

HESI Math Instructor's Guide

General Information

- HESI is short for Health Educational System Incorporated.
- The HESI test is a multi-part (web-based), proctored, scored assessment.
- Students have up to 4 hours to complete the test.
- They must register with the testing center ahead of time – no walk-ins.
- CCRI requires 4 sections for nursing students – Math, Reading Comprehension, Vocabulary, and Grammar. The other sections – Science, etc. are NOT required.
- All sections contain 55 questions (50 scored questions and 5 experimental questions that are unscored)
- Test-takers can choose which order to take the sections.
- Most questions are multiple choice, but a few have answers that are typed in.
- Students may NOT go back to previous questions once the questions are submitted.
- Unanswered questions are marked wrong.
- Study books and apps are available. For Math, any are fine if they are used. For RLA, some are much better than others.
- Students may only take the HESI twice in a 12-month period. And must wait at least two weeks between exams.
- The HESI A2 costs \$54. Testing by appointment only and is now offered remotely.

Calculator use

- An on screen calculator is allowed on every question of the math section.
- Students must click on the calculator icon in order to use it.
- Numbers and operators must be clicked with the mouse not typed.

Topics covered in the math section

- Basic operations
- Order of operations
- Fractions
- Decimals
- Percentages
- Ratios and proportions
- Unit conversion – household measurements, including military time and temperature
- Word problems
- Solving one and two step equations.

The Purpose of a HESI Prep workshop

- To help students become familiar with the test
- To go over test-taking strategies
- To expose students to the different types of questions
- To identify areas that need study/practice

Time: This workshop normally takes 1.5 hours and may be split into two 45 minute sessions

More info: <https://www.ccri.edu/doss/deansda/testingcenters/hesi.html>

Resources: https://www.ccri.edu/success/forstudents/hesi_prep_resources.html

1. $32.21 - 4.68 =$
 - a. 14.59 - too low
 - b. 27.53 The point of this is to illustrate estimation.**
 - c. 1.459 - absurd
 - d. 31.742 - too high
2. $(7.2)(0.34) =$ **parentheses mean multiplication and yes, you really can use a calculator for these!**
 - a. 14.18 - absurd
 - b. 2.234
 - c. 2.64
 - d. 2.448 - correct number of decimal places and ends in 8**
3. $8:10 :: x:100, x=?$ **This is a proportion. Most students haven't seen this format before. Set up as fractions and cross multiply.** $\frac{8}{10} = \frac{x}{100}$ **$10x = 800 ; x = 80$**
4. A hospital day staff consists of 25 registered nurses, 75 unlicensed assistants, five phlebotomists, six receptionists and office staff, and forty-five physicians. One summer day the staff was only at 68% strength. How many people were working that day? **Add by grouping $25+75+5+6+45 = 156 * 0.68 = 106.08 = 106$ people.**
We generally round people, places, and things to whole numbers.
5. A farmer raises chickens for eggs and meat. Any chicken that does not lay at least one egg a week is moved to the slaughterhouse. The farmer has 765 chickens that can lay one egg each day. Each day 80% of the chickens lay eggs. How many eggs does the farmer collect each day?

Get rid of unnecessary information. $765 * 0.8 = 612$ eggs

6. A teacher's aide is preparing a snack for the class. In order to prepare the powdered drink the aide must convert the directions to metric measurements. The directions say, "Dilute contents of package in 2 quarts of water." The aide's measuring device only measures in liters. How many liters of water should be used? (Enter numeric value only. Round to the nearest tenth if necessary.)

Students must know all conversions for volume, length, weight, time, and temperature from memory.

$$2 \text{ qts} * \frac{2 \text{ pints}}{1 \text{ quart}} * \frac{2 \text{ cups}}{1 \text{ pint}} * \frac{8 \text{ fl. oz.}}{1 \text{ cup}} * \frac{30 \text{ ml}}{1 \text{ fl. oz.}} * \frac{1 \text{ L}}{1000 \text{ ml}} = \frac{1920}{1000} = 1.92 = 1.9 \text{ L}$$

Dimensional Analysis or unit fractions

7. Express 40% as a fraction and decimal.

$$40\% = \text{"40 per hundred"} = 40:100 = 0.4 = \frac{40}{100} = \frac{2}{5}$$

Be sure to reduce all fractions!

8. Express $\frac{3}{8}$ as a decimal and percent.

$$3:8 = 0.375 = 37.5\%$$

9. Express 0.24 as a fraction and percent.

$$0.24 = 24\% = \frac{24}{100} = \frac{6}{25}$$

10. Last night at a certain hospital 76 babies were born. Of the births, 45% were girls. How many boys were born last night?

$$76 * 0.45 = 34.2 = 34 \text{ girls. How many boys? } 76 - 34 = 42 \text{ girls}$$

Make sure to answer the question that is asked!

11. A doctor tells a patient to cut back on coffee. The patient usually has four 8-oz cups of coffee per day. If the doctor told him to cut back by 25%, how many ounces of coffee can the patient consume each day?

$$\text{There are a lot of ways to do this. } 4 * 8 = 32 \text{ oz} * 25\% = 8 \text{ oz; } 32 - 8 = 24 \text{ oz}$$

12. A worker is filling out his timesheet. He worked 8 hours on Monday, 7 hours and 30 minutes on Tuesday, $8\frac{3}{4}$ hours on Wednesday, 4 hours on Thursday, and $8\frac{1}{4}$ hours on Friday. If his hourly wage is \$14.35, what will be his gross pay for this week?

Add all hours together. $8+7.5+8.75+4+8.25 = 36.5 * \$14.35=523.775 = \$523.78$

Convert all time formats to decimals. Round money to nearest cent.

Many students forget that 30 minutes = 0.5 hours!

13. Evaluate: $2x^2-3xy-2y^2+10$, for $x=2$ and $y=-3$

$$2(2)^2-3(2)(-3)-2(-3)^2+10 =$$

$$8-18+18+10=18$$

Remember the order of operations! PEMDAS

14. Solve for x:

Which values for x make the equations true? Students can plug in all the multiple choice answers.

a. $2x-3 = 17$

$$x=10$$

b. $3-4x = 27$

$$x=-6$$

c. $2-(x-4) = 8$

$$x=-2$$

d. $2(3x-4) = 6x-8$

x=all real numbers. How many solutions? A. 0 B. 1 C More than 1 etc.

15. Use the rules for order of operations to simplify the following:

a. $15 - 8 \div 4 \times 3 = 9$

b. $16 - 10 + 4 - 13 = -3$

c. $\frac{13-2 \times 4}{2^3+1} = \frac{5}{9}$

d. $2\frac{2}{5} + 3\frac{2}{3} = \frac{91}{15}$ or $6\frac{1}{15}$

e. $5\frac{1}{4} - 3\frac{3}{5} = \frac{33}{20}$ or $1\frac{13}{20}$

f. $\frac{2}{3} \times 4\frac{1}{4} \times \frac{3}{17} = \frac{1}{2}$

g. $4\frac{1}{2} \div \frac{5}{9} = \frac{81}{10}$ or $8\frac{1}{10}$

16. Express in AM/PM time:

Students may set their watch or cell phone to international/military time to get used to it.

a. 2359 **11:59 PM**

b. 2000 **10:00 PM**

c. 1200 **12:00 PM or noon**

d. 0000 **12:00 AM or midnight**

e. 1545 **3:45 PM**

17. Express in 24-hour time

a. 11:30 AM **1130**

b. Midnight **0000**

c. Noon **1200**

d. 2:30 PM **1430**

e. 11:00 PM **2300**

18. Convert the following: **Formulas are not given!**

a. $50^\circ \text{ F to } ^\circ \text{ C } (50-32)/1.8 = 10^\circ \text{ C}$

$C=(F-32)/1.8$

b. $41^\circ \text{ C to } ^\circ \text{ F } 1.8(41)+32 = 105.8^\circ \text{ F}$

$F=1.8C+32$