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Half life math

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This measurement is applied to materials that experience exponential decay, meaning that the rate of decay is directly proportional to the amount of the substance, slowing down as the substance depletes. Half-life varies widely — it can be a few seconds or millions of years, depending upon the stability of the substance. The concept has applications throughout the world of science. A given substance always has the same half-life until it reaches very small amounts, even though the rate of decay slows over time. Imagine an element has a half-life of five minutes, for example. If we start out with 20 ounces of it, five minutes later we will have 10 ounces remaining, and in another five minutes only 5 ounces remaining. The rate of decay has slowed from 2 ounces per minute to 1 ounce per minute, but the half-life is constant at five minutes. Half-life is perhaps best known in the context of radioactivity. Radioactive "parent" elements transform into stable, or non-radioactive, "daughter" elements and emit radiation as they decay. Knowing the daughter element and half-life of a radioactive element, therefore, allows one to date a partially decayed sample by comparing the ratio of parent to daughter element. This method of dating is commonly used to determine the age of various entities in our universe, from fossils to meteorites. Carbon-14, a radioactive element present in living materials on Earth, begins decaying at the moment of death and can be used to date once-living materials such as bone and wood. This measurement is also important in biology, where it indicates the amount of time in which half of a given substance is metabolized and/or eliminated by the body. In this sense, half-life is used in pharmacology to determine appropriate dosage amounts and intervals. It can also be applied in toxicology to determine the effects of toxins in the body over time. All The Science is dedicated to providing accurate and trustworthy information. We carefully select reputable sources and employ a rigorous fact-checking process to maintain the highest standards. To learn more about our commitment to accuracy, read our editorial process. By Niki Acker "In addition to her role as a All The Science editor, Niki Foster is passionate about educating herself on a wide range of interesting and unusual topics to gather ideas for her own articles. A graduate of UCLA with a double major in Linguistics and Anthropology, Niki's diverse academic background and curiosity make her well-suited to create engaging content for WiseGeekreaders. " Growth and decay problems are another common application of derivatives.We actually don’t need to use derivatives in order to solve these problems, but derivatives are used to build the basic growth and decay formulas, which is why we study these applications in this part of calculus. We won’t work through how to prove these formulas, because in addition to derivatives, we also use integrals to build them, and we won’t learn about integrals until later in calculus.So, for now, we’ll just state that the basic equation for exponential decay is???y=Ce^{kt}???where ???C??? is the amount of a substance that we’re starting with, ???k??? is the decay constant, and ???y??? is the amount of the substance we have remaining after time ???t???. Since substances decay at different rates, ???k??? will vary depending on the substance.Half life equationEvery decaying substance has its own half life, because half life is the amount of time required for exactly half of our original substance to decay, leaving exactly half of what we started with. Because every substance decays at a different rate, each substance will have a different half life. But regardless of the substance, when we’re looking at half life, we know that???y=\frac{C}{2}???Because ???y??? is the amount of substance that remains as the substance decays, and because ???C??? is the amount of substance we started with originally, when the substance has decayed to half of its original amount, ???y??? will be equivalent to ???C/2???. So we can substitute this value in for ???y???, and then simplify the decay formula.???\frac{C}{2}=Ce^{kt}??????\frac{1}{2}=e^{kt}???So, when we’re dealing with half life specifically, instead of exponential decay in general, we can use this formula we got from substituting ???y=C/2???. ExampleFermium-???253??? has a half life of ???3??? days. If we start with ???1,200\ \text{mg}???, how much Fermium-???253??? will be left after ???10??? days?First we need to find ???k???. Since we know that ???C=1,200??? and that ???t=3???, we can use???\frac{C}{2}=Ce^{kt}??????\frac{1,200}{2}=1,200e^{k(3)}???Solving the equation for ???k???, we get???\frac{1}{2}=e^{3k}??????\ln{\frac{1}{2}}=\ln{e^{3k}}??????\ln{0.5}=3k??????k=\frac{\ln{0.5}}{3}???Now that we have a value for ???k???, we can solve for ???y??? using ???y=Ce^{kt}???, where ???C=1,200???, ???t=10??? and ???k=\frac{\ln{0.5}}{3}???.??y=1,200e^{\frac{\ln{0.5}}{3}(10)}??????y=1,200e^{\frac{10}{3}\ln{0.5}}??????y=119.06\ \text{mg}???There would be ???119.06\ \text{mg}??? of Fermium-???253??? left after ???10??? days. Because every substance decays at a different rate, each substance will have a different half life. ExampleThe half life of Americium-???243??? is ???7,370??? years. How long will it take a mass of Americium-???243??? to decay to ????3\%?? of its original size?First we need to find ???k???. We can assume that the original mass is ???100\%??? of its original size and say that ???C=1???, and we already know that ???t=7,370???, so we can use???\frac{C}{2}=Ce^{kt}???to find ???k???.??\frac{1}{2}=1e^{k(7,370)}??????\frac{1}{2}=e^{7,370k}??????\ln{\frac{1}{2}}=\ln{e^{7,370k}}??????\ln{\frac{1}{2}}=7,370k?????k=\frac{\ln{0.5}}{7,370}???Now that we have ???k???, we can find ???t??? using ???y=Ce^{kt}???, where ???C=1??? and ???y=0.73???.???0.73=1e^{\frac{\ln{0.5}}{7,370}t}??????\ln{0.73}=\ln{e^{\frac{\ln{0.5}}{7,370}t}}??????\ln{0.73}=\frac{\ln{0.5}}{7,370}t??????t=\frac{7,370\ln{0.73}}{\ln{0.5}}??????t=3,346.21??? yearsIt would take ??? 3,346.21??? years for our sample to decay to ????3\%??? of its original size. We are independent & ad-supported. We may earn a commission for purchases made through our links. Advertiser Disclosure Our website is an independent, advertising-supported platform. We provide our content free of charge to our readers, and to keep it that way, we rely on revenue generated through advertisements and affiliate partnerships. This means that when you click on certain links on our site and make a purchase, we may earn a commission. Learn more. How We Make Money We sustain our operations through affiliate commissions and advertising. If you click on an affiliate link and make a purchase, we may receive a commission from the merchant at no additional cost to you. We also display advertisements on our website, which help generate revenue to support our work and keep our content free for readers. Our editorial team operates independently of our advertising and affiliate partnerships to ensure that our content remains unbiased and focused on providing you with the best information and recommendations based on thorough research and honest evaluations. To remain transparent, we’ve provided a list of our current affiliate partners here. All The Science, in your inbox Our latest articles, guides, and more, delivered daily. By Mary Elizabeth Updated Jun 05, 2024 By Michael Pollick Updated May 21, 2024 By C.H. Seman Updated May 21, 2024 Explore fresh perspectives Popular picks Genetic engineering is manipulation of cell DNA. Though many people question the ethics, genetic engineering is commonly used for... Solar power is energy derived from the sun and converted into heat or electricity. Versatile and renewable, solar power can... All The Science, in your inbox Our latest articles, guides, and more, delivered daily. Privacy Policy Terms and Conditions All The Science, in your inbox -> The HP TET June 2025 Notification has been released. -> The HP TET Application Form can be submitted online by 30th April 2025. -> The HP TET June 2025 Exam will be scheduled between 1st June 2025 to 14th June 2025. -> Graduates with a B.Ed qualification can apply for TET (TGT), while 12th-pass candidates with D.El.Ed can apply for TET (JBT). -> To prepare for the exam solve HP TET Previous Year Papers. Also, attempt HP TET Mock Tests. , the free encyclopedia that anyone can edit. 119,323 active editors 6,997,999 articles in English "Chinese character" written in traditional (left) and simplified (right) forms Chinese characters are logographs used to write the Chinese languages and others from regions influenced by Chinese culture. The function, style, and means of writing characters have changed greatly over the past three millennia. Unlike letters in alphabets that directly reflect the sounds of speech, Chinese characters generally represent morphemes—the units of meaning in a language—often encoding aspects of pronunciation as well as meaning. Writing all of a language's frequently used vocabulary requires 2000–3000 characters; as of 2024, nearly 100,000 have been identified and included in The Unicode Standard. Characters are composed of strokes written in a fixed order. Historically, methods of writing them include inscribing stone, bone, or bronze; brushing ink onto silk, bamboo, or paper; and printing with woodblocks or moveable type. More recent technologies using Chinese characters include telegraph codes and typewriters, as well as input methods and text encodings on computers. (Full article...) Recently featured: Ezra Pound Dracunculiasis Red-capped parrot Archive By email More featured articles About Marcy Rheintgen ... that Marcy Rheintgen (pictured), a transgender woman, was arrested and detained overnight for using a women's bathroom in Florida? ... that a 700-year-old fortification in present-day South Korea was mostly destroyed during the construction of a coastal road? ... that some people ski every month of the year? ... that Tarmidi Suhardjo was fired from his party's leadership roles because he ran for governor? ... that Pope Leo XIV was the editor-in-chief of his high school's yearbook? ... that after Slovak actress Hana Meličková moved to Prague to study piano, she secretly enrolled in acting classes? ... that the riverine rabbit was thought to be extinct for more than 30 years? ... that Australian NFL player Laki Tasi got into American football at the suggestion of a burger shop owner? ... that guests at the launch of the bonkbuster Mount! were given polo mints to feed to a white stallion? Archive Start a new article Nominate an article Nicușor Dan Author Banu Mushtaq and translator Deepa Bhasthi win the International Booker Prize for Heart Lamp: Selected Stories. Nicușor Dan (pictured) is elected as president of Romania. In the Portuguese legislative election, the Democratic Alliance wins the most seats in parliament. Austria, represented by JJ with the song "Wasted Love", wins the Eurovision Song Contest. In the Philippines, the Alyansa para sa Bagong Pilipinas wins the most seats in the Senate election, while Lakas–CMD, one of its component parties, wins the most seats in the House elections. Ongoing: Gaza war M23 campaign Russian invasion of Ukraine timeline Sudanese civil war timeline Recent deaths: Benjamin Ritchie Jadwiga Rappé Bachtiar Basri Daniel Bilalian Eddie Sheldrake Domingos Maubere Nominate an article May 24: Aldersgate Day (Methodism) Eric XIV of Sweden 1567 – The mentally ill King Erik XIV of Sweden (pictured) and his guards murdered five incarcerated nobles, including some members of the influential Sture family. 1689 – The Act of Toleration became law, granting freedom of worship to English nonconformists under certain circumstances, but deliberately excluding Catholics. 1798 – The Irish Rebellion of 1798 began, with battles beginning in County Kildare and fighting later spreading across the country. 1963 – United States Attorney General Robert F. Kennedy met with African American author James Baldwin in an unsuccessful attempt to improve race relations. 2014 – A gunman involved in Islamic extremism opened fire at the Jewish Museum of Belgium in Brussels, killing four people. Robert Hues (d. 1632)Philip Pearlstein (b. 1924)Magnus Manske (b. 1974)Stormé DeLarverie (d. 2014) More anniversaries: May 23 May 24 May 25 Archive By email List of days of the year About Germanicus Julius Caesar (24 May 15 BC – 10 October AD 19) was an ancient Roman general and politician most famously known for his campaigns against Arminius in Germania. The son of Nero Claudius Drusus and Antonia Minor, Germanicus was born into an influential branch of the patrician gens Claudia. The agnomen Germanicus was added to his full name in 9 BC when it was posthumously awarded to his father in honor of his victories in Germania. In AD 4 he was adopted by his paternal uncle Tiberius, himself the stepson and heir of Germanicus' great-uncle Augustus; ten years later, Tiberius succeeded Augustus as Roman emperor. As a result of his adoption, Germanicus became an official member of the gens Julia, another prominent family, to which he was related on his mother's side. His connection to the Julii Caesares was further consolidated through a marriage between him and Agrippina the Elder, a granddaughter of Augustus. He was also the father of Caligula, the maternal grandfather of Nero, and the older brother of Claudius. This bust, depicting Germanicus in AD 4, is in the collection of the J. Paul Getty Museum. Sculpture credit: unknown; photographed by J. Paul Getty Museum Recently featured: The Cocoanuts In the Loge Black-crowned barwing Archive More featured pictures Community portal – The central hub for editors, with resources, links, tasks, and announcements. Village pump – Forum for discussions about Wikipedia itself, including policies and technical issues. Site news – Sources of news about Wikipedia and the broader Wikimedia movement. Teahouse – Ask basic questions about using or editing Wikipedia. Help desk – Ask questions about using or editing Wikipedia. Reference desk – Ask research questions about encyclopedic topics. Content portals – A unique way to navigate the encyclopedia. Wikipedia is written by volunteer editors and hosted by the Wikimedia Foundation, a non-profit organization that also hosts a range of other volunteer projects: CommonsFree media repository MediaWikiWiki software development Meta-WikiWikimedia project coordination WikibooksFree textbooks and manuals WikidataFree knowledge base WikinewsFree-content news WikiquoteCollection of quotations WikisourceFree-content library WikispeciesDirectory of species WikiversityFree learning tools WikivoyageFree travel guide WiktionaryDictionary and thesaurus This Wikipedia is written in English. Many other Wikipedias are available; some of the largest are listed below. 1,000,000+ articles العربية Deutsch Español فارسی Français Italiano Nederlands 日本語 Polski Português Русский Svenska Українська Tiếng Việt 中文 250,000+ articles Bahasa Indonesia Bahasa Melayu Bân-lâm-gú Български Català Čeština Dansk Eesti Esperanto Euskara עברית Հայերեն Magyar Norsk bokmål Română Simple English Slovenčina Srpski Srpskohrvatski Suomi Türkçe Oʻzbekcha 50,000+ articles Asturianu Azərbaycanca [illegible] Bosanski کوردی Ελληνικά Frysk Gaeilge Galego Hrvatski ქართული Kurdî Latviešu Lietuvių [illegible] Македонски [illegible] Norsk nynorsk [illegible] Shqip Slovenščina [illegible] اردو Retrieved from " 2 Calendar year Years Millennium 2nd millennium Centuries 15th century 16th century 17th century Decades 1540s 1550s 1560s 1570s 1580s Years 1564 1565 1566 1567 1568 1569 1570 vte November 10: Battle of Saint-Denis. 1567 by topic Arts and science Architecture Art Literature Music Science Leaders Political entities State leaders Colonial governors Religious leaders Birth and death categories Births – Deaths Establishments and disestablishments categories Establishments – Disestablishments Works category Works vte 1567 in various calendarsGregorian calendar1567MDLXVIIAb urbe condita2320Armenian calendar1016ԹՎ ՌԺՉAssyrian calendar6317Balinese saka calendar1488–1489Bengali calendar973–974Berber calendar2517English Regnal year9 Eliz. 1 – 10 Eliz. 1Buddhist calendar2111Burmese calendar929Byzantine calendar7075–7076Chinese calendar丙寅年 (Fire Tiger)4264 or 4057 — to —丁卯年 (Fire Rabbit)4265 or 4058Coptic calendar1283–1284Discordian calendar2733Ethiopian calendar1559–1560Hebrew calendar5327–5328Hindu calendars - Vikram Samvat1623–1624 - Shaka Samvat1488–1489 - Kali Yuga4667–4668Holocene calendar11567Igbo calendar567–568Iranian calendar945–946Islamic calendar974–975Japanese calendarEiroku 10(永禄１０年)Javanese calendar1486–1487Julian calendar1567MDLXVIIKorean calendar3900Minguo calendar345 before ROC民前345年Nanakshahi calendar99Thai solar calendar2109–2110Tibetan calendar阳火虎年(male Fire-Tiger)1693 or 1312 or 540 — to —阴火兔年(female Fire-Rabbit)1694 or 1313 or 541 Year 1567 (MDLXVII) was a common year starting on Wednesday of the Julian calendar. January 20 – Battle of Rio de Janeiro: Portuguese forces under the command of Estácio de Sá definitively drive the French out of Rio de Janeiro. January 23 – After 45 years' reign, the Jiajing Emperor, Zhu Houcong, dies in the Forbidden City of China. January – A Spanish force under the command of Captain Juan Pardo establishes Fort San Juan, in the Native American settlement of Joara. The fort is the first European settlement in present-day North Carolina. February 4 – Prince Zhu Zaiji, son of the Jiajing Emperor, becomes the ascends the throne of Ming Dynasty China as the Longqing Emperor.[1] February 10 – Henry Stuart, Lord Darnley, husband of Mary, Queen of Scots, is murdered at the Provost's House in Kirk o' Field, Edinburgh.[2] March 13 – Battle of Oosterweel: A Spanish mercenary army surprises and kills a band of rebels near Antwerp in the Habsburg Netherlands, beginning the Eighty Years' War. April 9 – In India, the Battle of Thanesar is fought in what is now the Indian state of Haryana. The Mughal Emperor Akbar, with 300 men, wins a victory over more than 7,000 warriors of the Sanyasi Hindu sect. Akbar's army has two cannons, 400 rifles and 75 elephants. April 10 – Henrique I Nerika a Mpudi becomes the new ruler of the Kingdom of Kongo in what is now the western part of the Democratic Republic of the Congo and the northern portion of Angola. Henrique succeeds his nephew, Bernardo I of Kongo April 12 – The Earl of Bothwell is acquitted on charges of murder in the February 10 killing of Lord Darnley, the husband of Mary Queen of Scots. Upon acquittal he makes plans to become Mary's new husband. April 20 – The Ainslie Tavern Bond is signed by a group of Scottish clerics and nobles recommends Bothwell as an appropriate husband for Queen Mary and approves his acquittal after trial for the murder of her previous husband.[3] April 24 – Bothwell takes Mary prisoner at his castle at Dunbar after preventing her from traveling from her palace to Edinburgh, then rapes her. May 15 – Mary, Queen of Scots, marries the Earl of Bothwell, under duress.[4] May 24 – Sture Murders: The mentally unstable King Erik XIV of Sweden and his guards murder five incarcerated nobles at Uppsala Castle. June 15 – Mary, Queen of Scots, is defeated by Scottish nobles at the Battle of Carberry Hill and imprisoned in Lochleven Castle. July 24 – Mary, Queen of Scots, is forced to abdicate, and replaced by her one-year-old son James VI. July 25 – The city of Santiago de León de Caracas is founded by Diego de Losada. July 29 – James VI is crowned at Stirling. August 22 – The Duke of Alba is sent to the Netherlands with a strong Spanish force, to suppress unrest there. He replaces Margaret of Parma as Governor of the Netherlands. Prince William of Orange is outlawed, and Lamoral, Count of Egmont imprisoned. September 9 – At a dinner, the Duke of Alba arrests Lamoral, Count of Egmont and Philip de Montmorency, Count of Horn for treason. September 27 – After the 2-week Siege of Inabayama Castle, the Oda clan capture Gifu Castle from the Saitō clan in Japan. September 29 – The Second War of Religion begins in France, when Louis, Prince of Condé and Gaspard de Coligny fail in an attempt to capture King Charles IX and his mother at Meaux. The Huguenots do capture several cities (including Orléans), and march on Paris. October 7 – Bible translations into Welsh: The New Testament is first published in Welsh, in William Salesbury's translation from the Greek. November 10 – Battle of Saint-Denis: Anne de Montmorency, with 16,000 Royalists, falls on Condé's 3,500 Huguenots. The Huguenots surprisingly hold on for some hours before being driven off. Montmorency is mortally wounded.[5] November 21 (10th day of 11th month, Eiroku 10) – In Japan, the Tōdai-ji Great Buddha Hall in the Nara Prefecture is destroyed after a six-month siege by Matsunaga Hisahide against Miyoshi Nagaitsu and the Miyoshi clan. Reconstruction of the temple does not take place until 140 years later in 1709. December 4 – Antão de Noronha, Viceroy of Portuguese India (now the Indian state of Goa) issues decrees prohibiting the public performance of Hindu rituals for marriages, cremations, and sacred thread wearing. Other rules require all natives 15 or older to attend Christian religious services, upon penalty of punishment.[6] December 12 – The Scottish Parliament votes to approve the Act Anent the demission of the Crown in favour of our Sovereign Lord, and his Majesty's Coronation 1567, an act regarding the abdication of Mary Queen of Scots in favor of her son James VI and the coronation of James, and confirms James as the legal ruler.[7] Mary's half brother, James Stewart, 1st Earl of Moray, is appointed as the regent to rule on behalf of the 18-month-old King of Scotland. In that Moray is absent from Scotland at the time, the Parliament appoints a committee of seven deputy regents to rule on behalf of Moray's power to rule on behalf of King James. King Frederick II of Denmark and Norway founds Fredrikstad in Norway. Construction of Villa Capra "La Rotonda" in Vicenza, designed by Andrea Palladio, begins. It will be one of the most influential designs in the history of architecture.[8] Rugby School, one of the oldest public schools in England, is founded. Although sparse maritime trade existed since its founding, the Ming dynasty government of China officially revokes the haijin maritime trade ban, reinstating foreign trade with all countries except Japan.[9] Jacob van Heemskerk Infanta Catherine Michelle of Spain January 1 – Fabio Colonna, Italian scientist (d. 1640) January 4 – François d'Aguilon, Belgian Jesuit mathematician (d. 1617) January 25 – Archduchess Margaret of Austria (d. 1633) January 27 – Anna Maria of Hesse-Kassel, Countess Consort of Nassau-Saarbrücke (d. 1626) February 3 – Anna Maria of Brandenburg, Duchess Consort of Pomerania (d. 1618) February 12 – Thomas Campion, English poet and composer (d. 1620)[10] February 23 – Elisabeth of Brunswick-Wolfenbüttel, Countess of Holstein-Schauenburg and Duchess Consort of Brunswick-Harburg (d. 1618) February 24 – Jindřich Matyáš Thurn, Swedish general (d. 1640) March 13 (bapt.) – Jacob van Heemskerk, Dutch admiral and explorer (d. 1607) March 17 – Akizuki Tanenaga, Japanese samurai and soldier (d. 1614) April 10 – John Louis I, Count of Nassau-Wiesbaden-Idstein, Germany noble (d. 1596) April 26 – Nicolas Formé, French composer (d. 1638) May 2 – Sebald de Weert, Dutch captain, vice-admiral of the Dutch East India Company (d. 1603) May 9 – John George I, Prince of Anhalt-Dessau (1603–1618) (d. 1618) May 13 – Don Giovanni de' Medici, Italian military commander and diplomat (d. 1621) May 15 – Claudio Monteverdi, Italian composer (d. 1643) June 25 – Jacob Ulfeldt, Danish politician (d. 1630) August 14 – Luigi Caponaro, Italian healer (d. 1622) August 15 – Philip III, Margrave of Baden-Rodemachern (1588–1620) (d. 1620) August 21 – Francis de Sales, Savoyard Bishop of Geneva and saint (d. 1622) September – Edward Sutton, 5th Baron Dudley, English landowner (d. 1643) September 2 – György Thurzó, Palatine of Hungary (d. 1616) September 5 – Date Masamune, Japanese daimyō (d. 1636) September 24 – Martin Fréminet, French painter (d. 1619) October 10 – Infanta Catherine Michelle of Spain (d. 1597) November Thomas Nashe, English poet (d. 1600)[11] Minye Kyawswa II of Ava, last crown prince of the Toungoo Empire (Burma) (d. 1599) November 1 – Diego Sarmiento de Acuña, 1st Count of Gondomar, Spanish diplomat (d. 1626) November 7 – Margherita Farnese, Benedictine nun (d. 1643) November 14 – Maurice of Nassau, Prince of Orange (d. 1625) November 16 – Anna of Saxony, German noblewoman (d. 1613) November 21 – Anne de Xainctonge, French religious (d. 1621) December 15 – Christoph Demantius, German composer (d. 1643) December 18 Cornelius a Lapide, Jesuit exegete (d. 1637) Tachibana Muneshige, Japanese samurai and soldier (d. 1643) date unknown Isabel Barreto, Spanish admiral (d. 1612) Pierre Biard, French settler and Jesuit missionary (d. 1622) Adriaen Block, Dutch fur trader and navigator (d. 1624) Jacques Clément, French assassin of Henry III of France (d. 1589) Arima Harunobu, Japanese Christian daimyō (d. 1612) John Parkinson, English herbalist and botanist (d. 1650) Willem Schouten, Dutch navigator (d. 1625) Torii Tadamasa, Japanese nobleman (d. 1628) Sanada Yukimura, Japanese samurai and soldier (d. 1615) Ban Naoyuki, Japanese samurai and soldier (d. 1615) Emperor Jiajing January 12 – Eva von Trott, German noble and courtier (b. 1505) January 17 – Sampiero Corso, Corsican mercenary leader (b. 1498) January 23 – Jiajing Emperor of China (b. 1507) January 26 – Nicholas Wotton, English diplomat (c. b. 1497) February 10 – Henry Stuart, Lord Darnley, consort of Mary, Queen of Scots (b. 1545) February 20 – Estácio de Sá, Portuguese officer, founder of Rio de Janeiro (b. 1520) March 31 – Philip I, Landgrave of Hesse (b. 1504) April 1 – Jan Krzysztof Tarnowski, Polish nobleman (b. 1537) April 2 – Ernest III, Duke of Brunswick-Grubenhagen (b. 1518) April 18 – Wilhelm von Grumbach, German adventurer (b. 1503) April 19 – Michael Stifel, German mathematician (b. 1487) May 2 – Marin Držić, Croatian writer (b. 1508)[12] June 2 – Shane O'Neill, Irish chieftain (b. 1530) June 12 – Richard Rich, Lord Chancellor of England (b. 1490) June 19 – Anna of Brandenburg, Duchess of Mecklenburg-Güstrow (b. 1507) August 3 – Myeongjong of Joseon, ruler of Korea (b. 1534) August 18 – Enea Vico, Italian engraver (b. 1523) October 1 – Pietro Carnesecchi, Italian humanist (b. 1508) October 31 – Marie of Brandenburg-Kulmbach, Princess of Brandenburg-Kulmbach and by marriage Electress Palatine (b. 1519) November 12 – Anne de Montmorency, Constable of France (b. 1493) November 13 – Pedro de la Gasca, viceroy of Peru (b. 1485) November 19 – Takeda Yoshinobu, Japanese daimyō (b. 1538) date unknown Thomas Beccon, English Protestant reformer (b. 1511) Péter Erdődy, ban of Croatia (b. 1504) Shahghali, khan of Qasim (b. 1505) Lawrence Sheriff, English gentleman and grocer to Elizabeth I (b. 1510) Akagawa Motoyasu, Japanese samurai ^ L. 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ISBN 9780470946749. ^ Bertrand, Romain (2011). L'Histoire à parts égales. Paris: Seuil. p. 66. ISBN 978-2-02-105017-2. ^ "Thomas Campion | English poet and musician". Encyclopedia Britannica. Retrieved April 20, 2021. ^ Nicholl, Charles. A Cup of News: The Life of Thomas Nashe. Routledge & Kegan Paul. 1984. Page 11. ^ Živojin Boškov (1971). Živan Milisavac (ed.). Jugoslovenski književni leksikon [Yugoslav Literary Lexicon] (in Serbo-Croatian). Novi Sad (SAP Vojvodina, SR Serbia): Matica srpska. p. 106. Retrieved from " 3One hundred years, from 1401 to 1500 This article needs additional citations for verification. Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed.Find sources: "15th century" – news · newspapers · books · scholar · JSTOR (September 2022) (Learn how and when to remove this message) Millennia 2nd millennium Centuries 14th century 15th century 16th century Timelines 14th century 15th century 16th century State leaders 14th century 15th century 16th century Decades 1400s 1410s 1420s 1430s 1440s 1450s 1460s 1470s 1480s 1490s Categories: Births – Deaths Establishments – Disestablishments vte Ottoman Sultan Mehmed II, victorious at the Ottoman conquest of Constantinople and the fall of the Byzantine Empire. Various historians describe it as the end of the Middle Ages. The Surrender of Granada by Francisco Pradilla Ortiz, 1882: Muhammad XII surrenders to Ferdinand and Isabella Gergio Deluci, Christopher Columbus arrives in the Americas in 1492, 1893 painting. The 15th century was the century which spans the Julian calendar dates from 1 January 1401 (represented by the Roman numerals MCDI) to 31 December 1500 (MD). In Europe, the 15th century includes parts of the Late Middle Ages, the Early Renaissance, and the early modern period. Many technological, social and cultural developments of the 15th century can in retrospect be seen as heralding the "European miracle" of the following centuries. The architectural perspective, and the modern fields which are known today as banking and accounting were founded in Italy. The Hundred Years' War ended with a decisive French victory over the English in the Battle of Castillon. Financial troubles in England following the conflict resulted in the Wars of the Roses, a series of dynastic wars for the throne of England. The conflicts ended with the defeat of Richard III by Henry VII at the Battle of Bosworth Field, establishing the Tudor dynasty in the later part of the century. Constantinople, known as the capital of the world and the capital of the Byzantine Empire, fell to the emerging Muslim Ottoman Turks, marking the end of the tremendously influential Byzantine Empire and, for some historians, the end of the Middle Ages.[1] This led to the migration of Greek scholars and texts to Italy, while Johannes Gutenberg's invention of a mechanical movable type began the printing press. These two events played key roles in the development of the Renaissance.[2][3] The Roman papacy was split in two parts in Europe for decades (the so-called Western Schism), until the Council of Constance. The division of the Catholic Church and the unrest associated with the Hussite movement would become factors in the rise of the Protestant Reformation in the following century. Islamic Spain became dissolved through the Christian Reconquista, followed by the forced conversions and the Muslim rebellion,[4] ending over seven centuries of Islamic rule and returning southern Spain to Christian rulers. The spices, wines and precious metals of the Bengal Sultanate[5] had attracted European traders to trade with Bengal, but the trade was subsequently lower, due to the rise of the Ottoman Empire, which introduced new taxes and tariffs against European traders. This had led to explorers like Christopher Columbus finding a route to reach India, which eventually reached the Americas. Explorers like Vasco da Gama, a Portuguese traveller, also found a route to reach to India from the African coast. In Asia, the Timurid Empire collapsed and the Afghan Pashtun Lodi dynasty took control of the Delhi Sultanate. Under the rule of the Yongle Emperor, who built the Forbidden City and commanded Zheng He to explore the world overseas, the Ming dynasty's territory reached its pinnacle. In Africa, the spread of Islam led to the destruction of the Christian kingdoms of Nubia, by the end of the century, leaving only Alodia (which was to collapse in 1504). The formerly vast Mali Empire teetered on the brink of collapse, under pressure from the rising Songhai Empire. In the Americas, both the Aztec Empire and the Inca Empire reached the peak of their influence, but the voyages of Christopher Columbus and other European voyages of discovery in the Americas, beginning the European colonization of the Americas, changed the course of modern history. Portrait of the founder of accounting, Luca Pacioli, by Jacopo de' Barbari (Museo di Capodimonte). 1401: Dilawar Khan establishes the Malwa Sultanate in present-day central India. 1402: Ottoman and Timurid Empires fight at the Battle of Ankara resulting in the capture of Bayezid I by Timur. 1402: Sultanate of Malacca founded by Parameswara.[6] 1402: The settlement of the Canary Islands signals the beginning of the Spanish Empire. 1403–1413: Ottoman Interregnum, a civil war between the four sons of Bayezid I. 1403: The Yongle Emperor moves the capital of China from Nanjing to Beijing.[7] 1404–1406: Regreg War, Majapahit civil war of secession between Wikramawardhana against Wirabhumi. 1405: The Sultanate of Sulu is established by Sharif ul-Hāshim. 1405–1433: During the Ming treasure voyages, Admiral Zheng He of China sails through the Indian Ocean to Malacca, India, Ceylon, Persia, Arabia, and East Africa to spread China's influence and sovereignty. The first voyage, a massive Ming dynasty naval expedition ending in 1407, visited Java, Palembang, Malacca, Aru, Samudera and Lambri.[8] 1408: The last recorded event to occur in the Norse settlements of Greenland was a wedding in Hvalsey in the Eastern Settlement in 1408. The Northern Yuan dynasty and Turco-Mongol residual states and domains by the 15th century 1410: The Battle of Grunwald is the decisive battle of the Polish–Lithuanian–Teutonic War leading to the downfall of the Teutonic Knights. 1410-1415: The last Welsh war of independence, led by Owain Glyndŵr. 1414: Khizr Khan, deputised by Timur to be the governor of Multan, takes over Delhi founding the Sayyid dynasty. 1415: Henry the Navigator leads the conquest of Ceuta from the Moors marking the beginning of the Portuguese Empire. 1415: Battle of Agincourt fought between the Kingdom of England and France. 1415: Jan Hus is burned at the stake as a heretic at the Council of Constance. 1417: A large goodwill mission led by three kings of Sulu, the Eastern King Paduka Pahala, the Western king Maharaja Kolamating and Cave king Paduka Prabhu as well as 340 members of their delegation, in what is now the southern Philippines, ploughed through the Pacific Ocean to China to pay tribute to the Yongle emperor of the Ming Dynasty.[9] 1417: The East king of Sulu, Paduka Pahala, on their way home, suddenly died in Dezhou, a city in east China's Shandong province. The Yongle Emperor Zhu Di commissioned artisans to build a tomb for the king.[10] 1419–1433: The Hussite Wars in Bohemia. Joan of Arc, a French peasant girl, directly influenced the result of the Hundred Years' War. 1420: Construction of the Chinese Forbidden City is completed in Beijing. 1420: In Sub-saharan Africa the Ife Empire has collapsed. 1424: James I returns to Scotland after being held hostage under three Kings of England since 1406. 1424: Deva Raya II succeeds his father Veera Vijaya Bukka Raya as monarch of the Vijayanagara Empire. 1425: Catholic University of Leuven (Belgium) founded by Pope Martin V. 1427: Reign of Itzcoatl begins as the fourth tlatoani of Tenochtitlan and the first emperor of the Aztec Empire. 1429: Joan of Arc ends the Siege of Orléans and turns the tide of the Hundred Years' War. 1429: Queen Suhita succeeds her father Wikramawardhana as ruler of Majapahit.[11] 1430: Rajah Lontok and Dayang Kalangitan become co-regent rulers of the ancient kingdom of Tondo. 1431 9 January – Pretrial investigations for Joan of Arc begin in Rouen, France under English occupation. 3 March – Pope Eugene IV succeeds Pope Martin V, to become the 207th pope. 26 March – The trial of Joan of Arc begins. 30 May – Nineteen-year-old Joan of Arc is burned at the stake. 16 June – the Teutonic Knights and Švitrigaila sign the Treaty of Christmemel, creating anti-Polish alliance September – Battle of Inverlochy: Donald Balloch defeats the Royalists. 30 October – Treaty of Medina del Campo, consolidating peace between Portugal and Castille. 16 December – Henry VI of England is crowned King of France. 1434: The Catholics and Utraquists defeat the Taborites at the Battle of Lipany, ending the Hussite Wars. 1438: Pachacuti founds the Inca Empire. Detail of The Emperor's Approach showing the Xuande Emperor's royal carriage. Ming dynasty of China. 1440: Eton College founded by Henry VI. 1440s: The Golden Horde breaks up into the Siberia Khanate, the Khanate of Kazan, the Astrakhan Khanate, the Crimean Khanate, and the Great Horde. 1440–1469: Under Moctezuma I, the Aztecs become the dominant power in Mesoamerica. 1440: Oba Ewuare comes to power in the West African city of Benin, and turns it into an empire. 1440: Reign of Moctezuma I begins as the fifth tlatoani of Tenochtitlan and emperor of the Aztec Empire. 1441: Jan van Eyck, Flemish painter, dies. 1441: Portuguese navigators cruise West Africa and reestablish the European slave trade with a shipment of African slaves sent directly from Africa to Portugal. 1441: A civil war between the Tutul Xiues and Cocom breaks out in the League of Mayapan. As a consequence, the league begins to disintegrate. 1442: Leonardo Bruni defines Middle Ages and Modern times. 1443: Abdur Razzaq visits India. 1443: King Sejong the Great publishes the hangul, the native phonetic alphabet system for the Korean language. 1444: The Albanian league is established in Lezha, Skanderbeg is elected leader. A war begins against the Ottoman Empire. An Albanian state is set up and lasts until 1479. 1444: Ottoman Empire under Sultan Murad II defeats the Polish and Hungarian armies under Władysław III of Poland and János Hunyadi at the Battle of Varna. 1445: The Kazan Khanate defeats the Grand Duchy of Moscow at the Battle of Suzdal. 1446: Mallikarjuna Raya succeeds his father Deva Raya II as monarch of the Vijayanagara Empire. 1447: Wijaya Parakrama Wardhana, succeeds Suhita as ruler of Majapahit.[11] 1449: Saint Srimanta Sankardeva was born. 1449: Esen Tayisi leads an Oirat Mongol invasion of China which culminate in the capture of the Zhengtong Emperor at Battle of Tumu Fortress. Angkor, the capital of the Khmer Empire, was abandoned in

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