas regulates blood glucose levels. • Describe the roles of reproductive hormones and of melatonin.	

__F___Hormones travel throughout the body in the bloodstream and can affect *any* cell.
__T__Organs and glands that produce most of the hormones in the body make up the endocrine system.
__T__Enkephalins are natural pain relievers released by the body in response to pain and stress.
__T__The endocrine system in our bodies is all about communication.

28. The hormone that is found more abundantly in *males* is testosterone
29. The hormone that is found more abundantly in *females* is estrogen
30. The endocrine glands are differ than exocrine glands because endocrine – no ducts, exocrine – have ducts
31. Hormones are secreted in the endocrine glands There are 8 of these.
32. Functions of hormones include
    a. Energy maintenance
    b. Homeostasis

c. Growth and development

33. Chemical messengers of the endocrine system are called hormones while chemical messengers of the nervous system are called neurotransmitters
34. Hormones are substances secreted by cells that act to regulate the activity of other cells in the body.
35. The inability of cells to take up glucose from blood is called diabetes mellitus
36. Oxytocin hormone causes the muscles of the uterus to contract during childbirth.
37. Thyroid hormones regulate metabolism
38. Endorphins resemble morphine medication.
39. Endorphins regulate emotions, pleasure, and improve mood.
40. Pain travels up the spinal cord to the brain.
41. Endorphins are the body's natural painkillers
42. Prostaglandins work locally meaning only at the site of infection.
43. Examples of when endorphins are released include childbirth combat and exercise
44. Down-regulation: is the decrease of hormone receptors which decreases the sensitivity to that hormone
45. Up-regulation: is the increase in the number of receptors which causes the cell to be more sensitive to a particular hormone
46. Hypothalamus - Area of the brain that coordinates the activities of the nervous and endocrine systems.
47. Pituitary glands regulate growth hormones
48. Melanocytes control skin pigmentation.
49. Three regions of the pituitary are anterior posterior and intermediate
50. Amino-acid-based hormones send messages from outside the cell.
51. *Excessive* production of thyroid hormones by the thyroid gland is hyperthyroidism
52. There are 2 adrenal glands which sit on top of each kidney They produce epinephrine and norepinephrine
53. Under production of thyroid hormones by the thyroid gland is hypothyroidism
54. Melatonin is secreted by the pineal gland

24. Enables the cells of certain tissues to take in glucose molecules, and lowers blood glucose levels
    A. Glucagon
    B. cAMP
    C. diabetes
    D. insulin
25. A hormone that causes liver cells to release glucose
    A. insulin
    B. glucagon
    C. cAMP
    D. enkephalin
26. All of the following are hormone-like substances except
    E. Sweat
    F. Enkephalins
    G. Endorphins
    H. Prostaglandins
27. A specific cell on which a hormone acts on
    A. Second messenger
    B. Insulin
    C. cAMP
    D. target cell
28. Glands that deliver substances through ducts are
    A. Endocrine
    B. Hormonal
    C. Exocrine
    D. Pineal
29. Which hormones carry out their function from *within* their target cells.
    A. Amino-acid-based
    B. Steroid
    C. Growth
    D. Sexual
30. High levels of a hormone stimulate the output of even more hormone during
    A. Positive feedback
    B. Negative feedback
    C. Both

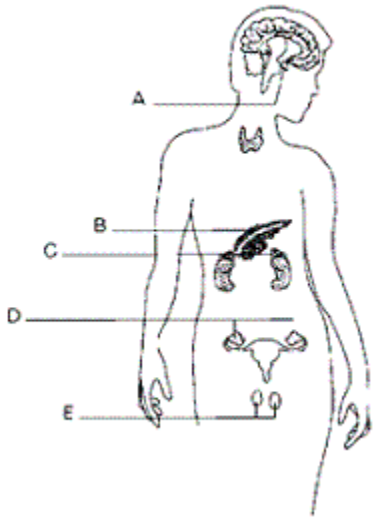
31. A hormone that increases the body's metabolic rate is associated with the
    A. Pineal gland
    B. Hypothalamus
    C. Pituitary gland
    D. Thyroid gland
32. A molecule that passes a chemical message from the first messenger to the cell
    A. Steroid messenger
    B. dAMP
    C. cyclic messenger
    D. second messenger
33. released during time of stress formerly called adrenaline
    A. norepinephrine
    B. cAMP
    C. enkephalins
    D. epinephrine
34. When an amino-acid based hormone attaches to a receptor protein,
    A. The shape of the receptor protein changes
    B. The hormones passes through the cell membrane
    C. The hormone is converted to a steroid
35. Hormones are
    A. released into the bloodstream or the fluid around cells.
    B. neurons along which messages travel.
    C. chemicals that stimulate nerve cells during times of stress.
36. All endocrine glands secrete hormones
    A. that affect every cell near the gland.
    B. that go to the pituitary gland.
    C. directly into the bloodstream or fluid around cells.
37. increase in blood-glucose level : glucagon release ::
    E. hyperthyroidism : overproduction of thyroid hormones
    F. hypothyroidism : overproduction of thyroid hormones
    G. oxytocin : production of testes
    H. diabetes mellitus : secretion of prolactin
38. endocrine glands : hormones ::

a. all cells : neurotransmitters
b. all cells : hormones
c. neurons : hormones
d. neurons : neurotransmitters

39. Since steroid hormones are fat soluble, they
    a. attach only to fat receptor molecules.
    c. activate only fat cells.
    b. pass through the cell membranes of their target cells.
    d. cannot enter the target cell.

40. A hormone receptor protein found inside the cytoplasm of a cell may
    a. synthesize DNA.
    c. attach to cyclic AMP.
    b. combine with a steroid hormone.
    d. act as a second messenger.

41. Hormones produced by the pituitary gland
    A. are produced as the result of stimulation by releasing hormones.
    B. control the activity of other endocrine glands.
    C. are regulated by secretions from the hypothalamus.
    D. All of the above.



42. A is the _____pituitary gland___
43. B is the ____pancreas___
44. C is the ___adrenal glands_____
45. D is the ___ovaries_____
46. E is the ____testes____

مدرسة المدار الدولية
MADAR international school

Total number of pages : **18**

Grade 11 __ __

Biology

Term 3	Worksheet	Duration: 45 min
Date:___/ ____ / 2016	**Nervous System**	

Name: _____ **Section: _____**

NGSS	Learning Objective	mark
HS-LS-1-To help students formulate an answer to the question, "How do organisms live and grow?"	• Analyze the structure and function of neurons. • Describe how the resting potential is established in a neuron. • Sequence the steps of a nerve impulse. • List the events that occur in synaptic transmission of a nerve impulse. • Distinguish between the central nervous system and the peripheral nervous system. • Identify the major parts of the brain and their functions. • Describe the structure of the spinal cord. • Sequence the events of a spinal reflex. • Compare the somatic nervous system with the autonomic nervous system. • List five types of sensory receptors and the stimuli to which they respond. • Identify sites of sensory processing in the brain. • Analyze the structure of the eye and its role in the visual system. • Describe how the ear detects sound and helps maintain balance. • Compare the senses of taste and smell.	

_____Memory, learning, and emotions are controlled by the autonomic nervous system.

_____A signal molecule that sends nerve impulses across synapses is a neurotransmitter.

_____The central nervous system is made up of the brain and spinal cord.

_____Alcoholism can lead to malnutrition, liver damage, and inflammation of the stomach lining.

_____Myelin sheaths slow down nerve impulses.

_____Multiple Sclerosis is an autoimmune disease where the body eats its own myelin sheath.

_____Neurotransmitters are chemical messengers that carry nerve impulses across the synaptic cleft.

_____Nicotine mimics the action of the neurotransmitter acetylcholine.

1. Chemical messengers of the endocrine system are called _____, while chemical messengers of the nervous system are called _____.
2. _____ - Area of the brain that coordinates the activities of the nervous and endocrine systems.
3. A bundle of axons is a _____.
4. The difference in electrical charge across a cell membrane is the _____ _____.
5. The two divisions of the autonomic nervous system are the parasympathetic division and the _____ division.
    a. Parasympathetic:
    b. Sympathetic:
6. The _____ is the body's main processing center.
7. A _____ increases the activity of the central nervous system.
8. _____ is the emotional and physical symptoms caused by taking a drug away from the body of an addicted person.
9. Drugs that alter the functioning of the central nervous system are known as _____ _____.
10. Repeated use of a drug that changes the normal functioning of neurons and synapses causes _____.
11. The need for increasing amounts of a drug to achieve the desired feelings is called _____.
12. A drug that generally decreases the activity of the central nervous system is called a _____.
13. _____ is a highly addictive stimulant found in the leaves of the coca plant.
14. The part of the brain that controls balance, posture, and movement is the _____.
15. The part of a neuron that receives information from other neurons is a _____.
16. The part of the neuron that conducts nerve impulses is the _____.
17. A neuron that detects sensory stimuli is a _____ _____.
18. Cones help us to see _____.
19. Rods help us to see _____ _____.

1. unmyelinated axon : slow nerve impulses ::
    a. myelinated axon : fast nerve impulses
    b. neuron : being composed of many axons
    c. nerve impulse : not traveling through axons
    d. dendrite : sending information

مدرسة المدار الدولية
MADAR international school

Total number of pages : **18**

Grade 11 __ __

Biology

Term 3	Worksheet	Duration: 45 min
Date:___/ ____ / 2016	**Nervous System**	

Name: _____ **Section: _____**

NGSS	Learning Objective	mark
HS-LS-1-To help students formulate an answer to the question, "How do organisms live and grow?"	• Analyze the structure and function of neurons. • Describe how the resting potential is established in a neuron. • Sequence the steps of a nerve impulse. • List the events that occur in synaptic transmission of a nerve impulse. • Distinguish between the central nervous system and the peripheral nervous system. • Identify the major parts of the brain and their functions. • Describe the structure of the spinal cord. • Sequence the events of a spinal reflex. • Compare the somatic nervous system with the autonomic nervous system. • List five types of sensory receptors and the stimuli to which they respond. • Identify sites of sensory processing in the brain. • Analyze the structure of the eye and its role in the visual system. • Describe how the ear detects sound and helps maintain balance. • Compare the senses of taste and smell.	

__F__Memory, learning, and emotions are controlled by the autonomic nervous system.

__T__A signal molecule that sends nerve impulses across synapses is a neurotransmitter.

__T__The central nervous system is made up of the brain and spinal cord.

__T__Alcoholism can lead to malnutrition, liver damage, and inflammation of the stomach lining.

__F__Myelin sheaths slow down nerve impulses.

__T__Multiple Sclerosis is an autoimmune disease where the body eats its own myelin sheath.

__T__Neurotransmitters are chemical messengers that carry nerve impulses across the synaptic cleft.

__T__Nicotine mimics the action of the neurotransmitter acetylcholine.

20. Chemical messengers of the endocrine system are called hormones while chemical messengers of the nervous system are called neurotransmitters..
21. Hypothalamus - Area of the brain that coordinates the activities of the nervous and endocrine systems.
22. A bundle of axons is a nerve
23. The difference in electrical charge across a cell membrane is the membrane potential
24. The two divisions of the autonomic nervous system are the parasympathetic division and the sympathetic division.
    a. Parasympathetic: fight or flight
    b. Sympathetic: sleeping; keeps involuntary systems working (heart rate, blood pressure, etc.)
25. The brain is the body's main processing center.
26. A stimulant increases the activity of the central nervous system.
27. Withdrawal is the emotional and physical symptoms caused by taking a drug away from the body of an addicted person.
28. Drugs that alter the functioning of the central nervous system are known as psychoactive drugs.
29. Repeated use of a drug that changes the normal functioning of neurons and synapses causes addiction
30. The need for increasing amounts of a drug to achieve the desired feelings is called tolerance.
31. A drug that generally decreases the activity of the central nervous system is called a depressant.
32. Cocaine is a highly addictive stimulant found in the leaves of the coca plant.
33. The part of the brain that controls balance, posture, and movement is the cerebellum.
34. The part of a neuron that receives information from other neurons is a dendrite
35. The part of the neuron that conducts nerve impulses is the axon
36. A neuron that detects sensory stimuli is a sensory neuron
37. Cones help us to see color
38. Rods help us to see dim light

2. unmyelinated axon : slow nerve impulses ::
   a. myelinated axon : fast nerve impulses
   c. nerve impulse : not traveling through **axons**
   b. neuron : being composed of many axons
   d. dendrite : sending information

مدرسة المدار الدولية
MADAR international school

Total number of pages : **18**

Grade 11

Biology

Term 3	Worksheet	Duration: 45 min
Date:___/ ____ / 2016	**Nervous & Endocrine System**	

Name: _____ **Section: _____**

NGSS	Learning Objective	mark
HS-LS-1-To help students formulate an answer to the question, "How do organisms live and grow?"	• Identify four major functions of hormones. • Differentiate between endocrine and exocrine glands. • Relate how hormones act only on specific cells. • Summarize how amino-acid-based hormones function. • Summarize how steroid and thyroid hormones function. • Analyze the structure and function of neurons. • Describe how the resting potential is established in a neuron. • Sequence the steps of a nerve impulse. • List the events that occur in synaptic transmission of a nerve impulse.	

1. Relate the relationship of hormones and receptors to the lock-and-key model.

2. Why is it important for hormones to have only one receptor? (HINT: remember the telephone game).

3. Identify the messenger used for the nervous system and the endocrine system.

4. Describe the action of cocaine at the synapse and the effects of long-term use on receptors.

5. Differentiate between negative and positive feedback with respect to control of hormones.

6. Compare the action mechanisms of amino-acid-based and steroid hormones.

7. Explain why people crave cocaine. (HINT: think about the “rush” they feel, and dopamine levels).

8. Describe the action of cocaine at the synapse and the effects of long-term use on receptors.

مدرسة المدار الدولية
MADAR international school

Total number of pages : **18**

Grade 11 __ __

Biology

Term 3	Worksheet	Duration: 45 min
Date:___/ ____ / 2016	**Nervous & Endocrine System**	

Name: _____ **Section:** _____

NGSS	Learning Objective	mark
HS-LS-1-To help students formulate an answer to the question, "How do organisms live and grow?"	• Identify four major functions of hormones. • Differentiate between endocrine and exocrine glands. • Relate how hormones act only on specific cells. • Summarize how amino-acid-based hormones function. • Summarize how steroid and thyroid hormones function. • Analyze the structure and function of neurons. • Describe how the resting potential is established in a neuron. • Sequence the steps of a nerve impulse. • List the events that occur in synaptic transmission of a nerve impulse.	

9. Relate the relationship of hormones and receptors to the lock-and-key model.

They fit together like a lock and a key, based on shape!

10. Why is it important for hormones to have only one receptor? (HINT: remember the telephone game).

The message gets altered or "messed up" which is why a hormone must have only one receptor and not many.

11. Identify the messenger used for the nervous system and the endocrine system.

Nervous – neurotransmitter, endocrine - hormones

12. Differentiate between negative and positive feedback with respect to control of hormones.

In positive feedback, high levels of a hormone stimulate the output of even more hormone. In negative feedback, a change in one direction of the amount of a hormone stimulates the control mechanism to counteract any further change in the same direction.

13. Compare the action mechanisms of amino-acid-based and steroid hormones.

Amino-acid-based hormones attach to receptor proteins on the surface of a target cell, causing the production of a second messenger within the cell. The second messenger in turn activates enzymes within the cell. Steroid hormones enter the cell, where they combine with receptor proteins in the cytoplasm or nucleus. The combined hormone and receptor molecules enter into the cell's nucleus, where they activate specific genes.

14. Explain why people crave cocaine. (HINT: think about the "rush" they feel, and dopamine levels).
Cocaine increases the amounts of dopamine inside of the brain, which causes a "rush" of pleasure which is why people keep craving that feeling.

15. Describe the action of cocaine at the synapse and the effects of long-term use on receptors.
Cocaine prevents the reabsorption of dopamine from the synaptic cleft. The trapped dopamine repeatedly stimulates postsynaptic neurons. The postsynaptic neurons adjust to the presence of cocaine by decreasing the number of dopamine receptors. This causes these neurons to become less sensitive, requiring more and more cocaine for stimulation.