## Science in the Caliphate Name:

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| **What do you need to perform science?** Science is not a natural activity. You need to be very careful in taking notes and controlling for outside factors. You need to be well educated and willing to think outside of the box—because many scientific results point to counter-intuitive conclusions. You need a society willing to let you explore your ideas and you need the money/resources to pursue them. | **List the things you need:** |
| **Why was science so strong in the Caliphate?** | |
| **Islam and Science:** from the very beginning, Islam had very positive impacts on the pursuit of knowledge. The Quran challenges Muslims to understand the world around them. There are several verses that seem to suggest that people should use observation to determine the nature of the universe. Added to this was a very important hadith during Abbasid times that recorded Muhammad stating that “the ink of the scholar is more precious than the blood of martyrs.” All of this showed that science and philosophy were critical studies and that pursuing them also got you closer to God. | **How did Islam encourage scientific ideas?** |
| **Backing of Nobles:** the rich and the lords of the Caliphate put a lot of money into science. They did this because of the ideas listed above. They wanted to show they were good Muslims and were helping the Ummah. They sponsored scholars and gave huge donations to the House of Wisdom and other libraries/universities. | **How did Nobles help science advance?** |
| **Legacy of Greece:** Very early in its history, the Caliphate became obsessed with the works of the great Greek mathematicians, philosophers, and scientists. The very first project of the famous House of Wisdom in Baghdad was to study and translate works from Greece. This was at the same time that Greek works were being discarded in Europe. Aristotle was particularly important, because he had created a system of logic that laid the groundwork for how to conduct science and philosophy in a consistent, careful way. | **How did Greek works become so important to the Caliphate?**  **How did these Greek works encourage science?** |
| **Explain how and why the culture of the Caliphates encourage science and other inquiry:** | |
| **Later Challenges to Science** | |
| **Al-Ghazali:** around 1100 AD, a theologian and philosopher named Al-Ghazali challenged the importance of philosophy and science. He did not argue that the Quran encouraged people to understand the world. What he argued was that philosophy and science cannot get you any closer to understanding the world. He stated that the world was mystical and could not be understood by observing it. He criticized the reliance on Greek philosophers—who he pointed out were not Muslims. Lastly, he popularized a school of thought known as occasionalism. | **What did al-Ghazali teach?**  **How did this have a negative impact on science?** |
| **Occasionalism** is the belief that all events occur because of God’s direct intervention and are not the product of physical causes. For example, when you hold a match to a cotton ball, the cotton ball is set on fire. Occasionalism states the cotton ball was set on fire by God and not by the match. The next time the cotton ball might be unaffected or might even freeze. This viewpoint became common in the Caliphate after al-Ghazali. | **Analysis: why would this belief make science more difficult to pursue?** |
| **Taqlid:** around the same time as al-Ghazali, Islamic rulers were becoming very concerned about the rise of new forms of Islam such as Shia. To combat this, they began to emphasize an idea known as Taqlid. This idea says that if you are not an expert, you should accept what the experts say and not think about it on your own. This had the effect of causing people to accept old, traditional answers without exploring the questions on their own. | **Analysis: why would this belief make science more difficult to pursue?** |
| **Look back at your list of things needed to perform science. Which of those were removed during the time of al-Ghazali?** | |
| **Think of the advancements made on your Golden Age poster. Would those have been possible during the time of al-Ghazali? Why/why not?** | |