

Muslim inventions that shaped our world

From carpets, optics and coffee to degree-awarding universities and hospitals, Islamic inventors have changed and molded the modern-day world as we know it. Talented and hardworking Muslim scholars, who were also students of the sciences, like Jabir Ibn Hayyan, Al-Jazari, Al-Zahrawi and Abbas ibn Firnas, discovered things that we still hold onto now.

It is important to note that Muslim scientists, researchers and inventors of the Islamic Golden Age were inspired and motivated by their religion, Islam. The contribution of Muslims is vast in many sectors. Algebra, a concept in mathematics that is the main component of any technological or engineering feat. This invaluable contribution to the study of mathematics was made by renowned Persian scientist, Muhammad ibn Musa al-Khwarizmi who popularized treatise on algebra *The Compendious Book on Calculation by Completion and Balancing* (813–833 CE). What many do not know is that degree-granting universities are a product of Islam's Golden Age and not only that, but the first university to be formally established was by a Muslim princess by the name of Fatima Al-Fibri in 859AD in Morocco. The establishment of the Ahmad ibn Tulun Hospital in Egypt in the 9th century was one of the first fully functional hospitals in the world and one which became a template for the hospitals we see nowadays.

These inventions are but a handful of hundreds if not thousands that Muslim inventors and scholars contributions. A great number of the everyday items we use are products of such inventors and scholars. Although the vast Islamic Empire being the learning centres of the world may be long gone, their legacy still lives on.

Adapted from <https://www.alhakam.org/5-muslim-inventions-that-shaped-our-world/>

1. Are the following statements true or false? Write T or F next to the letter corresponding to the statement and correct the false one(s).

a. Muslim contributions are limited to one sector.

(...)
F

b. Algebra is credited to the Muslim mathematician Al-Khwarizmi.

(...)
T

c. Ahmad ibn Tulun established the first school in Egypt.

(...)
F

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2. Fill in the following table.

Scholar/Scientist	Inventions/contributions	Date
1- Fatima Al-Fihri	The first university in the world.	859 AD
2- Ahmed Ibn Tulun	1st hospital in Egypt	9th century
3- Al-Khwarizmi	Algebra	813-833

3. Answer the following questions according to the text:

a. Who are the Muslim scientists that are mentioned in the text?

are: Al-Khwarizmi, Ahmed, Abbas Ibn Feinan

b. What did Muslims invent?

Muslim invented, Algebra, university and hospital.

c. Where did Fatima Al-Fihri establish the first university in the world?

in Morocco

4. WHAT or WHO do the underlined words in the text refer to?

a. Their (§2)..... b. Who (§2)..... c. These (§3).....

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B/ Text Exploration

(7points)

1. Match words and definitions. 1-..... 2-..... 3-..... 4-.....

Words	Definitions
1-Discover	a- To design or create something that did not exist before.
2-Scientist	b- To find information, a place, or an object, especially for the first time.
3-Invent	c- is one of the broad areas of mathematics
4- Algebra	d- An expert who studies or works in one of the sciences.

2. Divide the following words into roots and affixes:

Words	Prefix	Root	Suffix
Inventor		invent	or
Researcher	Re	search	er

3. Give the correct form(s) of the verbs in brackets.

- a- He (Work) as pharmacologist *will work* if he (study) *studies* biology.
 b- If you (heat) *heat* ice, it (melt) *melts*

4. Re-order the following sentences to make a coherent passage.

- a- and he has a degree in physics from the University of Algiers in 1980. *2*
 b- In 2012, he was listed among the top 100 inventors worldwide. *4*
 c- Belgacem Haba is Algerian scientist *1*
 d- Haba developed 3D technologies for mobiles and servers. *3*



1	2	3	4

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Part Two: Written Expression

(05 points)

Choose ONE of the following topics:

Topic One: One of the most appreciated innovations in the 21st century is the invention of social media. However, researches show that students who spend too much time on social media can suffer from various health issues. Write a composition of about 80 to 120 words to talk about the negative effects of social media on students. **Make the best use of the following notes:**

- increased risk for depression
- anxiety, loneliness, cyberbullying
- self-harm, and even suicidal thoughts
- poor sleep, eye fatigue

Social medias are platforms that allow interaction between people. So, what are

The negative effects of social media on students?

First, it is well known that social media increased the risk of depression that cause self-harm

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or even suicidal thought. Secondly, these platforms also develop anxiety, loneliness and encourage cyberbullying. Finally, they cause fast addiction especially for students as a result - most of them have poor sleep and eye-fatigue.

To conclude, it is true that technology is a useful servant, but a dangerous master.

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Have you ever wondered why massive boats and ships weighing hundreds of tons float while small objects like rocks sink? Have you ever wondered why when you inhale in a pool you float and when you exhale you sink to the bottom even though you weigh the same? This phenomenon can be explained by the scientific principle called buoyancy. ⇒

In the third century B.C., the Greek mathematician and physicist Archimedes discovered the principle of buoyancy. Everyone knows that some objects float in water and others do not. An object that floats in water might sink in alcohol, and one that sinks in water might float in glycerin. All liquids possess the property that is called buoyancy- an upward push upon objects that are submerged within them.

Buoyancy is the upward force that an object feels from the water and when compared to the weight of the object, it is what makes an object float, sink, or remain neutrally buoyant in the water.

When an object sinks, the weight of the object is greater than the upward buoyant force exerted by the water and its density is greater than 1 g/cm^3 . When an object is neutrally buoyant, meaning it neither sinks nor floats, then the weight of the object is equal to the upward buoyant force exerted by the water.

Adopted from

www.phillyseaperch.org/uploads/9/1/0/6/9106381/buoyancy_for_hs.pdf

1. The text is an extract from:

- a) a magazine b) a website c) a newspaper

2. Say whether the following statements are "true" or "false".

- a) When you exhale or inhale in a pool you float. *false*
- b) If an object floats in water, it floats in any other liquid. *false*
- c) Oil possesses buoyancy. *True*
- d) If an object's density is less than water's density (1 g/cm^3), it will sink. *false*

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3. Answer the following questions according to the text.

a) Do all objects float in water? Justify.

No, they don't.

b) When did Archimedes discover the principle of buoyancy?

in 3rd century BC

c) What is the principle of buoyancy?

4. Who or what do the underlined words refer to in the text?

a) that (§2) any object

b) it (§3) buoyancy

5. Choose a title for the text:

a) The property of buoyancy experiments

b) Famous discoveries

c) Scientific

B/ Text Exploration:

1. Find in the text words which are closest in meaning to the following:

a) Breathe in (§1) = inhale

b) power (§3) = force

b) floating (§4)

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3. Give the correct form of the verbs in brackets.

a) The experiment (to be) will be successful if you follow (to follow) the instructions.

b) When you (to pour) pour oil on water, it (to float) floats.

4. Rewrite sentence (b) so that it means the same as sentence (a).

1/ a) Archimedes discovered the principle of buoyancy.

b) The principle of buoyancy was discovered by Archimedes.

2/ a) The experiment should be presented by the students.

b) The students should present the experiments.

5. Underline the stressed syllable in the following words:

Decision - scientific - property - theoretical - buoyancy - inhale

6. Reorder the following sentences to make a coherent passage.

a) So, technology is a way of putting theoretical knowledge into action by means of skills or engineering methods. 4

b) These words are 'techne' which means 'craft' or 'skill'. 2

c) The word 'technology' comes from two Greek words. 1

d) and 'logos', which can be translated as 'knowledge'. 3

PART TWO: Written Expression

(05 points)

Choose **ONE** of the following topics:

Topic One: In recent years, science has witnessed different advancements which have facilitated many things for people.

Using the following notes, write a paragraph in which you talk about progress/development in science and its usefulness.

- science's importance today/ more laboratories
- new discoveries and inventions
- life is easier/ transport/ housing/ medicines
- technological development

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In the ninth century the Arabs became the chief standard-bearers of science and philosophy. The golden age of Arab science lasted for about two centuries. The world owes a great debt of gratitude to the Muslim caliphs for their support for learning during this period.

The Arabs made important contributions to mathematics. The most outstanding work in Arabic in this field was probably the *Arithmetic* of the Persian Al Khwarizmi. In this treatise the author introduced a striking innovation _ the number system that we use today and that we call 'Arabic numerals'. The Arabs called them *gobar numbers*. Al-Khwarizmi derived this system from the Hindus. He also wrote a treatise entitled *On Algebra*. It was based to a certain extent on Hindu sources. The name 'algebra' is of Arabic origin ; it comes from 'al-jabr', meaning 'the union of broken parts'.

The Arabs were greatly interested in astronomy. Caliph Ma'mun built a splendid observatory in Baghdad in the year 829, and his astronomers made regular observations of the heavens. One of the greatest among the Arab astronomers was Al-Battani. He revised many false notions in Ptolemy's book *Great Composition*, which was translated into the Arabic under the title of the *Almagest*.

Alchemy had many devotees among the Arabs. The word *alchemy* itself is of Arabic origin. The most famous Arab alchemist was Jabir or Jaber, a Syrian physician who lived in the eighth or ninth century . Jabir perfected new methods of evaporation, filtration and crystallization and he was able to prepare a number of chemical substances, such as alums, alkalis, saltpetre and mercuric oxide.

(The Book of Popular Science v.2, pp.299-301)

1. Choose the right answer.

The text is about: a) Arab Science b) The Arabs c) Popular Science

2. Say whether the following statements are "true" or "false" according to the text.

- a) The Arabs were only great in science during the golden age. F
b) The Arabs gave the name *gobar numbers* to what is called now "Arabic numerals". T
c) Ma'mun was a famous astronomer in his life. T

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3. Answer the following questions according to the text.

- How many years did the golden age last?
- What did Al-Khwarizmi innovate in Mathematics?
- Did Jaber bring new methods to Alchemy? *Yes, he did!*
- Name THREE sciences mentioned in the text.

4. Who or what do the underlined words refer to in the text?

- their (\$1)
- He (\$2)
- which(\$3)
- itself (\$4)



B/ Text Exploration: (08pts)

1. Find in the text words which are closest in meaning to the following:

- numbers (\$2) =
- named(\$2) = *called*

Find in the text words which are opposite in meaning to the following:

- tiny (\$1) = *great*
- few (\$4) = *many*

2. Complete the following table:

Word	Adjective
science	<i>scientific</i>
origin	<i>original</i>
value	<i>valuable</i>
success	<i>successful</i>

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3. Rewrite sentence (b) so that it means the same as sentence (a).

1/ a) The Arabs made important contributions to Mathematics.

b) Important contributions... to math were made by the Arabs

2/ a) The students should learn different sciences.

b) Different sciences... should be learnt by the students.

4. Put the verbs between brackets in their correct form.

=> a) The Arabs (not prosper) in future if they (not develop) their economy.

will not prosper
don't develop

b) If you (to put) ice cubes in water, they (to melt).

put-

melt-

5. Classify the following words according to the number of their syllables.

mathematics - field - Arabic - physics

One Syllable	Two Syllables	Three Syllables	Four Syllables
field	physics	Arabic	mathematics

6. Fill in the gaps with words from the list:

experimented - works - with - physicist

The most famous Arab physicist was Alhazen of Basra. His chief works were the *Treasury of Optics* and *On the Burning Sphere*. Alhazen worked out the laws of reflection; he works with spherical and parabolic mirrors and with magnifying glasses.

منصة دروسكم للتعليم الإلكتروني

PART TWO: Written Expression Choose ONE of the following topics: (05points)

Topic One: Al Khwarizmi is regarded as one of the most famous scientists of the Islamic Golden Age. Using the following notes, write a short biography about him.

- Persian mathematician, astronomer, astrologer, geographer
- born in Persia around 780
- lived in Baghdad / worked at the "House of Wisdom" (Dār al-Ḥikma)
- made contributions (mathematics, astronomy, geography...)
- books (*On Algebra/Hisâb al-Jabr wa'l-Muqâbala / Kitâb Sûrat al-Ard...*)
- died in 850

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