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Midterm - INTD262

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Unit 3

1. Recall the fascinating story about psychological research, in which the author shares that 67 percent of psychol ogists who were asked to share there data did not share it. (a) Were the rates of error higher or lower in the studies for which the authors did not share data? (b) In whose favor were the errors?

a) Higher Error

b) 96 percent

2. “Recent research in behavioral economics has shown that groups are often better than individuals at finding errors in reasoning.” (a) Why do you think this is the case? (b) Can you give an example of the wisdom of crowds thus far in our study of Latin American science?

A) Groups are often better than individuals at finding errors in reasoning because they bring diverse perspectives and knowledge to the table. When multiple people evaluate a problem, they can catch mistakes that an individual might overlook. This collective intelligence allows for a more thorough analysis and a higher likelihood of identifying errors.

B) Creation of Science journal

3. Recall the story of cold fusion. (a) List three facets of the peer review process that went wrong in this episode. (b) How long, from start to finish, did it take for the scientific community to sort out the errors in the cold fusion research?
    a. Three issues with the peer review process were that they published their 'research' on cold fusion without undergoing peer review and ignored negative reviews, they failed to share their data with other researchers, and they were unable to replicate the results they claimed to achieve.
    b. The scientific community needed less than two months to uncover the flaws in the cold fusion research.
4. Note that we encountered several examples of viceregal engineers becoming Latin American leaders. (a) What are some examples of professions that involved modern

technical skill in Rio de la Plata and Peru? (b) What is the primary profession of modern US leaders, for example, elected to The United States Congress?

a. Mercury mining and sailing
b. U.S leader elect the U.S congress: polticans and lawyers

5. Jos´e Mariano Moci˜no and others were ordered by the Mexican viceroy on an expedition to Nootka Island. What was the purpose of the expedition? (Take INTD255 to learn more!)
    a. To study the natural richness in Russia

6. In Per´u, we must take note of the work of Hip´olito Un´anue. (a) What are some of his other scientific contributions? (b) In Nueva Granada, we must take note of the work of Jos´e Celestino Mutis. What are some of his main contributions?
    a. Unannue: botany and modernization of medicine
    b. Mutis: expedition botanica and advancements in physics
7. (a) When did Latin American wars of independence begin, approximately? (b) Give some examples of scientists and engineers who fought and died for their countries.
    a. The Latin American wars of independence began approximately in the early 19th century, around 1810.

    b. Some examples of scientists and engineers who fought and died for their countries include Francisco José de Caldas, a Colombian scientist and geographer who participated in the fight for Colombia's independence and was executed in 1816, and José María Morelos, a Mexican priest and military leader with training in engineering, who was a prominent figure in Mexico's war of independence and died in 1815.

Unit 4

1. How long after Semmelweis's solution to childbed fever was germ theory introduced?
    a. Took about 15 to 20 years
2. Where did the practice of autopsies begin? In what way does performing an autopsy fit with the scientific attitude?
    a. It began in Paris, France.It fits since autopises are ways of verfiying bedside diagnosis

3. (a) Do you think the discovery of penicillin was an accident? Why or why not? (b) Louis Pasteur is quoted as saying “chance favors the prepared mind.” What did he mean by this? (c) In light of (a) and (b) do you regard the discovery of cinchona as accidental or scientific?
    a. (a) The discovery of penicillin is often considered a fortunate accident. Alexander Fleming noticed that a mold (Penicillium notatum) had contaminated his petri dishes and was killing the surrounding bacteria. While the initial observation was accidental, Fleming's scientific curiosity and subsequent experiments confirmed the mold's antibacterial properties.
    b. (b) When Louis Pasteur said, “chance favors the prepared mind,” he meant that while chance events or accidents can lead to discoveries, it is the prepared and knowledgeable mind that recognizes their significance and acts upon them. Essentially, being well-prepared and informed allows one to take advantage of unexpected opportunities.
    c. (c) In light of (a) and (b), the discovery of cinchona (from which quinine, a treatment for malaria, is derived) can be seen as both accidental and scientific. Indigenous people in South America used the bark of the cinchona tree to treat fevers, which European scientists later investigated and scientifically validated. The initial use might have been accidental, but the scientific method was applied to understand and harness its medicinal properties.
4. What event catelyzed the formation of the Establecimiento de Ciencias de M´edicas in 1833?
    a. The Mexican Wars for Independence
5. (a) List some reasons the authors give to explain why medical reforms were slow to materialize in Nueva Granada, relative to the struggle for reform in Nueva Espa˜na. (b) Who led the medical reform process in Nueva Granada in the 18th century? (c) When and where was the Facultad de Medicina reestablished in Nueva Granada, and what happened next?
    a. (a) Some reasons the authors give to explain why medical reforms were slow to materialize in Nueva Granada, relative to the struggle for reform in Nueva España, include: Political and administrative instability in Nueva Granada.

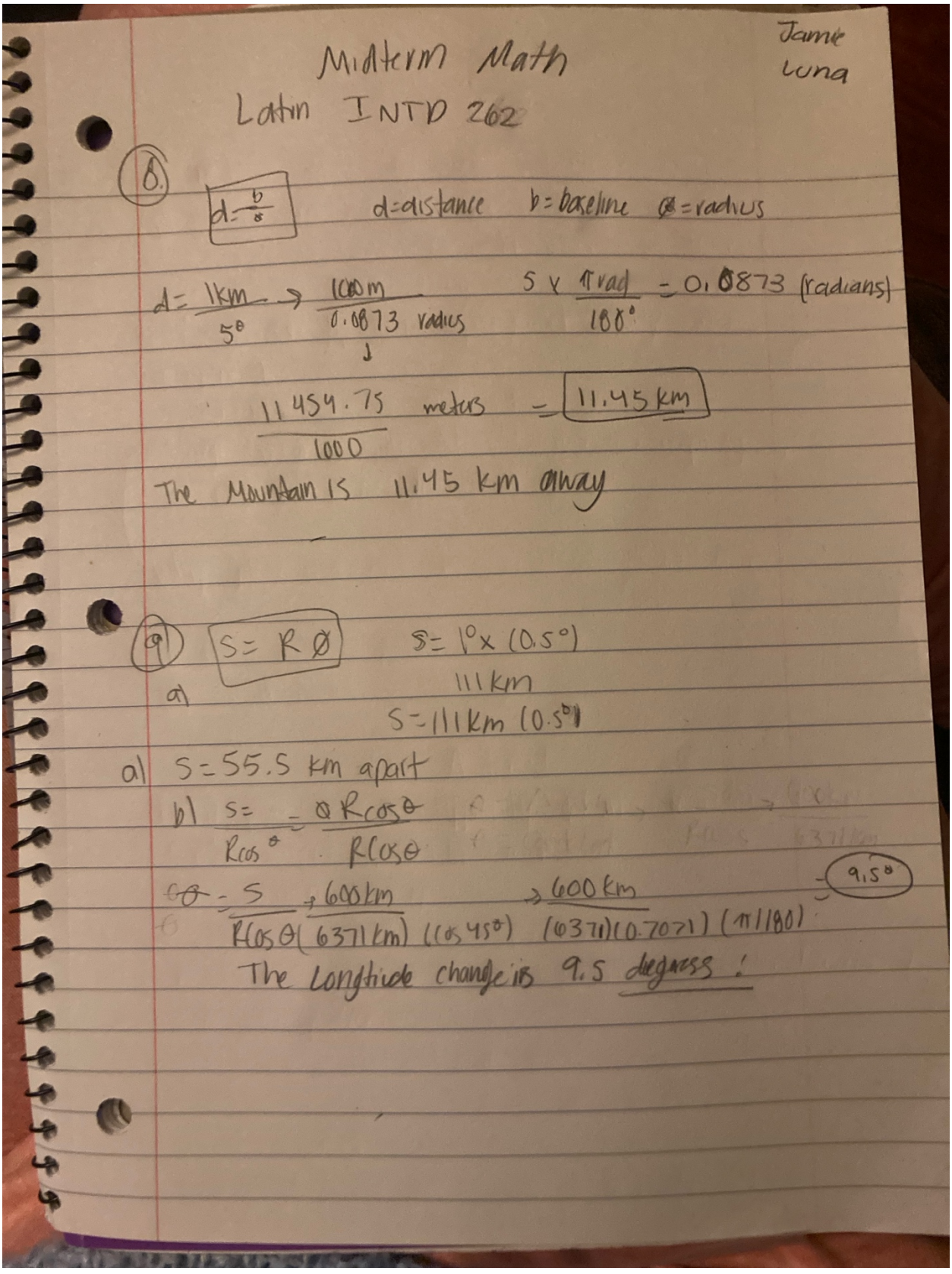
Limited financial resources and investment in medical infrastructure. Resistance from traditional medical practitioners and institutions. Geographic and communication challenges that hindered the spread of new ideas and practices.

   b. (b) The medical reform process in Nueva Granada in the 18th century was led by José Celestino Mutis, a Spanish priest, botanist, and physician who played a significant role in modernizing medical education and practices.
   c. (c) The Facultad de Medicina was reestablished in Nueva Granada in 1802 in Bogotá. Following its reestablishment, the institution faced several challenges, including political upheaval and wars of independence, which impacted its stability and growth. Despite these difficulties, the Facultad de Medicina continued to evolve and contribute to the advancement of medical knowledge and practice in the region.

6. (a) How many medical schools were there in Brazil in the eighteenth century? (b) What happened to the Portuguese Crown in 1807? What influence did this have on medical reform?
   a. (a) There was 0 but later was 1
   b. (b) Crown was from Napolen from Portugal to Brazil. Would lead to medical refoem and schools
7. As the generation of doctors in Columbia returned from France in the late 19th century, what three cultural institutions did they establish to enhance medical practice?
   a. Medical journals, professional assoications and “standard’ medical schools

8. Triangulation Suppose you observe a distant mountain from a flat plain. Suppose you walk a baseline of 1 km, perpendicular to the direction towards the mountain. The difference between the compass headings to the mountain at either end of the baseline is 5 degrees. How far away is the mountain?

9. Latitude and Longitude (a) Suppose two cities lie along a constant line of longitude. If we measure a change of 30 minutes (0.5 degree latitude) between them, how far apart are they, in km? (b) Suppose two cities lie along a constant latitude of 45 degrees North. If they are 600 km apart, what is the change in longitude between them?



Midterm Math
Latin INTD 262

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8. $d = \frac{b}{\theta}$ d=distance b=baseline θ=radius

$d = \frac{1\text{km}}{5^\circ} \rightarrow \frac{1000\text{m}}{0.0873 \text{ radius}}$ $5 \times \frac{\pi \text{rad}}{180^\circ} = 0.0873$ (radians)

$\frac{11454.75 \text{ meters}}{1000} = 11.45\text{km}$

The Mountain is 11.45 km away

9) $S = R\theta$ $S = 1^\circ \times (0.5^\circ)$

a) 111km

$S = 111\text{km}(0.5^\circ)$

a) S=55.5 km apart

b) $S = \theta R\cos\theta$ $\frac{S}{R\cos\theta} = \frac{\theta R\cos\theta}{R\cos\theta}$

$\theta = \frac{S}{R\cos\theta(6371\text{km})} \rightarrow \frac{600\text{km}}{(\cos 45^\circ)} \rightarrow \frac{600\text{km}}{(6371)(0.7071)(\pi/180)} = 9.5^\circ$

The Longitude change is 9.5 degrees!

Unit 5

1. (a) When were the first medical journals published in Columbia? (Give a few examples). (b) Compare this time frame to the publication of the first mining, chemistry, and physics journals in Mexico. (c) How, or through whom, were these journals connected to medical schools in Columbia?
    a. (a) The first medical journals in Colombia were published in the early 19th century. A few examples include: El Repertorio de Medicina y Cirugía" published in 1823. "El Boletín de la Sociedad de Medicina y Ciencias Naturales" published in 1833.
    b. (b) The publication of these medical journals in Colombia occurred around the same time or slightly later compared to the first journals in other scientific fields in Mexico. For instance, the first mining journal in Mexico, "El Minero Mexicano," was published in 1826, while the first chemistry and physics journals appeared in the mid-19th century.
    c. (c) These medical journals in Colombia were often connected to medical schools through prominent physicians and educators who contributed to them. For example, José Celestino Mutis and his followers played a crucial role in linking these publications with academic institutions, ensuring that the latest medical knowledge and research were disseminated among students and professionals.
2. In 1833, two Enlightenment period institutions were merged into the beginnings of a modern medical school in Mexico. What were the three institutions?
    a. Facultad de Medicina, Establecimiento de Ciencias médicas and the Real escuela de Cirugia.
3. Consider our major in kinesiology and nutrition science (KNS). To what extent would we consider this medicine, in the absence of modern germ theory? That is, are there other holistic forms of medical development we encountered in Latin American history besides vaccines and drugs that fight bacteria and viruses?

   a. In the absence of modern germ theory, kinesiology and nutrition science (KNS) would still be considered important aspects of medicine, focusing on holistic approaches to health and well-being. Historically, various forms of medical development in Latin America emphasized holistic practices beyond vaccines and drugs. For example, traditional indigenous medicine often incorporated the use of medicinal plants, spiritual healing, and physical therapies. These practices aimed at maintaining balance within the body and with the environment. The use of herbs and natural remedies was common, and many of these traditional methods are still respected and used today. Lifestyle and dietary practices were crucial in maintaining health. Nutrition was seen as a fundamental part of preventing illness and promoting wellness, much like it is in modern kinesiology and nutrition science. So, while modern germ theory brought significant advancements in understanding and treating diseases, holistic approaches to health, including kinesiology and nutrition, have long been integral to medical practices in Latin American history.

4. (a) What historical event in 1808 led to the creation of the first medical and surgical schools in Brazil (b) When did Brazil declare independence from Portugal? (c) How long after independence did the Brazilians introduce modern reforms into the medical schools in Bahia and Rio de Janeiro?
   a. 1808 transfer of the Portugal court in Rio de Janeior which led to the creation of the first medical and surgical schools in Brazil
   b. Brail declared independence in 1822 from Portugal
   c. After 7 years of their independence modern medical schools were introduced in Brazil
5. In Columbia, the Escuela de Medicina was founded in 1865. It was centered on hospital-based anatomy and physiology. Consider the following quote from the text: “The second phase is notable for the slow progress of laboratory-based medicine, especially etiopathological procedures. Its final stage, staring in the 1950s, is defined by the introduction of Flexnerian reforms from North American technological medicine.” What does quote mean by Flexnerian? Think back to our reading in The Scientific Attitude.

a. The quote refers to "Flexnerian" reforms, which are based on the principles outlined in the Flexner Report of 1910. This report, authored by Abraham Flexner, revolutionized medical education in North America by advocating for a more rigorous and scientific approach to medical training. It emphasized the importance of laboratory-based research, standardized curricula, and the integration of medical education with clinical practice in hospitals.
b. In the context of the quote, the introduction of Flexnerian reforms in Colombia during the 1950s signifies a shift towards adopting these North American standards. This meant a greater focus on scientific rigor, laboratory research, and the application of technological advances in medicine, aligning Colombian medical education with the more systematic and evidence-based practices advocated by Flexner.

6. (a) What was a major driver of modern epidemiology in 19th Century Brazil? (b) What was the purpose of the Tropicalist School of medicine? (c) When did the bubonic plague enter Brazil, and how did the Brazilians respond?
    a. A major driver of modern epidemiology in 19th century Brazil was the need to address the widespread outbreaks of infectious diseases such as yellow fever, malaria, and cholera. These diseases posed significant public health challenges and prompted the development of systematic approaches to study and control them.
    b. The purpose of the Tropicalist School of medicine was to study and address the unique health issues and diseases prevalent in tropical regions, particularly in Brazil. This school focused on understanding the environmental and social factors contributing to these diseases and developing appropriate medical responses and treatments.
    c. The bubonic plague entered Brazil in 1899, arriving through the port of Santos. The Brazilian response included quarantine measures, the establishment of sanitary commissions, and efforts to improve urban sanitation. Public health campaigns were launched to educate the population about the disease and its transmission, and measures were taken to control the rat population, which was a primary vector for the plague.