

# Study Recommendations for HESI Admissions Assessment Test

**Additional materials** are available to prepare for the HESI A2 Test:

- Recommended **PLATO** tutorials at end of this document
- The **Learning Express Library** – accessible from the LInC Databases webpage- Sign in and click on “Nursing” under Featured Resources. Take the *Nursing School Practice Entrance Tests 1 & 2* for *Biology, Chemistry, Math and Reading Comprehension*.
- The **HESI Admission Assessment Exam Review** book is:
  - Available in the LInC, “On Reserve” (you can look at it and take notes, but you cannot check it out, and you cannot copy any pages).
  - Available from bookstores; approximate price \$35.00 (plus shipping & handling).
    - *Be SURE to ask for HESI (evolve/reach) Admission Assessment Exam Review, ISBN 9781416056355*
    - Can also be purchased from this website:  
<http://portals2.elsevier.com/portal/portal/hesi>

## BIOLOGY

**Please refer to your textbooks used in BIOL 105 (formerly BIOL100) and your Anatomy & Physiology courses.**

### Properties of Water (an Inorganic Compound)

#### Polarity of Molecules

#### Biological Molecules ("Organic Compounds"):

Carbohydrates, including glycogen and starch

Lipids

Saturated vs. Unsaturated Fats

Phospholipids

Steroids

Proteins

Structural (Fibrous) vs. Functional (Globular, including Enzyme) Proteins

Nucleic Acids: DNA and RNA

Enzymes as Catalysts for Metabolic Processes

ATP

### Cell Structure and Function

Nucleus

Chromosomes (Chromatin)

Ribosomes

Endoplasmic Reticulum (ER):

Rough ER

Smooth ER

Gogi Apparatus  
Lysosomes  
Inclusions (Vacuoles)  
Mitochondria  
Plasma (Cell) Membrane  
    Proteins of the Cell Membrane and their functions  
Cytoplasm  
Cytoskeleton

Diffusion  
Osmosis  
Filtration

### **(Asexual) Cellular Growth and Reproduction**

(see also "Binary Fission," for bacteria, below)

Mitosis: interphase, prophase, metaphase, anaphase, telophase  
cytokinesis

### **Sexual Cellular Reproduction:**

Meiosis: Meiosis I and Meiosis II

### **Genetic Code**

DNA  
A, T, G and C nitrogenous bases  
Double Helix structure

### **Replication**

### **Transcription**

### **Translation:**

Codon  
Anticodon

### **Necessary Life Functions (Characteristics of Cells/Living Organisms)**

### **Homeostasis**

### **Positive Feedback versus Negative Feedback**

### **Metabolism:**

Anabolism  
Catabolism

### **Cellular Respiration:**

Aerobic:  
    Glycolysis  
    Kreb's Cycle:  
        NADH, FADH<sub>2</sub>  
    Electron Transport Chain  
Anaerobic (Fermentation)

***The following topics may not be found in your Human Anatomy & Physiology texts, but may be reviewed using the listed web links.***

**Genetics:** <http://library.thinkquest.org/C004367/be1.shtml>

Genotype versus Phenotype

Dominant and Recessive Traits

Alleles

Homozygous vs. Heterozygous Traits

Punnett Squares: [http://anthro.palomar.edu/mendel/mendel\\_2.htm](http://anthro.palomar.edu/mendel/mendel_2.htm)

Pedigree

Polygenes and Environmental Factors (Multifactorial Inheritance)

**Organization of Species:**

**Know all Kingdoms, including Monera (bacteria) and Animalia (includes humans)**

This site will help you understand the Kingdoms. It is a bit confusing to study this topic at this time, as science is in a transitional stage of re-classifying all living creatures, due to recent new information. Understand that the single-celled bacteria (former Kingdom Monera) belong to the Prokaryotes, and differ from the Eukaryotes (which include most plants and all animals, including humans). Note that the term "Prokaryote," which you may understand to be basically single-celled bacteria, is not mentioned at the first site below, but is understood to be the combination of Archea and Eubacteria...every other being on earth is in the Domain Eukarya, and is thus a Eukaryote. The second site listed below will also be helpful, as it distinguishes the characteristics of Eukaryotes from those of the Prokaryotes.

<http://www.palaeos.com/Kingdoms/kingdoms.htm#kingdoms>

**Theory of Evolution:**

[http://www.pbs.org/wgbh/evolution/educators/course/session2/explain\\_c\\_pop2.html](http://www.pbs.org/wgbh/evolution/educators/course/session2/explain_c_pop2.html)

**Scientific Method:**

[http://teacher.nsrj.rochester.edu/phy\\_labs/AppendixE/AppendixE.html](http://teacher.nsrj.rochester.edu/phy_labs/AppendixE/AppendixE.html)

**Density:**

<http://physics.about.com/od/fluidmechanics/f/density.htm>

**Specific Heat:**

<http://www.iun.edu/~cpanhd/C101webnotes/matter-and-energy/specificheat.html>

**Solutions:** <http://www.sparknotes.com/chemistry/solutions/composition>

*click on "Terms" "Solution Composition" and "Problems and Solutions"*

### **Photosynthesis and Chloroplasts:**

**Describe the basic chemical equation:**

<http://www.life.uiuc.edu/bio100/lectures/s97lects/07Photosynthesis/photosynsumm.html>  
<http://biology.about.com/od/plantbiology/a/aa050605a.htm>

### **Binary Fission: a type of Asexual Cellular Reproduction used by bacteria, not humans**

The method by which bacteria reproduce. The circular DNA molecule is replicated; then the cell splits into two identical cells, each containing an exact copy of the original cell's DNA.

## **CHEMISTRY**

*The following topics are may not be found in your Human Anatomy & Physiology texts, but may be reviewed using the listed web links.*

### **States of Matter, and Changes of State of Matter: Solid, Liquid and Gas Mixtures: Homogeneous versus Heterogeneous**

<http://www.iun.edu/~cpanhd/C101webnotes/matter-and-energy/elscmpdsmxts.html>

### **Atomic Structure:**

<http://www.smuhsd.k12.ca.us/bhs/science-dept/marcan/APpdfs/chap02notes.pdf>

Protons, Electrons, Neutrons:

mass, location and charge of each

Orbitals versus Nucleus of Atom

### **Atomic Number**

### **Atomic Mass**

### **Isotopes**

### **Ions: Cations versus Anions**

### **Chemical Bonding:**

Covalent versus Ionic

Polar versus Nonpolar Covalent Bonds

Single-, Double-, and Triple-Covalent Bonds

Hydrogen Bonding

http: [www.sparknotes.com](http://www.sparknotes.com)

- Click on "Sparknotes Free Study Guide" tab (top left corner)
- Click on Study Guide Category "Chemistry"
- Select topic from items in "Bonding" list

### **Acids and Bases:**

Characteristics of Acids

Characteristics of Bases

Neutralization

pH scale

<http://lrs.ed.uiuc.edu/students/erlinger/water/background/ph.html>

### **Chemical versus Physical Changes/Properties**

<http://www.iun.edu/~cpanhd/C101webnotes/matter-and-energy/properties.html>

<http://www.learner.org/channel/courses/essential/physicalsci/session4/closer1.html>

### **Periodic Table of Elements:**

<http://www.iun.edu/~cpanhd/C101webnotes/composition/elements.html>

A Periodic Table to print out, when reading about "Trends," below:

<http://www.webelements.com/>

Characteristics of Groups and Rows in the Periodic Table, including Ions and Noble Gases Trends in the Periodic Table:

<http://chemistry.about.com/library/weekly/aa071802a.htm>

### **Chemical Equations: Reactants versus Products**

<http://www.iun.edu/~cpanhd/C101webnotes/chemical%20reactions/chemicalrxn.html>

**Chemical Reactions:** synthesis, decomposition, combustion (oxidation-reduction, or "redox"), single- and double- exchange (or replacement, or displacement)

<http://misterguch.brinkster.net/6typesofchemicalrxn.html>

### **Rates of Chemical Reactions**

Reversible versus Irreversible Reactions

Effects Due to Changes in: Temperature, Particle Size (Surface Area),

Concentration of Reactants, Addition of a Catalyst

<http://www.purchon.com/chemistry/rates.htm>

### **Moles: Definition**

#### **Molar Calculations:**

Calculation of number of molecules of a substance, given the number of moles; Calculation of number of grams of a substance, given the number of moles of that substance; Calculate the number of moles of a substance, given the weight in grams:

<http://dbhs.wvusd.k12.ca.us/webdocs/Solutions/Molarity.html>

<http://antoine.frostburg.edu/chem/senese/101/moles/index.shtml>

### **Nuclear Chemistry: radioactivity, and release of alpha, beta and gamma radiation**

<http://www.lbl.gov/abc/Basic.html>

**Law of Conservation of Matter (Mass):**

<http://www.iun.edu/~cpanhd/C101webnotes/matter-and-energy/masscons.html>

<http://www.iun.edu/~cpanhd/C101webnotes/chemical%20reactions/massconservation.html>

**Van der Waals Forces:**

<http://www.usetute.com.au/intermof.html>

**Stoichiometry: Balancing simple chemical equations**

<http://www.usetute.com.au/balcheme.html>

**Oxidation States:**

**Definition:** An oxidation number (oxidation state) is the charge an atom would carry if the molecule or ion were completely ionic

**Rules for Determining Oxidation States:**

For elements, the oxidation number is the number of electrons the element would have to lose or gain in order to have a complete outer shell. (e.g., Oxygen would be assigned "-2" as it would have to accept two additional negatively charged electrons to complete its outer shell).

<http://www.usetute.com.au/oxistate.html>

## ANATOMY & PHYSIOLOGY

*The following information can be found in your Anatomy & Physiology texts.*

**Homeostasis****Levels of Structural Organization** (cells to organisms)**Directional Terms:**

Superior, inferior, anterior, posterior, medial, lateral

**Planes of the Body:**

Median (Sagittal), Coronal (Frontal), Transverse (Horizontal)

**Body Cavities** (Know location and organ contents):

Dorsal: cranial and spinal

Ventral: orbits, nasal, oral, thoracic, mediastinum, pericardial, pleural and abdominopelvic (peritoneal)

**Membranes of Body Cavities**

(pleural, pericardial, peritoneal)

**Know the Four Major Tissues and the Function of Each:**

Epithelial Tissue:

Types of Membranes and their Definitions:

Mucous, Serous, Synovial and Cutaneous  
Connective Tissues:  
Cartilage, Bone, Blood, Adipose, Dense, Loose  
Muscle Tissue:  
voluntary and involuntary; smooth, cardiac and skeletal  
Nerve Tissue

Glands: sudoriferous, sebaceous, ceruminous

## **Review of Parts (Organelles) of the Cell (see listing under Biology, above)**

### **Integumentary System**

Epidermal and Dermal Structures  
What is keratin, and keratinized epithelium?  
Strata of the Epidermis: stratum corneum, stratum lucidum, stratum  
granulosum and stratum germinativum/basale (mitotic layer)  
Subcutaneous Tissue (Hypodermis): know definition  
Sebaceous and Sudoriferous Glands  
Functions of the Skin  
Appendages of the Skin: hair, nails

### **Skeletal System**

Functions of the skeletal system  
Classification of bones by shape  
Osteocytes/Osteoblasts/Osteoclasts  
Spongy versus Compact bone  
Axial versus Appendicular bones  
Number of bones in the body, Names of all the bones and numbers of  
each type (including numbers and types of vertebrae, names and numbers  
of cranial bones, facial bones).  
Term to Know: foramen magnum and its significance

### **Muscular System**

Organization:  
muscles, muscle cell, myofibrils, myofilaments, sarcomeres  
Sliding Filament Theory of Muscle Contraction:  
role of actin, myosin, ATP, calcium  
Muscle Types:  
Voluntary versus Involuntary versus Cardiac  
Prime Mover, Agonists, Antagonists  
Classification of Muscles as Flexors, Extensors, Abductors, Adductors  
Naming of Muscles Related to location, origin, insertion, shape, function  
(action)  
Know the names of all major contour (surface) muscles of body.  
Terms to Know: Joint, Tendon, Ligament, Sarcoplasmic Reticulum

## **Nervous System**

Basic Functions

Anatomy of Neuron

Conduction of a Nerve Impulse through the Neuron

Sensory (afferent) versus Motor (efferent) Neurons

Central Nervous System versus Peripheral Nervous System

Somatic (Voluntary) Nervous System versus Autonomic Nervous System

Major Parts of the Brain (cerebrum, cerebellum, medulla oblongata) and their Functions

Spinal Cord and Spinal Nerves:

Simple spinal reflexes versus reflexes modified by ascending and descending tracts

Sensory versus motor impulses

Dorsal horns versus ventral horns

Definitions: foramen magnum, spinal (vertebral) column

## **Endocrine System**

Definition of a Hormone

Hierarchical Levels of Control:

Hypothalamus, pituitary (master gland), other endocrine gland(s), target tissue(s)

Pituitary:

Anterior (Adenohypophysis) versus Posterior (Neurohypophysis)

Locations in the Body, Hormones Secreted by Each, Hormone Actions, and Disorders Associated with Abnormal Levels of each Hormone, for each of the following:

Anterior Pituitary:

Pay particular attention to: GH/STH, ACTH, TSH, FSH, LH, PRL

Posterior Pituitary:

ADH, oxytocin

Major Endocrine Organs: Thyroid, Parathyroids, Adrenals, Pancreas, Gonads (Ovaries, Testes), Pineal

Organs Other Than Major Endocrine Organs

Hypothalamus

Adrenal Cortex and Functions of Cortisol

Basic Actions of Hormones:

alteration of cellular growth, differentiation, or metabolic activity

Mechanism of Action of Steroid Hormones versus Protein Hormones

Major Groups of Hormones: steroids versus protein hormones

## **Circulatory System:**

Composition of Whole Blood: 55% plasma, 45% formed elements

Composition of Plasma



Blood Elements and their Functions:

Erythrocytes, Leukocytes, Platelets

Genesis in Red Bone Marrow of RBC, WBC and platelets

5 types of Leukocytes and how they differ:

size, nucleus appearance, staining properties, granule type

Functions of Blood, including Immune Functions

Normal pH of Blood

Terms to Know: Antibody, Phagocytosis

Atria versus Ventricles

Systemic Circulation versus Pulmonary Circulation

Pathway of Blood Flow through the System and Pulmonary Circulatory Systems

including names of chambers and valves of heart

names of major arteries and veins entering and leaving the heart and lungs

Pathway of Cardiac Electrical Conduction

Systole versus Diastole

EKG rhythm

Differences between Arteries and Veins

Vasoconstriction versus Vasodilation

Skeletal Muscle Pump action to assist venous return to heart; venous return is also assisted by breathing movements and unidirectional valves

List all the major Arteries and Veins of the body

### **Respiratory System:**

Basic Functions

Basic Structures: nose, nasal cavity, pharynx, larynx, trachea, bronchi, lungs, diaphragm, and rib cage muscles and bones.

Control of respiratory rate via medulla oblongata

Internal versus External Respiration

describe the process of gas exchange

Inhalation versus Exhalation

Active versus Passive Process, respectively

Trace the pathways of oxygen and carbon dioxide throughout the circulatory system.

Transport of Oxygen via Erythrocytes; bound to Hemoglobin

Transport of Carbon Dioxide in the form of bicarbonate ion

Regulation of Blood pH by Respiratory System via regulation of bicarbonate ion

### **Digestive System**

Alimentary Canal/Digestive Tube or Tract/Gastrointestinal Tract

Basic Functions:

ingestion, propulsion, mechanical digestion, chemical digestion, absorption, secretion, defecation (elimination)

Basic Structures, their secretions, and their specific functions:

oral cavity, pharynx, esophagus, stomach, small intestine (duodenum, jejunum, ileum), large intestine (cecum, appendix, ascending colon, transverse colon, descending colon, sigmoid colon), rectum, anus

Accessory Digestive Organs, their secretions, and their specific functions:

liver, gallbladder, pancreas

Mechanical Digestion versus Chemical Digestion

Mastication (Chewing)

Functions of Saliva; salivary amylase

Terms to Know: Bolus, Chyme, Bile

Hydrochloric Acid Secretion by Stomach

Four Layers of the Wall of the Digestive Tract:

mucous membrane, submucous layer, muscular layer and serous layer (serosa)

Trace the pathway of food through the digestive tract, noting the enzymes and glandular products that are mixed with the food at each step.

Understand the biomolecules that are digested by each enzyme, and the monomer "building blocks" of each biomolecule:

amino acids, fatty acids, glucose and other simple sugars, nucleotides

Lymphatics: absorption of fats via lacteals, and transport to bloodstream

Small intestine: absorption of nutrient building blocks by villi

Large intestine: absorption of water

Bacterial colonization of large intestine (intestinal flora)

## **Urinary System**

Basic Functions

Basic Structures and their specific Functions:

kidneys, ureters, urinary bladder, urethra

Transitional Epithelium of the Urinary System

How does the male urethra differ from the female urethra?

Nephron Structure and Function:

trace the pathway of filtered blood through all the structures of the kidney and their nephrons (starting with the renal artery), then trace the pathway of urine through the remaining organs of the urinary system from collecting ducts through the urethra. Know the terms Bowman's capsule and glomerulus.

Movement of substances across the nephron: filtration, secretion, reabsorption. Both active and passive movement (diffusion) occurs.

Role of Kidney in Regulating Blood pH: Acidosis and Alkalosis

## **Reproductive System**

Functions: produce hormones, produce sex cells (gametes)

List all the Organs of the Reproductive Tract in Both Sexes

Control by Pituitary Gland

Comparison of Male and Female Reproductive Tracts, including cyclic nature of sex cell production and hormone levels in female versus continuous nature in males  
Secondary Sex Characteristics in both sexes  
Know the Layers of the Uterine Wall, and how they change under hormonal control  
Control of Production of Male and Female Gametes by Hormones:  
    FSH, ICSH, LH, testosterone, estrogen, progesterone  
Review of Meiosis  
Trace the pathway of Sperm Development and Emission through the male reproductive tract.  
Trace the origin and path of the ovum during Fertilization and Implantation (as the blastocyst); fertilization occurs in the fallopian tube (oviduct).  
Review the changes in the uterine lining, and the changes in hormonal levels, during the Menstrual Cycle; ovulation occurs at Day 14.  
Role of the Corpus Luteum  
Review the Development of the Embryo during pregnancy: placenta, formation of embryonic tissues (endoderm, mesoderm, ectoderm).  
How do hormonal levels change throughout pregnancy, and what are all the tissues they affect in the mother?  
Role of Placenta in Maintaining Milk Production; Role of Prolactin  
Terms to Know: Embryo, Chromosome, Zygote

# MATH

**Without using a calculator**, take the following **Math Quiz**, then check your answers against the **Answer Key**, below.

You will also find it helpful to **memorize the following information**:

## **Understanding Roman Numerals:**

<http://www.factmonster.com/ipka/A0769547.html>

## **Conversion between Fahrenheit and Celsius:**

$$C = (5/9) \times (F - 32) \quad \text{or} \quad F = [(9/5) \times C] + 32$$

C = degree in Celsius, F = degrees in Fahrenheit]

Boiling Point of Water: 100 degrees Celsius; 212 degrees Fahrenheit

Freezing Point of Water: 0 degrees Celsius; 32 degrees Fahrenheit

[http://avc.comm.nsdlib.org/cgi-bin/wiki\\_grade\\_interface.pl?Converting\\_Temperatures](http://avc.comm.nsdlib.org/cgi-bin/wiki_grade_interface.pl?Converting_Temperatures)

<http://www.fordhamprep.org/gcurran/sho/sho/lessons/lesson29.htm>

Metric Conversions: **Conversion between units in the metric system**

**1 milliliter = 1 cubic centimeter (cc)**

[http://vulcan.wr.usgs.gov/Miscellaneous/ConversionTables/conversion\\_table.html](http://vulcan.wr.usgs.gov/Miscellaneous/ConversionTables/conversion_table.html)

## Math Quiz

Basic Addition:

1. 
$$\begin{array}{r} 359 \\ + 2,204 \\ \hline \end{array}$$

2. 
$$\begin{array}{r} 247 \\ + 4,309 \\ \hline \end{array}$$

Basic Subtraction:

3. 
$$\begin{array}{r} 4,907 \\ - 3,478 \\ \hline \end{array}$$

4. 
$$\begin{array}{r} 5,812 \\ - 2,434 \\ \hline \end{array}$$

5.  $369 - 241 = \underline{\hspace{2cm}}$

6.  $2,345 - 2008 = \underline{\hspace{2cm}}$

Basic Multiplication:

7. 
$$\begin{array}{r} 319 \\ \times 914 \\ \hline \end{array}$$

8. 
$$\begin{array}{r} 888 \\ \times 296 \\ \hline \end{array}$$

9.  $825 \times 14 = \underline{\hspace{2cm}}$

10.  $788 \times 139 = \underline{\hspace{2cm}}$

For problems 11 - 13, round to the nearest whole number.

11.  $4,056 \div 5 = \underline{\hspace{2cm}}$

12.  $4,443 \div 12 = \underline{\hspace{2cm}}$

13.  $4 \overline{)432} = \underline{\hspace{2cm}}$

Addition of Decimals (report all decimal places in your answer):

14.  $2.278 + 1.4 + 22 = \underline{\hspace{2cm}}$

15.  $98.0 + 27 + 1.2 + 0.34 =$  \_\_\_\_\_

Subtraction of Decimals:

16.  $15 - 5.43 =$  \_\_\_\_\_

17.  $44.56 - 12 =$  \_\_\_\_\_

For problems 18 and 19, round to the tenths place.

Multiplication of Decimals:

18.  $439.1 \times 34 =$  \_\_\_\_\_

19.  $0.032 \times 435.2 =$  \_\_\_\_\_

For problems 20 - 22, round your answer to the hundredths place.

Division with Decimals:

20.  $56 \div 0.3 =$  \_\_\_\_\_

21.  $3.445 \div 0.25 =$  \_\_\_\_\_

22.  $3.25 \div 5.6 =$  \_\_\_\_\_

Addition of Fractions:

23.  $\frac{2}{7} + \frac{4}{5} =$  \_\_\_\_\_

24.  $2\frac{5}{7} + 6\frac{8}{9} =$  \_\_\_\_\_

25.  $3\frac{4}{5} + 12\frac{1}{3} =$  \_\_\_\_\_

Subtraction of Fractions:

26.  $\frac{22}{37} - \frac{4}{37} =$  \_\_\_\_\_

27.  $21\frac{13}{14} - 2\frac{6}{7} =$  \_\_\_\_\_

28.  $6\frac{4}{5} - 1\frac{1}{10} =$  \_\_\_\_\_

Multiplication of Fractions:

29.  $\frac{2}{7} \times \frac{4}{7} = \underline{\hspace{2cm}}$

30.  $1 \frac{13}{14} \times 2 \frac{2}{3} = \underline{\hspace{2cm}}$

31.  $6 \frac{3}{4} \times 2 = \underline{\hspace{2cm}}$

Division of Fractions:

32.  $\frac{6}{7} \div \frac{4}{5} = \underline{\hspace{2cm}}$

33.  $6 \div \frac{1}{8} = \underline{\hspace{2cm}}$

34.  $9 \frac{4}{7} \div 3 = \underline{\hspace{2cm}}$

For problems 35 and 36, round to the hundredths place.

Change these fractions to decimals:

35.  $\frac{5}{6} = \underline{\hspace{2cm}}$

36.  $19 \frac{1}{7} = \underline{\hspace{2cm}}$

Change these decimals to fractions:

37.  $5.032 = \underline{\hspace{2cm}}$

38.  $0.02 = \underline{\hspace{2cm}}$

39.  $7.29 = \underline{\hspace{2cm}}$

Change each number from a fraction into a ratio:

40.  $\frac{12}{15} = \underline{\hspace{2cm}}$

41.  $\frac{17}{20} = \underline{\hspace{2cm}}$

Solve for  $x$ :

42.  $4:3 :: 16:x$        $x =$  \_\_\_\_\_

43.  $18:27 :: 9:x$        $x =$  \_\_\_\_\_

Change each decimal to a percent:

44.  $0.98 =$  \_\_\_\_\_

45.  $.00043 =$  \_\_\_\_\_

Change each percent into a decimal:

46.  $65\% =$  \_\_\_\_\_

47.  $0.03\% =$  \_\_\_\_\_

48.  $14.3\% =$  \_\_\_\_\_

Round to the tenths place for problems 49 and 50.

Change each fraction into a percent.

49.  $\frac{4}{7} =$  \_\_\_\_\_

50.  $\frac{2}{13} =$  \_\_\_\_\_

Round to the nearest whole number for problem 51.

51. What is 3 out of 7, as a percent? \_\_\_\_\_

52. What is 20 out of 100, as a percent? \_\_\_\_\_

53. What is 15% of 900? \_\_\_\_\_

For problem 54, report your answer to the tenths place.

54. What is 3.5% of 24? \_\_\_\_\_

55. 4 is 1% of what number? \_\_\_\_\_

56. 3 is 15% of what number? \_\_\_\_\_

57. What is the numerical value of the Roman number VIII? \_\_\_\_\_

58. What is the numerical value of the Roman number XI? \_\_\_\_\_



## Answer Key to Math Quiz

1. 2,563
2. 4,556
3. 1,429
4. 3,378
5. 128
6. 337
7. 291,566
8. 262,848
9. 11,550
10. 109,532
11. 811
12. 370
13. 108
14. 25.678
15. 126.54
16. 9.57
17. 32.56
18. 14,929.4
19. 13.9
20. 186.67
21. 13.78
22. 0.58
23.  $1 \frac{3}{35}$
24.  $9 \frac{38}{63}$
25.  $16 \frac{2}{15}$
26.  $\frac{18}{37}$
27.  $19 \frac{1}{14}$
28.  $5 \frac{7}{10}$
29.  $\frac{8}{49}$
30.  $5 \frac{1}{7}$
31.  $13 \frac{1}{2}$
32.  $1 \frac{1}{14}$
33. 48
34.  $3 \frac{4}{21}$
35. 0.83
36. 19.14
37.  $5 \frac{4}{125}$
38.  $\frac{1}{50}$
39.  $7 \frac{29}{100}$
40. 4:5
41. 17:20
42. 12
43. 13.5
44. 98%
45. 0.043%
46. 0.65
47. 0.0003
48. 0.143
49. 57.1%
50. 15.4%
51. 43%
52. 20%
53. 135
54. 0.84
55. 400
56. 20
57. 8
58. 11

## **HESI A2 PreTest PLATO**

If you have a PLATO login, go to the “LnC Quick Links” on the LnC pages and click on PLATO, or go directly to <http://plato.davenport.edu> and log in by entering your PLATO Name, Group Name (HESI) and your password.

If you do not have a PLATO login, follow the directions under “Create a PLATO login” at this web page:

<http://dnn4.davenport.edu/LibraryInformationCommonsLnC/TutoringServices/Tutorials/PLATO/tabid/190/Default.aspx>

### **PLATO Biology Series**

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Click on the following sections. *Unless indicated by bullets, complete the entire tutorial's menu in order to cover the basics of Biology.*

#### Introduction to Biology

- Biology the Study of Life
  - II Signs of Life
  - V Scientific Method

#### The Energy and Chemistry of Life

- Cellular Respiration
- Photosynthesis
- Enzymes
- Biochemistry

#### Cell Structure and Specialization

- The plasma membrane and cellular transport
- Mitosis
- Meiosis

#### Genetics and Evolution

- Mendel's Principles of Heredity
- Investigating Heredity
- DNA: The Molecules of Life
- From DNA to Protein

#### The Diversity of Life

- Classification of Living Things
  - I Introduction
  - III Criteria for Classification
  - IV The 5 Kingdom Classification
  - V The 6 Kingdom Classification

## **PLATO Chemistry Series**

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Click on the following sections. *Unless indicated by bullets, complete the entire tutorial's menu in order to cover the basics of Chemistry,*

### **Introductory Chemistry**

#### Introduction to Chemistry

#### Atomic Structure

#### Periodic Table and Trends

- Introduction
  - B. Periodic Table Organizes the Elements
- IV. The Modern Periodic Table

#### Properties of Acids, Bases, and Salts

#### Bonding I

#### Gases & Their Properties

- II Physical Properties of Gases
  - A. Gases are States of Matter
    - 1 &2
  - B. Variables Used to Describe Gases
    - 1 – 4

#### Solutions

- I Solution Introduction
  - B. Heterogeneous Mixtures
  - C. Homogeneous Mixtures
  - D. Components of a Solution
- V Solution Concentrations
  - Relative Terms
  - Molarity
  - Molality
  - Molar Fraction

### **Chemical Transformations**

#### Formulas, Equations, & Stoichiometry

#### Chemical Equilibrium

- II Review of Chemical Reactions

#### Chemical Reactions

- IV Chemical Equations
  - All

#### Reaction Rates

- II Rates of Reactions
  - The Concept of Rates
- III Factors Affecting Reactions Rates (All)

## **PLATO Foundational Mathematics**

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*This is a complete review of mathematics. Depending on your math skills, you may not need to complete all tutorials within each section.*

- Adding and Subtracting Whole Numbers 1
- Adding and Subtracting Whole Numbers 2
- Multiplying Whole Numbers
- Dividing Whole Numbers
- Understanding Fractions
- Adding and Subtracting Fractions
- Multiplying and Dividing Fractions
- Understanding Decimals
- Performing Operations with Decimals
- Working with a Percentage
- Understanding Ratios and Proportions
- Using Geometry
- Measurements