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Periodicity in chemistry shows how element properties change predictably with increasing atomic number.Mendeleev used periodicity to arrange elements, helping to predict and discover new elements.Important properties that display periodicity include ionization energy, electronegativity, atomic radius, and electron affinity. In the context of chemistry and the periodic table, periodicity refers to trends or recurring variations in element properties with increasing atomic number. Periodicity is caused by regular and predictable variations in element atomic structure. Mendeleev organized elements according to recurring properties to make a periodic table of elements. Elements within a group (column) display similar characteristics. The rows in the periodic table (the periods) reflect the filling of electrons shells around the nucleus, so when a new row begins, the elements stack on top of each other with similar properties. For example, helium and neon are both fairly unreactive gases that glow when an electric current is passed through them. Lithium and sodium both have a +1 oxidation state and are reactive, shiny metals. Periodicity was helpful to Mendeleev because it showed him gaps in his periodic table where elements should be. This helped scientists find new elements because they could be expected to display certain characteristics based on the location they would take in the periodic table. Now that the elements have been discovered, scientists and students used periodicity to make predictions about how elements will behave in chemical reactions and their physical properties. Periodicity helps chemists predict how the new, superheavy elements might look and behave. Periodicity can include many different properties, but the key recurring trends are: Ionization Energy - This is the energy needed to completely remove an electron from an atom or ion. Ionization energy increases moving left to right across the table and decreases moving down a group. Electronegativity - A measure of how readily an atom forms a chemical bond. Electronegativity increases moving left to right across a period and decrease moving down a group. Atomic Radius - This is half the distance between the middle of two atoms just touching each other. Atomic radius decreases moving left to right across a period and increases moving down a group. Ionic radius is the distance for ions of the atoms and follows the same trend. Although it might seem like increasing the number of protons and electrons in an atom would always increase its size, the atom size doesn't increase until a new electron shell is added. Atom and ion sizes shrink moving across a period because the increasing positive charge of the nucleus pulls in the electron shell. Electron Affinity - This is a measure of readily an atom accepts an electron. Electron affinity increases moving across a period and decreases moving down a group. Nonmetals usually have higher electron affinities than metals. The noble gases are an exception to the trend since these elements have filled electron valence shells and electron affinity values approaching zero. However, the behavior of the noble gases is periodic. In other words, even though an element group might break a trend, the elements within the group display periodic properties. If you're still confused or need additional information, a more detailed overview of periodicity is also available. 64%(11)64% found this document useful (11 votes)105K viewsSaveSave 15-Periodic-Trends-answer-key For Later64%64% found this document useful, undefined The modern periodic table is based on the law that an element's properties are a periodic function of its atomic number. These properties are related to the elements' electronic configuration. As we move across a period from left to right or down the group, we notice a common trend in properties. This property trend is referred to as periodic properties. Atomic size, metallic character, non-metallic character, ionisation potential, electron affinity, and electronegativity are all important periodic properties. What is the Periodic Law? Periodic trends are founded on periodic law. The chemical elements are enumerated in order of increasing atomic number, and main properties undergo cyclic changes, according to the periodic law. At regular intervals, elements with comparable chemical characteristics reappear. Dmitri Mendeleev established this principle. He also asserted that the periodic chart was based on different physical and chemical properties of elements, not merely atomic weights. The recurrence of features was later discovered to be attributable to the recurrence of comparable electronic configurations in the outer shells of atoms. Periodic Table Trends The periodic trends are based on the Periodic Law, which states that if the chemical elements are listed in increasing atomic number order, many of their properties undergo cyclical changes, with elements with similar properties recurring at regular intervals. Many of the physical and chemical properties of lithium, such as its vigorous reactivity with water, recur in sodium, potassium, and caesium after arranging elements in increasing atomic numbers. Mendeleev discovered this principle in 1871, following a number of investigations throughout the nineteenth century. Mendeleev also proposed an elemental periodic system based not only on atomic weights but also on the chemical and physical properties of the elements and their compounds. Henry Moseley discovered in 1913 that periodicity is determined by the atomic number rather than the atomic weight. Lothar Meyer presented his table following Mendeleev, but he disagreed with Mendeleev's Periodic law. Initially, there was no theoretical explanation for the Periodic Law, and it was only used as an empirical principle; however, with the development of quantum mechanics, it became possible to understand the theoretical basis for the Periodic Law. When elements are listed in increasing atomic number order, the periodic recurrence of elements with similar physical and chemical properties results directly from the periodic recurrence of similar electronic configurations in respective atoms' outer shells. One of the most significant events in the history of chemical science was the discovery of the Periodic Law. Almost every chemist employs and continues to employ the Periodic Law. The Periodic Law also resulted in the creation of the periodic table, which is now widely used in a variety of fields. Atomic size The atomic radius is the distance between the nucleus's centre and the atom's outermost shell. As we progress from one period to the next, the atomic size of a group grows due to the addition of shells. Over time, the atomic size decreases while the number of shells remains constant and the nuclear charge increases. This causes electrons to be drawn from the outermost shell towards the nucleus, reducing its size. Metallic character Metals are the elements that lose electrons to form cations. The metallic character increases as we move down the group because atomic size increases, resulting in easy electron loss. It, on the other hand, decreases over time as we move from left to right. This occurs because the nuclear charge increases, making it more difficult for an atom to lose electrons. Non-metallic character Non-metals are elements that have a proclivity to gain electrons. Moving across a period increases the tendency to gain electrons due to an increase in nuclear charge and a decrease in atomic size. As a result, the nonmetallic character increases over time. The non-metallic character decreases as we move down the group due to the increase in atomic size. Ionization potential The ionisation potential is defined as the amount of energy required to remove an electron from the outermost shell of a gaseous atom and convert it into a positively charged gaseous ion. The periodic properties of ionisation potential increase as the atomic size decreases over time due to an increase in nuclear charge. The ionisation potential decreases as we move down the group due to the increase in atomic size. Factors That Affect the Ionization Energy Levels Nuclear Charge: The force of attraction between the nucleus and valence electrons decreases as the nuclear charge decreases, resulting in decreased ionisation energy.Shielding Effect: Shielding effect increases as nuclear charge grows, hence as the shielding effect increases, so does ionisation energy.Atomic Radius: The force of attraction between the nucleus and valence electrons reduces as the atomic radius grows. As a result, as the atomic radius increases, the ionisation reduces.Half-Filled Valence Shells: Ionization energy is high in pseudo-filled or half-filled valence shells. The periodic trend does not apply to any of the elements in the oxygen and boron families. They take a little less energy than the standard trend. Electron affinity A certain amount of energy is released when electrons are added to a neutral gaseous atom. This is referred to as electron affinity. Electron affinity causes the formation of a negative ion or anion. On the periodic table, it increases from left to right and decreases from top to bottom. Electron affinity decreases as atomic size increases, and vice versa. The electron affinity is also affected by the screening effect and the reactivity of non-metals. Melting Point The melting point of an element is the amount of energy required to change the state of an element from solid to liquid. Which essentially means severing a few ties. As a result, the melting point rises as the strength of the bond between the atoms increases. Boiling Point The boiling point is determined by the amount of heat required to convert a liquid to a gaseous state, just as the melting point is determined by the strength of the bonds between atoms. Electronegativity The ability of an atom to attract a pair of electrons is referred to as electronegativity. The electronegativity of elements is affected by the size of an atom and its nuclear charge. It increases as we move from left to right across the periodic table and decreases as we move from top to bottom. Fluorine has a higher electronegative value, while caesium has a lower electronegative value. It also differs between metals and non-metals. Nonmetals have a higher electronegative potential than metals. It also aids in the identification of the types of bonds formed between the elements. The group 13 elements are an exception, and electronegativity rises from aluminium to thallium as a result. In addition, tin has a stronger electronegativity than lead in group 14. Metallic character Metallic character is defined as the characteristics associated with the metals found on the periodic table. Metallic lustre, hardness, malleability, thermal conductivity, and other properties are examples of these characteristics. The elements on the left side of the periodic table have a more metallic character. It decreases from left to right due to electron addition and increases from top to bottom due to electron removal. When the atomic number increases, so do the ability to lose electrons. Non-metallic character The periodic table shows that the nonmetallic character of elements increases from left to right and decreases from top to bottom. The elements with this property do not have metallic properties. Shielding Effect It can be characterized as the inner electrons resisting an outer electron. It can also be used to describe how many nuclei are capable of controlling electrons in the outer shell. Because of the increasing shielding effect, the effective nuclear charge drops along with the group. The effective nuclear charge rises over time as the nuclear charge rises. Sample Questions Question 1: What is the modern periodic table based on? Answer: The modern periodic table is based on the law that an element's properties are a periodic function of its atomic number. These properties are related to the elements' electronic configuration. Question 2: What is the effect on metallic character as we move in a periodic table? Answer: The metallic character increases as we move down the group because atomic size increases, resulting in easy electron loss. It, on the other hand, decreases over time as we move from left to right. Question 3: Define electron affinity. Answer: A certain amount of energy is released when electrons are added to a neutral gaseous atom. This is referred to as electron affinity. Question 4: What is the effect on electronegativity as we move in a periodic table? Answer: The electronegativity of elements is affected by the size of an atom and its nuclear charge. It increases as we move from left to right across the periodic table and decreases as we move from top to bottom. Question 5: What are some metallic characteristics? Answer: Metallic character is defined as the characteristics associated with the metals found on the periodic table. Metallic lustre, hardness, malleability, thermal conductivity, and other properties are examples of these characteristics. Name: Terrell Pennington Date: 12-02-2022 Student Exploration: Periodic Trends Directions: Follow the instructions to go through the simulation. Respond to the questions andprompts in the orange boxes. Vocabulary: atomic radius, electron affinity, electron cloud, energy level, group, ion, ionization energy, metal, nonmetal, nucleus, period, periodic trends, picometer, valence electron Prior Knowledge Questions (Do these BEFORE using the Gizmo.) 1. On the image at right, the two magnets are the same. Which paper clip would be harder to remove? B 2. Which magnet would be most likely to attract additional paper clips? B 3. What is the relationship between the thickness of the book and the ability of the magnet to hold on to and attract paper clips? Answers will differ. [The distance between the magnet and the paper clip increases with the thicknessof the book. The magnet holds the paper clips more loosely as a result of the greater distance, but it isalso less able to attract other objects since the attractive force is reduced.] Gizmo Warm-up Just as the thickness of a book changes how strongly a magnet attracts a paper clip, thesize of an atom determines how strongly the nucleus attracts electrons. In the Periodic Trends Gizmo, you will explore this relationship and how it affects the properties of different elements. The atomic radius is a measure of the size of the electron cloud , or the region where electrons can be found. To begin, check that H (hydrogen) is selected in Group 1 on the left. Turn on Show ruler . To measure the radius, drag one end of the ruler to the proton in the nucleus and the other end to the electron. Click Save radius to record the value. 1. What is the radius of hydrogen? 53 pm Notice that the radius is measured in picometers (pm). A picometer is one trillionth of a meter. 2. On the right side of the Gizmo, select Li . Connect the right side of the ruler to the outermost electron, or valence electron . What is the radius of lithium? 167 pm Reproduction for educational use only. Public sharing or posting prohibited. © 2020 ExploreLearning™ All rights reserved Activity A: Atomic radius Get the Gizmo ready: ● Check that Atomic radius is selected from the drop-down menu. Question: What factors affect the radius of an atom? 1. Predict: How do you think the radius of an atom will change as you move down a group (vertical column) in the periodic table? Predictions will vary. 2. Collect data: Use the ruler to measure the atomic radii of the group 1 elements. As you do so, count the energy levels (shown as rings of electrons) in each atom. Record in the table. Element H Li Na K Rb Cs Number of energy levels 1 2 3 4 5 6 Atomic radius (pm) 53 167 190 243 265 298 3. Observe: What happens to the radius as you move down group 1? It gets bigger. [Except that Cs is larger than Fr.] 4. Explore: Turn off Show ruler . Select Li , and then select Be . Observe the radii of the elements in group 2. Then look at other groups. What pattern do you see? As you descend a group, the radius tends to grow. 5. Draw a conclusion: In general, what is the effect of the number of energy levels on the radius of an atom? The radius rises along with the number of energy levels. 6. Predict: How do you think the radius of an atom will change as you move across a period (horizontal row) in the periodic table? Predictions will vary. 7. Collect data: Beginning with Na , record the number of energy levels, number of protons, and atomic radius for each element in period 3. Element Na Mg Al Si P S Cl Ar Number of energy levels 3 3 3 3 3 3 3 3 Number of protons 11 12 13 14 15 16 17 18 Atomic radius (pm) 190 145 118 111 98 88 79 71 8. Observe: What happens to the radius as you move across a period? Reproduction for educational use only. Public sharing or posting prohibited. © 2020 ExploreLearning™ All rights reserved It tends to decrease. 9. Explore: Investigate other periods in the periodic table. Does the same trend occur? Does the same trend occur? Yes Hypothesize why this trend occurs. The number of protons increases but the number of energy levels remains constant as you progress through a period. Thecloud is consequently drawn in closer. 10. Analyze: Consider how the number of protons might affect the size of the electron cloud. A. As you move across a period, are new energy levels added? No B. What happens to the number of protons in the nucleus asyou move from one element to the next across a period? The number of protons rises. C. If the proton number increases while the number of energylevels remains constant, what happens to the attractive forcebetween the nucleus and the electrons? The attractive force becomesgreater. D. How does your answer to the previous question explain thetrend in radii across a period? While the total number of energylevels remains constant, theattracting force increases overtime. As a result, the electronsare drawn in closer. 11. Extend your thinking: The Gizmo enables you to examine ions , or atoms that have gained or lost electrons. Select Na and turn on Show ion . Compare the radius of the neutral atom to that of the ion. Repeat with Cl . Then look at other ions. See if you can find a pattern. A. Why do you think the Na + ion is smaller than a neutral Na atom? Electron repulsions are reducedwith fewer electrons. Theelectron cloud is drawn closerbecause there are now moreprotons than electrons. B. Why do you think the Cl - ion is larger than a neutral Cl atom? The electron cloud grows as thenumber of electrons increasesdue to stronger electronrepulsions. The nucleus cannotdraw the cloud in as tightly sincethe number of protons hasremained constant. Unlike neutral atoms, ions have a different number of electrons than protons. The electrons are attracted tothe protons and repelled by other electrons. If another electron is added, the repulsion between electronsincreases while the attractive force of the nucleus stays the same. As a result, the electron cloud expands. Reproduction for educational use only. Public sharing or posting prohibited. © 2020 ExploreLearning™ All rights reserved If an electron is lost, the cloud is pulled in more tightly. Electron repulsions decrease while the number ofprotons remains constant. Reproduction for educational use only. Public sharing or posting prohibited. © 2020 ExploreLearning™ All rights reserved Activity B: Removing andadding electrons Get the Gizmo ready: ● Choose Ionization energy from the drop-down menu. Question: How does the radius of an atom affect the ability of the protons in the nucleus to hold on toand attract electrons? 1. Predict: Ionization energy (IE) is the energy required to remove an electron from an atom. As atomic radius increases, the valence electrons get farther from the nucleus. How do you think an atom’s size willaffect its ability to hold on to its valence electrons? Why? The forecasts will differ. 2. Investigate: Select H . In the Gizmo, the hydrogen atom is shown next to a positive charge. As you move the atom to the right, the force of attraction between the positive charge and the valence electron willincrease until the electron is removed. Slowly drag the atom towards the charge. After the electron is removed, use the ruler to measure thedistance between the original and the final position of the electron. Record the distance and ionizationenergy in the table, then repeat for the other group 1 elements. Element H Li Na K Rb Cs Fr Distance (no units) 268 392 397 414 417 423 422 Ionization energy (kJ/mol) 1312 520 496 419 403 376 380 3. Analyze: What trend do you notice? Ionization energy tends to decrease down a group. 4. Investigate: Gather data for ionization energy across a period. Record in the table below. Element Na Mg Al Si P S Cl Ar Distance (no units) 397 345 379 335 286 289 235 177 Ionization energy (kJ/mol) 496 738 578 787 1012 1000 1251 1521 5. Analyze: What trend do you notice? Ionization energy tends to increase across a period. 6. Explore: Examine other groups and periods in the periodic table to see if the same trends exist. What trends do you see in ionization energy down a group and across a period? Ionization energy tends to decrease down a group and increase across a period. Reproduction for educational use only. Public sharing or posting prohibited. © 2020 ExploreLearning™ All rights reserved 7. Think and discuss: As you move down a group, you will recall that the radius increases. Why do you think an increase in atomic radius would result in a lower ionization energy? The force of attraction that holds electrons to the nucleus weakens as their distance grows.Therefore, removing them requires less effort. 8. Think and discuss: As you move across a period, you will recall that the radius decreases. Why do you think a decrease in atomic radius would result in a greater ionization energy? The force of attraction holding electrons in place grows as the distance between the nucleusand electrons shrinks. Therefore, removing them requires greater energy. 9. Predict: Electron affinity (EA) refers to the energy released when an electron is added to an atom. This release of energy is always expressed as a negative value. The greater the magnitude of the negativevalue, the greater the attraction for electrons. (An EA of –100 kJ/mol would indicate a stronger attraction forelectrons than an EA of –50 kJ/mol.) How do you think the size of an atom will affect its ability to attract additional electrons? The forecasts will differ. 10. Investigate: Choose Electron affinity and select fluorine (F). In the Gizmo, the fluorine atom is shown next to an electron. To measure the electron affinity, slowly drag the fluorine atom toward the electron. When theelectron hops over, use the ruler to measure the distance. What is the ruler distance? 416 What is the electron affinity? -328 kj/mol 11. Explore: Find the electron affinity for each of the other Group 17 elements and each of the other Period 2 elements. Record these below. (Note: If an atom has a positive EA it will have no attraction for an electron.)All values in the tables below will be in kJ/mol. Grp. 17 EA F:-328 Cl:-349 Br:-325 I:-295 At:-222 Ts:-166 Per. 2 EA Li:-60 Be:50 B:-27 C:122 N:-7 O:-141 F:-328 Ne:120 What is the trend in EA down a group? Electron affinity tends to decrease down a group. What is the trend in EA across a period? Electron affinity tends to increase across a period. 12. Think and discuss: What is the relationship between electron affinity and atomic radius? Why do you think this relationship occurs? Electron affinity decreases as atomic radius grows; conversely, electron affinity increases asatomic radius decreases. Atoms tend to have a stronger attraction to electrons as they Reproduction for educational use only. Public sharing or posting prohibited. © 2020 ExploreLearning™ All rights reserved become smaller and a lesser attraction as they become larger. Activity C: Periodic trends Get the Gizmo ready: ● Select the TRENDS tab. Check that Groups is selected from the drop-down menu. Introduction : The periodic table is so named because similar patterns repeat, or appear periodically, throughout the table. These patterns are referred to as periodic trends . Question: How do atomic radius, ionization energy, and electron affinity change throughout theperiodic table? 1. Predict: Based on your investigations in activities A and B, predict where in the periodic table you will typically find the following: Largest atoms, smallest atoms, highest ionization energy, lowest ionization energy, highest electron affinity, lowest electron affinity . Upper left region smallest atom highest ionizations Upper right region Far left column lowest electron affinity highest electron affinity Far right column Lower left region lowest ionization energy largest atoms Lower right region 2. Observe: Choose Atomic radius from the drop-down menu to see the relative sizes of the elements. In which parts of the table do you find the largest and smallest atoms? The lower left area has the largest atoms, while the upper right area contains the smallest. 3. Observe: Choose Ionization energy . Ionization energy is shown by color. In which parts of the table do you find atoms with the highest, and the lowest, ionization energies? The top right and lower left have the highest and lowest ionization energies, respectively. 4. Observe: Choose Electron affinity . Electron affinity is shown by color, with darker blue corresponding to the highest (most negative) electron affinity. In which parts of the table do you find the greatest and lowestattraction for electrons? Upper right has the highest electron affinities. The far right column of the periodic table hasthe lowest electron affinities. EA's tendency is not as obvious as the others'. 5. Infer: Which group has high ionization energies but very weak electron affinities? Reproduction for educational use only. Public sharing or posting prohibited. © 2020 ExploreLearning™ All rights reserved Which group has high ionization energiesbut very weak electron affinities? Group 18 Why do you think this is so? It is challenging to remove an electron from a noble gas atomdue to its short radius. Due to the filled octet in theseelements, adding an electron would not be energeticallyadvantageous, leading to a low EA. 6. Investigate: Select Groups . The periodic table is divided into metals and nonmetals . Metals are to the left of the metalloids and nonmetals to the right. To the left of the table you will see a list of group names. Clickon each group name to reveal its properties. A. Metals tend to have low ionization energies. What properties of elements inthe metal groups do you think are the result of this tendency? strong reactivity,formation of +ions, superiorconductivity, andglossy look(groups 1 and 2). B. Except for the noble gases, nonmetals tend to have high electron affinities.What properties of nonmetals do you think are the result of this tendency? Formation ofnegative ions,good insulators,high reactivity(esp. group 17). 7. Analyze: The metallic character of an element is determined by how readily it loses electrons. Elements that lose electrons most easily have the greatest metallic character. A. Which group has the greatest metallic character? Alkali metals (group 1). B. Which group has the lowest metallic character? Noble gases (group 18). C. What is the relationship between metallic character andionization energy? Atoms with the lowest IE tend tohave the most metallic characterSince metals have a tendency tohold electrons loosely. An atom ismore likely to lose electrons andproduce a positive ion the moremetallic it is. 8. Summarize: ✏ Hand draw in this space or click here to select EDIT to use the drawing tool. Reproduction for educational use only. Public sharing or posting prohibited. © 2020 ExploreLearning™ All rights reserved What conclusion can you draw about the ability of metals to hold on to and attract electrons, ascompared to nonmetals? Compared to nonmetals, metals are less able to retain and draw electrons. Reproduction for educational use only. Public sharing or posting prohibited. © 2020 ExploreLearning™ All rights reserved Skip to content DSA to Development: A Complete GuideBeginner to AdvanceJAVA Backend Development - LiveIntermediate and AdvanceTech Interview 101 - From DSA to System Design for Working ProfessionalsBeginner to AdvanceFull Stack Development with React & Node JS - LiveBeginner to AdvanceJava Programming Online Course [Complete Beginner to Advanced]Beginner to AdvanceC++ Programming Course Online - Complete Beginner to AdvancedBeginner to AdvancePage 2Our website uses cookiesWe use cookies to ensure you have the best browsing experience on our website. By using our site, you acknowledge that you have read and understood our Cookie Policy & Privacy Policy Without an account, Gizmos can be viewed for just 5 minutes each per day. To teach with Gizmos: Share — copy and redistribute the material in any medium or format for any purpose, even commercially. 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For example, other rights such as publicity, privacy, or moral rights may limit how you use the material. , the free encyclopedia that anyone can edit. 117,922 active editors 6,999,503 articles in English The first UK Phantom on a test flight in 1968 From 1968 to 1992, the United Kingdom used the McDonnell Douglas F-4 Phantom II as one of its principal combat aircraft. The Phantom was procured to serve in both the Royal Navy's Fleet Air Arm and the Royal Air Force (RAF) in several different roles. Most Phantoms operated by the UK were built as a special batch containing a significant amount of British technology. Two variants were initially built: the F-4K was a carrier-based air-defence interceptor for the Fleet Air Arm, while the F-4M was initially used by the RAF for tactical strike and reconnaissance, before transitioning to an air defence role in the 1970s. In the mid-1980s, a third Phantom variant was obtained when fifteen former US Navy F-4J aircraft were purchased to augment the UK's air defences. Although the Fleet Air Arm ceased using the Phantom in 1978, the RAF retained it until 1992, when it was withdrawn as part of a series of post-Cold War defence cuts. (Full article...) Recently featured: Transportation during the 2024 Summer Olympics and Paralympics Rhine campaign of 1796 Chinese characters Archive By email More featured articles About The aftermath of the Kirkby train crash ... that the train driver in the Kirkby train crash (pictured) was found to have been using his mobile phone before the collision? ... that a tour promoting the EP For Your Validation sold out in ten minutes? ... that despite being named in college as the best at his position in the U.S., football player Buster Maddox only appeared in one NFL game? ... that the Doctor Who episode "Lux" is set in Miami, Florida, despite being filmed in Penarth, Wales? ... that Jean-Mohammed Abd-el-Jalil, a Moroccan Franciscan friar, was permitted by the Pope to keep "Muhammad" as his baptismal name? ... that Robert Mugabe's motorcade was known for speeding and killing people? ... that Elizabeth Holtzman's opponent ran an ad saying "maybe I'd like to have her as a daughter, but not as a DA" before her election as the first female Brooklyn District Attorney? ... that fighter pilot Morton D. Magoffin made pilots in his group sprint around an airfield for not saluting him? 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. A tornado outbreak leaves at least 27 people dead in the Midwestern and Southeastern United States. Ongoing: Gaza war M23 campaign Russian invasion of Ukraine timeline Sudanese civil war timeline Recent deaths: Jim Irsay Yury Grigorovich Yuri Vladimirov Colton Ford Werenoi Benjamin Ritchie Nominate an article May 27 Manchu Prince Dorgon 1644 – Manchu regent Dorgon (depicted) defeated rebel leader Li Zicheng of the Shun dynasty at the Battle of Shanhai Pass, allowing the Manchus to enter and conquer the capital city of Beijing. 1799 – War of the Second Coalition: Austrian forces defeated the French Army of the Danube, capturing the strategically important Swiss town of Winterthur. 1954 – The security clearance of American nuclear physicist J. Robert Oppenheimer, head of Project Y, was revoked. 1967 – Australians voted overwhelmingly to include Indigenous Australians in population counts for constitutional purposes and to allow the federal government to make special laws affecting them in states. 1997 – A destructive F5-rated tornado tracked through a subdivision of homes northwest of Jarrell, Texas, killing 27 people. Diego Ramírez de Arellano (d. 1624)Julia Ward Howe (b. 1819)Cilla Black (b. 1943)Gérard Jean-Juste (d. 2009) More anniversaries: May 26 May 27 May 28 Archive By email List of days of the year About Anemonoides blanda, the Balkan anemone, Grecian windflower, or winter windflower, is a species of flowering plant in the family Ranunculaceae. The species is native to southeast Europe and the Middle East. It grows up to 10 to 15 centimetres (4 to 6 inches) tall and is valued for its daisy-like flowers, which appear in early spring, a time when little else is in flower. The flowers are found in various colors and are radially symmetrical, containing seven or more sepals and petals. This purple A. blanda flower was photographed in Bamberg, Germany. Photograph credit: Reinhold Möller Recently featured: Bluespotted ribbontail ray Black Lives Matter art Germanicus 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. 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Unsourced material may be challenged and removed.Find sources: "1644" – news · newspapers · books · scholar · JSTOR (August 2016) (Learn how and when to remove this message) Calendar year Years Millennium 2nd millennium Centuries 16th century 17th century 18th century Decades 1620s 1630s 1640s 1650s 1660s Years 1641 1642 1643 1644 1645 1646 1647 vte July 1: The Battle of Colberger Heide is fought between Sweden and Denmark-Norway off of the German coast. July 2: Parliament wins control of northern England from King Charles in the Battle of Marston Moor. 1644 by topic Arts and science Architecture Art Literature Music Science Leaders State leaders Colonial governors Religious leaders Birth and death categories Births – Deaths Establishments and disestablishments categories Establishments – Disestablishments Works category Works vte 1644 in various calendarsGregorian calendar1644MDCXLIVAb urbe condita2397Armenian calendar1093ԹՎ ՌՂԳAssyrian calendar6394Balinese saka calendar1565–1566Bengali calendar1050–1051Berber calendar2594English Regnal year19 Cha. 1 – 20 Cha. 1Buddhist calendar2188Burmese calendar1006Byzantine calendar7152–7153Chinese calendar癸未年 (Water Goat)4341 or 4134 — to —甲申年 (Wood Monkey)4342 or 4135Coptic calendar1360–1361Discordian calendar2810Ethiopian calendar1636–1637Hebrew calendar5404–5405Hindu calendars - Vikram Samvat1700–1701 - Shaka Samvat1565–1566 - Kali Yuga4744–4745Holocene calendar11644Igbo calendar644–645Iranian calendar1022–1023Islamic calendar1053–1054Japanese calendarKan'ei 21 / Shōhō 1(正保元年)Javanese calendar1565–1566Julian calendarGregorian minus 10 daysKorean calendar3977Minguo calendar268 before ROC民前268年Nanakshahi calendar176Thai solar calendar2186–2187Tibetan calendar阴水羊年(female Water-Goat)1770 or 1389 or 617 — to —阳木猴年(male Wood-Monkey)1771 or 1390 or 618 1644 (MDCXLIV) was a leap year starting on Friday of the Gregorian calendar and a leap year starting on Monday of the Julian calendar, the 1644th year of the Common Era (CE) and Anno Domini (AD) designations, the 644th year of the 2nd millennium, the 44th year of the 17th century, and the 5th year of the 1640s decade. As of the start of 1644, the Gregorian calendar was 10 days ahead of the Julian calendar, which remained in localized use until 1923. Calendar year It is one of eight years (CE) to contain each Roman numeral once (1000(M)+500(D)+100(C)+(-10(X)+50(L))+(-1(I)+5(V)) = 1644). Kolumna Zygmunta erected. January 22 – The Royalist Oxford Parliament is first assembled by King Charles I of England.[1] January 26 – First English Civil War: Battle of Nantwich – The Parliamentarians defeat the Royalists, allowing them to end the 6-week siege of the Cheshire town.[2] January 30 Dutch explorer Abel Tasman departs from Batavia in the Dutch East Indies (modern-day Jakarta in Indonesia) on his second major expedition for the Dutch East India Company, to map the north coast of Australia. Tasman commands three ships, Limmen, Zeemeeuw and Braek, and returns to Batavia at the beginning of August with no major discoveries. Battle of Ochmatów: Polish–Lithuanian Commonwealth forces under hetman Stanisław Koniecpolski secure a substantial victory over the horde of Crimean Tatars under Tugay Bey. February 5 – The first livestock branding law in America is passed in Connecticut.[3] March 24 – Roger Williams is granted an official grant for his Rhode Island Colony from the Parliament of England, allowing the establishment of a general assembly. April 18 – Opchanacanough leads the Powhatan Indians in an unsuccessful uprising against the English at Jamestown. Although 300 of the English colonists are slain, the settlers pursue Opchanacanough, who is imprisoned in Jamestown for the rest of his life.[4] This is the last such Indian rebellion in the region. April 25 – A popular Chinese rebellion led by Li Zicheng sacks Beijing, prompting Chongzhen, the last emperor of the Ming dynasty, to commit suicide. May 6 – Johan Mauritius resigns as Governor of Brazil.[3] May 25 – Ming general Wu Sangui forms an alliance with the invading Manchus and opens the gates of the Great Wall of China at Shanhaiguan Pass, letting the Manchus through towards the capital Beijing. May 26 – Battle of Montijo: The Kingdom of Portugal is victorious over Habsburg Spain, in the first major action between the two nations during the Portuguese Restoration War. May 27 – Battle of Shanhai Pass: The Manchu Qing dynasty and Wu Sangui gain a decisive victory over Li Zicheng's Shun dynasty. June 3 – Li Zicheng proclaims himself emperor of China. June 6 – The invading Qing army, with the help of Ming general Wu Sangui, captures Beijing in China, marking the beginning of Manchu rule over China proper. June 11 – During the English Civil War, Prince Rupert and his men take Liverpool Castle.[5] Liverpool is later reclaimed by Sir John Moore. July 1 – Torstenson War: Battle of Colberger Heide – The Dano-Norwegian and Swedish fleets fight a naval battle off the coast of Schleswig-Holstein. The battle is indecisive but represents a minor success for the Dano-Norwegian fleet. July 2 – English Civil War: Battle of Marston Moor – The Parliamentarians crush the Royalists in Yorkshire, ending Charles I's hold on the north of England.[6] September 1 – English Civil War: Battle of Tippermuir – Montrose defeats Lord Elcho's Covenanters, reviving the Royalist cause in Scotland. September 2 – English Civil War: Second Battle of Lostwithiel (in Cornwall) – Charles I and the Royalists gain their last major victory.[7] September 15 – Pope Innocent X succeeds Pope Urban VIII, becoming the 236th pope.[8] October 1 – The Jews of Mogilev, Polish–Lithuanian Commonwealth, are attacked during Tashlikh. November 8 – The Shunzhi Emperor, the second emperor of the Qing dynasty, is enthroned in Beijing after the collapse of the Ming dynasty as the first Qing emperor to rule over China proper. November 23 Battle of Jüterbog (December 3 New Style): Sweden's forces defeat those of the Holy Roman Empire. Areopagitica, an appeal for freedom of speech written by John Milton, is published in London. November – The Castle of Elvas in Portugal resists a 9-day siege by the Spanish during the Portuguese Restoration War. December 8 (December 18 New Style) – As Christina comes of age, she is made ruling queen of Sweden. December – Bubonic plague breaks out in Edinburgh (Scotland). A Spanish officer is murdered in St. Dominic's Church, Macau during mass by colonists loyal to Portugal during the Portuguese Restoration War. Sigismund's Column is erected in Warsaw to commemorate King Sigismund III Vasa, who moved the capital of Poland from Kraków to Warsaw in 1596. Philosopher René Descartes publishes Principia Philosophiae (Principles of Philosophy) in Amsterdam. The opera Ormindo is first performed in Venice (music by Francesco Cavalli, and libretto by Giovanni Faustini). The West India Company[which?] displays greater interest in profit than in colonization.[vague] Thomas Britton Veit Hans Schnorr von Carolsfeld Otto Mencke Henry Winstanley Henrietta of England January 9 – Robert Gibbes, English-born landgrave in South Carolina (d. 1715) January 10 Louis François, duc de Boufflers, Marshal of France (d. 1711) Celestino Sfondrati, Italian Catholic cardinal (d. 1696) January 11 – Hayashi Hōkō, Japanese philosopher (d. 1732) January 14 – Thomas Britton, English concert promoter (d. 1714) January 18 – John Partridge, English astrologer (d. 1708) January 23 – Jonas Budde, Norwegian army officer (d. 1710) January 25 – Antoine Thomas, Jesuit missionary priest and astronomer (d. 1709)[9] January 26 – Thomas Boylston, American colonial doctor (d. 1695) February 2 Isaac Chayyim Cantarini, Italian rabbi (d. 1723) Johannes Hancke, German writer (d. 1713) February 7 – Nils Bielke, member of the High Council of Sweden (d. 1716) February 8 – Pierre de La Broue, American bishop (d. 1720) February 12 – Jakob Ammann, Swiss founder of the Amish sect (d. 1712) February 24 – Maria Elisabeth Lämmerhirt, German mother of Johann Sebastian Bach (d. 1694) March 1 – Simon Foucher, French polemicist (d. 1696) March 15 – Veit Hans Schnorr von Carolsfeld, German iron and cobalt magnate (d. 1715) March 21 – Sir Walter Bagot, 3rd Baronet, English politician (d. 1704) March 22 Otto Mencke, German philosopher and scientist (d. 1707) Sir James Rushout, 1st Baronet, English politician (d. 1698) March 25 – Heinrich von Cocceji, German jurist from Bremen (d. 1719) March 31 – Henry Winstanley, English engineer (d. 1703) April 6 – António Luís de Sousa, 2nd Marquis of Minas, Portuguese general, governor-general of Brazil (d. 1721) April 7 Nathaniel Johnson, American politician (d. 1713) François de Neufville, duc de Villeroy, French soldier (d. 1730) April 11 – Marie Jeanne Baptiste of Savoy-Nemours, Duchess of Savoy (d. 1724) April 17 – Abraham Storck, Dutch painter (d. 1708) April 21 – Conrad von Reventlow, Danish statesman, first Grand Chancellor of Denmark

Portuguese exploratory expedition was sent eastward from Malacca (in present-day Malaysia) to search for the 'Spice Islands' (Maluku) led by Francisco Serrão. Serrão is shipwrecked but struggles on to Hitu (northern Ambon) and wins the favour of the local rulers.[9] 1513: Machiavelli writes The Prince, a treatise about political philosophy 1513: The Portuguese mariner Jorge Álvares lands at Macau, China, during the Ming dynasty. 1513: Henry VIII defeats the French at the Battle of the Spurs. 1513: The Battle of Flodden Field in which invading Scots are defeated by Henry VIII's forces. 1513: Sultan Selim I ("The Grim") orders the massacre of Shia Muslims in Anatolia (present-day Turkey). 1513: Vasco Núñez de Balboa, in service of Spain arrives at the Pacific Ocean (which he called Mar del Sur) across the Isthmus of Panama. He was the first European to do so. 1514: The Battle of Orsha halts Muscovy's expansion into Eastern Europe. 1514: Józsa rebellion (peasant revolt) in Hungary.Martin Luther initiated the Reformation with his Ninety-five Theses in 1517. 1514: The Battle of Chaldiran, the Ottoman Empire gains decisive victory against Safavid dynasty. 1515: Ascension of Francis I of France as King of France following the death of Louis XII. 1515: The Ottoman Empire wrests Eastern Anatolia from the Safavids after the Battle of Chaldiran. 1515: The Ottomans conquer the last beyliks of Anatolia, the Dulkadirs and the Ramadanids. 1516–1517: The Ottomans defeat the Mamluks and gain control of Egypt, Arabia, and the Levant. 1517: The Sweating sickness epidemic in Tudor England.[10] 1517: The Reformation begins when Martin Luther posts his Ninety-five Theses in Saxony. 1518: The Treaty of London was a non-aggression pact between the major European nations. The signatories were Burgundy, France, England, the Holy Roman Empire, the Netherlands, the Papal States and Spain, all of whom agreed not to attack one another and to come to the aid of any that were under attack. 1518: Mir Chakar Khan Rind leaves Baluchistan and settles in Punjab. 1518: Leo Africanus, also known as al-Hasan ibn Muhammad al-Wazzan al-Fasi, an Andalusian Berber diplomat who is best known for his book Descrittione dell'Africa (Description of Africa), is captured by Spanish pirates; he is taken to Rome and presented to Pope Leo X. 1518: The dancing plague of 1518 begins in Strasbourg, lasting for about one month. 1519: Leonardo da Vinci dies of natural causes on May 2.Europe at the time of the accession of Charles V in 1519 1519: Wang Yangming, the Chinese philosopher and governor of Jiangxi province, describes his intent to use the firepower of the fo-lang-ji, a breech-loading Portuguese culverin, in order to suppress the rebellion of Prince Zhu Chenhao. 1519: Barbary pirates led by Hayreddin Barbarossa, a Turk appointed to ruling position in Algiers by the Ottoman Empire, raid Provence and Toulon in southern France. 1519: Death of Emperor Maximilian; Charles I of Austria, Spain, and the Low Countries becomes Emperor of Holy Roman Empire as Charles V, Holy Roman Emperor (ruled until 1556). 1519–1522: Spanish expedition commanded by Magellan and Elcano are the first to Circumnavigate the Earth. 1519–1521: Hernán Cortés leads the Spanish conquest of the Aztec Empire. Ferdinand Magellan led the first expedition that circumnavigated the globe in 1519–1522. 1520–1566: The reign of Suleiman the Magnificent marks the zenith of the Ottoman Empire. 1520: The first European diplomatic mission to Ethiopia, sent by the Portuguese, arrives at Massawa 9 April, and reaches the imperial encampment of Emperor Dawit II in Shewa 9 October. 1520: Vijayanagara Empire forces under Krishnadevaraya defeat the Adil Shahi under at the Battle of Raichur 1520: Sultan Ali Mughayat Shah of Aceh begins an expansionist campaign capturing Daya on the west Sumatran coast (in present-day Indonesia), and the pepper and gold producing lands on the east coast. 1520: The Portuguese established a trading post in the village of Lamakera on the eastern side of Solor (in present-day Indonesia) as a transit harbour between Maluku and Malacca. 1521: Belgrade (in present-day Serbia) is captured by the Ottoman Empire. 1521: After building fortifications at Tuen Mun, the Portuguese attempt to invade Ming dynasty China, but are expelled by Chinese naval forces. 1521: Philippines encountered by Ferdinand Magellan. He was later killed in the Battle of Mactan in central Philippines in the same year. 1521: Jiajing Emperor ascended the throne of Ming dynasty, China. 1521: November, Ferdinand Magellan's expedition reaches Maluku (in present-day Indonesia) and after trade with Ternate returns to Europe with a load of cloves. 1521: Pati Unus leads the invasion of Malacca (in present-day Malaysia) against the Portuguese occupation. Pati Unus was killed in this battle, and was succeeded by his brother, sultan Trenggana. 1522: Rhodes falls to the Ottomans of Suleiman the Magnificent.[11]Sack of Rome of 1527 by Charles V's forces (painting by Johannes Lingelbach) 1522: The Portuguese ally themselves with the rulers of Ternate (in present-day Indonesia) and begin construction of a fort.[9] 1522: August, Luso-Sundanese Treaty signed between Portugal and Sunda Kingdom granted Portuguese permit to build fortress in Sunda Kelapa. 1523: Sweden gains independence from the Kalmar Union. 1523: The Cacao bean is introduced to Spain by Hernán Cortés 1524–1525: German Peasants' War in the Holy Roman Empire. 1524: Giovanni da Verrazzano is the first European to explore the Atlantic coast of North America between South Carolina and Newfoundland. 1524: Ismail I, the founder of Safavid dynasty, dies and Tahmasp I becomes king.Gun-wielding Ottoman Janissaries and defending Knights of Saint John at the siege of Rhodes in 1522, from an Ottoman manuscript 1525: Timurid Empire forces under Babur defeat the Lodi dynasty at the First Battle of Panipat, end of the Delhi Sultanate. 1525: German and Spanish forces defeat France at the Battle of Pavia, Francis I of France is captured. 1526: The Ottomans defeat the Kingdom of Hungary at the Battle of Mohács. 1526: Mughal Empire, founded by Babur. 1527: Sack of Rome with Pope Clement VII escaping and the Swiss Guards defending the Vatican being killed. The sack of the city of Rome considered the end of the Italian Renaissance. 1527: Protestant Reformation begins in Sweden. 1527: The last ruler of Majapahit falls from power. This state (located in present-day Indonesia) was finally extinguished at the hands of the Demak. A large number of courtiers, artisans, priests, and members of the royalty moved east to the island of Bali; however, the power and the seat of government transferred to Demak under the leadership of Pangeran, later Sultan Fatah. 1527: June 22, The Javanese Prince Fatahillah of the Cirebon Sultanate successfully defeated the Portuguese armed forces at the site of the Sunda Kelapa Harbor. The city was then renamed Jayakarta, meaning "a glorious victory." This eventful day came to be acknowledged as Jakarta's Founding Anniversary. 1527: Mughal Empire forces defeat the Rajput led by Rana Sanga of Mewar at the Battle of Khanwa 1529: The Austrians defeat the Ottoman Empire at the siege of Vienna. 1529: Treaty of Zaragoza defined the antimeridian of Tordesillas attributing the Moluccas to Portugal and Philippines to Spain. 1529: Imam Ahmad Gurey defeats the Ethiopian Emperor Dawit II in the Battle of Shimbra Kure, the opening clash of the Ethiopian–Adal War. Spanish conquistadors with their Tlaxcallan allies fighting against the Otomies of Metztitlan in present-day Mexico, a 16th-century codex 1531–1532: The Church of England breaks away from the Catholic Church and recognizes King Henry VIII as the head of the Church. 1531: The Inca Civil War is fought between the two brothers, Atahualpa and Huáscar. 1532: Francisco Pizarro leads the Spanish conquest of the Inca Empire. 1532: Foundation of São Vicente, the first permanent Portuguese settlement in the Americas. 1533: Anne Boleyn becomes Queen of England. 1533: Elizabeth Tudor is born. 1534: Jacques Cartier claims Canada for France. 1534: The Ottomans capture Baghdad from the Safavids. 1534: Affair of the Placards, where King Francis I becomes more active in repression of French Protestants. 1535: The Münster Rebellion, an attempt of radical, millennialist, Anabaptists to establish a theocracy, ends in bloodshed. 1535: The Portuguese in Ternate depose Sultan Tabariji (or Tabarija) and send him to Portuguese Goa where he converts to Christianity and bequeaths his Portuguese godfather Jordao de Freitas the island of Ambon.[12] Hairun becomes the next sultan. 1536: Catherine of Aragon dies in Kimbolton Castle, in England.Territorial expansion of the Ottoman Empire under Suleiman (in red and orange) 1536: In England, Anne Boleyn is beheaded for adultery and treason. 1536: Establishment of the Inquisition in Portugal. 1536: Foundation of Buenos Aires (in present-day Argentina) by Pedro de Mendoza. 1537: The Portuguese establish Recife in Pernambuco, north-east of Brazil. 1537: William Tyndale's partial translation of the Bible into English is published, which would eventually be incorporated into the King James Bible. 1538: Gonzalo Jiménez de Quesada founds Bogotá. 1538: Spanish–Venetian fleet is defeated by the Ottoman Turks at the Battle of Preveza. 1539: Hernando de Soto explores inland North America. Nicolaus Copernicus 1540: The Society of Jesus, or the Jesuits, is founded by Ignatius of Loyola and six companions with the approval of Pope Paul III. 1540: Sher Shah Suri founds the Suri dynasty in South Asia, an ethnic Pashtun (Pathan) of the house of Sur, who supplanted the Mughal dynasty as rulers of North India during the reign of the relatively ineffectual second Mughal emperor Humayun. Sher Shah Suri decisively defeats Humayun in the Battle of Bilgram (May 17, 1540). 1541: Pedro de Valdivia founds Santiago in Chile. 1541: An Algerian military campaign by Charles V of Spain (Habsburg) is unsuccessful. 1541: Amazon River is encountered and explored by Francisco de Orellana. 1541: Capture of Buda and the absorption of the major part of Hungary by the Ottoman Empire. 1541: Sahib I Giray of Crimea invades Russia. 1542: The Italian War of 1542–1546 War resumes between Francis I of France and Emperor Charles V. This time Henry VIII is allied with the Emperor, while James V of Scotland and Sultan Suleiman I are allied with the French. 1542: Akbar The Great is born in the Rajput Umarkot Fort 1542: Spanish explorer Ruy López de Villalobos named the island of Samar and Leyte Las Islas Filipinas honoring Philip II of Spain and became the official name of the archipelago. 1543: Ethiopian/Portuguese troops defeat the Adal army led by Imam Ahmad Gurey at the Battle of Wayna Daga; Imam Ahmad Gurey is killed at this battle. 1543: Copernicus publishes his theory that the Earth and the other planets revolve around the Sun 1543: The Nanban trade period begins after Portuguese traders make contact with Japan. 1544: The French defeat an Imperial–Spanish army at the Battle of Ceresole.Scenes of everyday life in Ming China, by Qiu Ying 1544: Battle of the Shirts in Scotland. The Frasers and Macdonalds of Clan Ranald fight over a disputed chiefship; reportedly, 5 Frasers and 8 Macdonalds survive. 1545: Songhai forces sack the Malian capital of Niani 1545: The Council of Trent meets for the first time in Trent (in northern Italy). 1546: Michelangelo Buonarroti is made chief architect of St. Peter's Basilica. 1546: Francis Xavier works among the peoples of Ambon, Ternate and Morotai (Moro) laying the foundations for a permanent mission. (to 1547) 1547: Henry VIII dies in the Palace of Whitehall on 28 January at the age of 55. 1547: Francis I dies in the Château de Rambouillet on 31 March at the age of 52. 1547: Edward VI becomes King of England and Ireland on 28 January and is crowned on 20 February at the age of 9. 1547: Emperor Charles V decisively dismantles the Schmalkaldic League at the Battle of Mühlberg. 1547: Grand Prince Ivan the Terrible is crowned tsar of (All) Russia, thenceforth becoming the first Russian tsar. 1548: Battle of Uedahara: Firearms are used for the first time on the battlefield in Japan, and Takeda Shingen is defeated by Murakami Yoshikiyo. 1548: Askia Daoud, who reigned from 1548 to 1583, establishes public libraries in Timbuktu (in present-day Mali). 1548: The Ming dynasty government of China issues a decree banning all foreign trade and closes down all seaports along the coast; these Hai jin laws came during the Wokou wars with Japanese pirates. 1549: Tomé de Sousa establishes Salvador in Bahia, north-east of Brazil. 1549: Arya Penangsang with the support of his teacher, Sunan Kudus, avenges the death of Raden Kikin by sending an envoy named Rangkud to kill Sunan Prawoto by Keris Kyai Satan Kober (in present-day Indonesia). The Islamic gunpowder empires: Mughal Army artillerymen during the reign of Jalaluddin Akbar 1550: The architect Mimar Sinan builds the Süleymaniye Mosque in Istanbul. 1550: Mongols led by Altan Khan invade China and besiege Beijing. 1550–1551: Valladolid debate concerning the human rights of the Indigenous people of the Americas. 1551: Fifth outbreak of sweating sickness in England. John Caius of Shrewsbury writes the first full contemporary account of the symptoms of the disease. 1551: North African pirates enslave the entire population of the Maltese island Gozo, between 5,000 and 6,000, sending them to Libya. 1552: Russia conquers the Khanate of Kazan in central Asia. 1552: Jesuit China Mission, Francis Xavier dies. 1553: Mary Tudor becomes the first queen regnant of England and restores the Church of England under Papal authority. 1553: The Portuguese found a settlement at Macau. 1554: Missionaries José de Anchieta and Manuel da Nóbrega establishes São Paulo, southeast Brazil. 1554: Princess Elizabeth is imprisoned in the Tower of London upon the orders of Mary I for suspicion of being involved in the Wyatt rebellion. 1555: The Muscovy Company is the first major English joint stock trading company. 1556: Publication in Venice of Delle Navigationi et Viaggi (terzo volume) by Giovanni Battista Ramusio, secretary of Council of Ten, with plan La Terra de Hochelaga, an illustration of the Hochelaga.[13] 1556: The Shaanxi earthquake in China is history's deadliest known earthquake during the Ming dynasty. 1556: Georgius Agricola, the "Father of Mineralogy", publishes his De re metallica. 1556: Akbar defeats Hemu at the Second battle of Panipat. 1556: Russia conquers the Astrakhan Khanate. 1556–1605: During his reign, Akbar expands the Mughal Empire in a series of conquests (in the Indian subcontinent).Political map of the world in 1556 1556: Mir Chakar Khan Rind captures Delhi with Humayun. 1556: Pomponio Algerio, radical theologian, is executed by boiling in oil as part of the Roman Inquisition. 1557: Habsburg Spain declares bankruptcy. Philip II of Spain had to declare four state bankruptcies in 1557, 1560, 1575 and 1596. 1557: The Portuguese settle in Macau (on the western side of the Pearl River Delta across from present-day Hong Kong). 1557: The Ottomans capture Massawa, all but isolating Ethiopia from the rest of the world. 1558: Elizabeth Tudor becomes Queen Elizabeth I at age 25. 1558–1603: The Elizabethan era is considered the height of the English Renaissance. 1558–1583: Livonian War between Poland, Grand Principality of Lithuania, Sweden, Denmark and Russia. 1558: After 200 years, the Kingdom of England loses Calais to France. 1559: With the Peace of Cateau Cambrésis, the Italian Wars conclude. 1559: Sultan Hairun of Ternate (in present-day Indonesia) protests the Portuguese's Christianisation activities in his lands. Hostilities between Ternate and the Portuguese. The Mughal Emperor Akbar shoots the Rajput warrior Jaimal during the Siege of Chittorgarh in 1567 1560: Ottoman navy defeats the Spanish fleet at the Battle of Djerba. 1560: Elizabeth Bathory is born in Nyirbator, Hungary. 1560: By winning the Battle of Okehazama, Oda Nobunaga becomes one of the pre-eminent warlords of Japan. 1560: Jeanne d'Albret declares Calvinism the official religion of Navarre. 1560: Lazarus Church, Macau 1561: Sir Francis Bacon is born in London. 1561: The fourth battle of Kawanakajima between the Uesugi and Takeda at Hachimanbara takes place. 1561: Guido de Bres draws up the Belgic Confession of Protestant faith. 1562: Mughal emperor Akbar reconciles the Muslim and Hindu factions by marrying into the powerful Rajput Hindu caste. 1562–1598: French Wars of Religion between Catholics and Huguenots. 1562: Massacre of Wassy and Battle of Dreux in the French Wars of Religion. 1562: Portuguese Dominican priests build a palm-trunk fortress which Javanese Muslims burned down the following year. The fort was rebuilt from more durable materials and the Dominicans commenced the Christianisation of the local population.[12] 1563: Plague outbreak claimed 80,000 people in Elizabethan England. In London alone, over 20,000 people died of the disease. 1564: Galileo Galilei born on February 15 1564: William Shakespeare baptized 26 April 1565: Deccan sultanates defeat the Vijayanagara Empire at the Battle of Talikota. 1565: Mir Chakar Khan Rind dies at aged 97. 1565: Estácio de Sá establishes Rio de Janeiro in Brazil. 1565: The Hospitallers, a Crusading Order, defeat the Ottoman Empire at the siege of Malta (1565). 1565: Miguel López de Legazpi establishes in Cebu the first Spanish settlement in the Philippines starting a period of Spanish colonization that would last over three hundred years. 1565: Spanish navigator Andres de Urdaneta discovers the maritime route from Asia to the Americas across the Pacific Ocean, also known as the tornaviaje. 1565: Royal Exchange is founded by Thomas Gresham. 1566: Suleiman the Magnificent, ruler of the Ottoman Empire, dies on September 7, during the battle of Szigetvar.Siege of Valenciennes during the Dutch War of Independence in 1567 1566–1648: Eighty Years' War between Spain and the Netherlands. 1566: Da le Balle Contrade d'Oriente, composed by Cipriano de Rore. 1567: After 45 years' reign, Jiajing Emperor died in the Forbidden City, Longqing Emperor ascended the throne of Ming dynasty. 1567: Mary, Queen of Scots, is imprisoned by Elizabeth I. 1568: The Transylvanian Diet, under the patronage of the prince John Sigismund Zápolya, the former king of Hungary, inspired by the teachings of Ferenc Dávid, the founder of the Unitarian Church of Transylvania, promulgates the Edict of Torda, the first law of freedom of religion and of conscience in the World. 1568–1571: Morisco Revolt in Spain. 1568–1600: The Azuchi-Momoyama period in Japan. 1568: Hadiwijaya sent his adopted son and son in-law Sutawijaya, who would later become the first ruler of the Mataram dynasty of Indonesia, to kill Arya Penangsang. 1569: Rising of the North in England. 1569: Mercator 1569 world map published by Gerardus Mercator. 1569: The Polish–Lithuanian Commonwealth is created with the Union of Lublin which lasts until 1795. 1569: Peace treaty signed by Sultan Hairun of Ternate and Governor Lopez De Mesquita of Portugal. The Battle of Lepanto 1570: Ivan the Terrible, tsar of Russia, orders the massacre of inhabitants of Novgorod. 1570: Pope Pius V issues Regnans in Excelsis, a papal bull excommunicating all who obeyed Elizabeth I and calling on all Catholics to rebel against her. 1570: Sultan Hairun of Ternate (in present-day Indonesia) is killed by the Portuguese.[12] Babullah becomes the next Sultan. 1570: 20,000 inhabitants of Nicosia in Cyprus were massacred and every church, public building, and palace was looted. Cyprus fell to the Ottoman Turks the following year. 1571: Pope Pius V completes the Holy League as a united front against the Ottoman Turks, responding to the fall of Cyprus to the Ottomans. 1571: The Spanish-led Holy League navy destroys the Ottoman Empire navy at the Battle of Lepanto. 1571: Crimean Tatars attack and sack Moscow, burning everything but the Kremlin. 1571: American Indians kill Spanish missionaries in what would later be Jamestown, Virginia. 1571: Spanish conquistador Miguel López de Legazpi establishes Manila, Philippines as the capital of the Spanish East Indies. 1572: Brielle is taken from Habsburg Spain by Protestant Watergeuzen in the Capture of Brielle, in the Eighty Years' War. 1572: Spanish conquistadores apprehend the last Inca leader Tupak Amaru at Vilcabamba, Peru, and execute him in Cuzco. 1572: Jeanne d'Albret dies aged 43 and is succeeded by Henry of Navarre. 1572: Catherine de' Medici instigates the St. Bartholomew's Day massacre which takes the lives of Protestant leader Gaspard de Coligny and thousands of Huguenots. The violence spreads from Paris to other cities and the countryside. 1572: First edition of the epic The Lusiads of Luís Vaz de Camões, three years after the author returned from the East.[14] 1572: The 9 years old Taizi, Zhu Yijun ascended the throne of Ming dynasty, known as Wanli Emperor. 1573: After heavy losses on both sides the siege of Haarlem ends in a Spanish victory.St. Bartholomew's Day massacre of French Protestants 1574: in the Eighty Years' War the capital of Zeeland, Middelburg declares for the Protestants. 1574: After a siege of 4 months the siege of Leiden ends in a comprehensive Dutch rebel victory. 1575: Oda Nobunaga finally captures Nagashima fortress. 1575: Following a five-year war, the Ternateans under Sultan Babullah defeated the Portuguese. 1576: Tahmasp I, Safavid shah, dies. 1576: The Battle of Haldighati is fought between the ruler of Mewar, Maharana Pratap and the Mughal Empire's forces under Emperor Akbar led by Raja Man Singh. 1576: Sack of Antwerp by badly paid Spanish soldiers. 1577–1580: Francis Drake circles the world. 1577: Ki Ageng Pemanahan built his palace in Pasargede or Kotagede. 1578: King Sebastian of Portugal is killed at the Battle of Alcazarquivir. 1578: The Portuguese establish a fort on Tidore but the main centre for Portuguese activities in Maluku becomes Ambon.[12] 1578: Sonam Gyatso is conferred the title of Dalai Lama by Tumed Mongol ruler, Altan Khan. Recognised as the reincarnation of two previous Lamas, Sonam Gyatso becomes the third Dalai Lama in the lineage.[15] 1578: Governor-General Francisco de Sande officially declared war against Brunei in 1578, starting the Castilian War of 1578. 1579: The Union of Utrecht unifies the northern Netherlands, a foundation for the later Dutch Republic. 1579: The Union of Arras unifies the southern Netherlands, a foundation for the later states of the Spanish Netherlands, the Austrian Netherlands and Belgium.The Irish Gaelic chieftain's feast, from The Image of Ireland 1579: The British navigator Sir Francis Drake passes through Maluku and transit in Ternate on his circumnavigation of the world. The Portuguese establish a fort on Tidore but the main centre for Portuguese activities in Maluku becomes Ambon.[16] The fall of Spanish Armada 1580: Drake's royal reception after his attacks on Spanish possessions influences Philip II of Spain to build up the Spanish Armada. English ships in Spanish harbours are impounded. 1580: Spain unifies with Portugal under Philip II. The struggle for the throne of Portugal ends the Portuguese Empire. The Spanish and Portuguese crowns are united for 60 years, i.e. until 1640. 1580–1587: Nagasaki comes under control of the Jesuits. 1581: Dutch Act of Abjuration, declaring abjuring allegiance to Philip II of Spain. 1581: Bayinnaung dies at the age of 65. 1582: Oda Nobunaga commits seppuku during the Honnō-ji Incident coup by his general, Akechi Mitsuhide. 1582: Pope Gregory XIII issues the Gregorian calendar. The last day of the Julian calendar was Thursday, 4 October 1582 and this was followed by the first day of the Gregorian calendar, Friday, 15 October 1582 1582: Yermak Timofeyevich conquers the Siberia Khanate on behalf of the Stroganovs. 1583: Denmark builds the world's first theme park, Bakken. 1583: Death of Sultan Babullah of Ternate. 1584–1585: After the siege of Antwerp, many of its merchants flee to Amsterdam. According to Luc-Normand Tellier, "At its peak, between 1510 and 1557, Antwerp concentrated about 40% of the world trade...It is estimated that the port of Antwerp was earning the Spanish crown seven times more revenues than the Americas."[17] 1584: Ki Ageng Pemanahan died. Sultan Pajang raised Sutawijaya, son of Ki Ageng Pemanahan as the new ruler in Mataram, titled "Loring Ngabehi Market" (because of his home in the north of the market). 1585: Akbar annexes Kashmir and adds it to the Kabul SubahPortuguese fusta in India from a book by Jan Huygen van Linschoten 1585: Colony at Roanoke founded in North America. 1585–1604: The Anglo-Spanish War is fought on both sides of the Atlantic. 1587: Mary, Queen of Scots is executed by Elizabeth I. 1587: The reign of Abbas I marks the zenith of the Safavid dynasty. 1587: Troops that would invade Pajang Mataram Sultanate storm ravaged the eruption of Mount Merapi. Sutawijaya and his men survived. 1588: Mataram into the kingdom with Sutawijaya as Sultan, titled "Senapati Ingalaga Sayidin Panatagama" means the warlord and cleric Manager Religious Life. 1588: England repulses the Spanish Armada. 1589: Spain repulses the English Armada. 1589: Catherine de' Medici dies at aged 69. Abu'l-Fazl ibn Mubarak presenting Akbarnama to Mughal Azam Akbar, Mughal miniature 1590: Siege of Odawara: the Go-Hojo clan surrender to Toyotomi Hideyoshi, and Japan is unified. 1591: Gazi Giray leads a huge Tatar expedition against Moscow. 1591: In Mali, Moroccan forces of the Sultan Ahmad al-Mansur led by Judar Pasha defeat the Songhai Empire at the Battle of Tondibi. 1592–1593: John Stow reports 10,675 plague deaths in London, a city of approximately 200,000 people. 1592–1598: Korea, with the help of Ming dynasty China, repels two Japanese invasions. 1593–1606: The Long War between the Habsburg monarchy and the Ottoman Turks. 1594: St. Paul's College, Macau, founded by Alessandro Valignano. 1595: First Dutch expedition to Indonesia sets sail for the East Indies with two hundred and forty-nine men and sixty-four cannons led by Cornelis de Houtman.[18] 1596: Birth of René Descartes. 1596: June, de Houtman's expedition reaches Banten the main pepper port of West Java where they clash with both the Portuguese and Indonesians. It then sails east along the north coast of Java losing twelve crew to a Javanese attack at Sidayu and killing a local ruler in Madura.[18] 1597: Romeo and Juliet is published. 1597: Cornelis de Houtman's expedition returns to the Netherlands with enough spices to make a considerable profit.[18] 1598: The Edict of Nantes ends the French Wars of Religion. 1598: Abbas I moves Safavids capital from Qazvin to Isfahan in 1598. 1598–1613: Russia descends into anarchy during the Time of Troubles. 1598: The Portuguese require an armada of 90 ships to put down a Solorese uprising.[12] (to 1599) 1598: More Dutch fleets leave for Indonesia and most are profitable.[18]Edo period screen depicting the Battle of Sekigahara 1598: The province of Santa Fe de Nuevo México is established in Northern New Spain. The region would later become a territory of Mexico, the New Mexico Territory in the United States, and the US State of New Mexico. 1598: Death of Toyotomi Hideyoshi, known as the unifier of Japan. 1599: The Mali Empire is defeated at the Battle of Jenné. 1599: The van Neck expedition returns to Europe. The expedition makes a 400 per cent profit.[18] (to 1600) 1599: March, Leaving Europe the previous year, a fleet of eight ships under Jacob van Neck was the first Dutch fleet to reach the 'Spice Islands' of Maluku.[18] 1600: Giordano Bruno is burned at the stake for heresy in Rome.Siege of Filakovo castle during the Long Turkish War 1600: Battle of Sekigahara in Japan. End of the Warring States period and beginning of the Edo period. 1600: The Portuguese win a major naval battle in the bay of Ambon.[19] Later in the year, the Dutch join forces with the local Hituese in an anti-Portuguese alliance, in return for which the Dutch would have the sole right to purchase spices from Hitu.[19] 1600: Elizabeth I grants a charter to the British East India Company beginning the English advance in Asia. 1600: Michael the Brave unifies the three principalities: Wallachia, Moldavia and Transylvania after the Battle of Șelimbăr from 1599. For later events, see Timeline of the 17th century. Polybius' The Histories translated into Italian, English, German and French.[20] Mississippian culture disappears. Medallion rug, variant Star Ushak style, Anatolia (modern Turkey), is made. It is now kept at the Saint Louis Art Museum. Hernan Cortes (1485–1547) Henry VIII, (1491–1547) King of England and Ireland Don Fernando Álvarez de Toledo (1507–1582) Suleiman the Magnificent, Sultan of the Ottoman Empire (1520–1566) Ivan IV the Terrible (1530–1584) Oda Nobunaga (1534–1582) Sir Francis Drake (c. 1540 – 1596) Alberico Gentili, (1552–1608) the Father of international law Philip II of Spain, King of Spain (1556–1598) Akbar the Great, Mughal emperor (1556–1605) Related article: List of 16th century inventions. The Columbian Exchange introduces many plants, animals and diseases to the Old and New Worlds. Introduction of the spinning wheel revolutionizes textile production in Europe. The letter J is introduced into the English alphabet. 1500: First portable watch is created by Peter Henlein of Germany.The Iberian Union in 1598, under Philip II, King of Spain and Portugal 1513: Juan Ponce de León sights Florida and Vasco Núñez de Balboa sights the eastern edge of the Pacific Ocean. 1519–1522: Ferdinand Magellan and Juan Sebastián Elcano lead the first circumnavigation of the world. 1519–1540: In America, Hernando de Soto expeditions map the Gulf of Mexico coastline and bays. 1525: Modern square root symbol (√) 1540: Francisco Vásquez de Coronado sights the Grand Canyon. 1541–42: Francisco de Orellana sails the length of the Amazon River. 1542–43: Firearms are introduced into Japan by the Portuguese. 1543: Copernicus publishes his theory that the Earth and the other planets revolve around the Sun 1545: Theory of complex numbers is first developed by Gerolamo Cardano of Italy. 1558: Camera obscura is first used in Europe by Giambattista della Porta of Italy. 1559–1562: Spanish settlements in Alabama/Florida and Georgia confirm dangers of hurricanes and local native warring tribes. 1565: Spanish settlers outside New Spain (Mexico) colonize Florida's coastline at St. Augustine. 1565: Invention of the graphite pencil (in a wooden holder) by Conrad Gesner. Modernized in 1812. 1568: Gerardus Mercator creates the first Mercator projection map. 1572: Supernova SN 1572 is observed by Tycho Brahe in the Milky Way. 1582: Gregorian calendar is introduced in Europe by Pope Gregory XIII and adopted by Catholic countries. c. 1583: Galileo Galilei of Pisa, Italy identifies the constant swing of a pendulum, leading to development of reliable timekeepers. 1585: earliest known reference to the 'sailing carriage' in China. 1589: William Lee invents the stocking frame. 1591: First flush toilet is introduced by Sir John Harrington of England, the design published under the title 'The Metamorphosis of Ajax'. 1593: Galileo Galilei invents a thermometer. 1596: William Barents discovers Spitsbergen. 1597: Opera in Florence by Jacopo Peri. Entertainment in the 16th century ^ a b Modern reference works on the period tend to follow the introduction of the Gregorian calendar for the sake of clarity; thus NASA's lunar eclipse catalogue states "The Gregorian calendar is used for all dates from 1582 Oct 15 onwards. Before that date, the Julian calendar is used." For dates after 15 October 1582, care must be taken to avoid confusion of the two styles. ^ de Vries, Jan (14 September 2009). "The limits of globalization in the early modern world". The Economic History Review. 63 (3): 710–733. CiteSeerX 10.1.1.186.2862. doi:10.1111/j.1468-0289.2009.00497.x. JSTOR 40929823. S2CID 219969360. SSRN 1635517. ^ Singh, Sarina; Lindsay Brown; Paul Clammer; Rodney Cocks; John Mock (2008). Pakistan & the Karakoram Highway. Vol. 7, illustrated. Lonely Planet. p. 137. ISBN 978-1-74104-542-0. Retrieved 23 August 2010. ^ Babur (2006). Babur Nama. Penguin Books. p. vii. ISBN 978-0-14-400149-1. ^ "16th Century Timeline (1501 to 1600)". fsmitha.com. Archived from the original on February 3, 2009. ^ "History of Smallpox – Smallpox Through the Ages" Archived 2019-09-24 at the Wayback Machine. Texas Department of State Health Services. ^ Ricklefs (1991), p.23 ^ "A LIST OF NATIONAL EPIDEMICS OF PLAGUE IN ENGLAND 1348–1665". Archived from the original on 2009-05-08. Retrieved 2009-04-25. ^ a b Ricklefs (1991), page 24 ^ The Sweating Sickness. Story of London.. Accessed 2009-04-25. Archived 2009-05-03. ^ Sandra Arlinghaus. "Life Span of Suleiman the Magnificent 1494–1566". Personal.umich.edu. Retrieved 2013-05-05. ^ a b c d e Ricklefs (1991), page 25 ^ "La Terra De Hochelaga – Jaques Cartier a Hochelaga". jacquescarter.org. Archived from the original on December 23, 2008. ^ "The Lusiads". World Digital Library. 1800–1882. Retrieved 2013-08-31. ^ Schwieger, Peter (2014). The Dalai Lama and the Emperor of China: a political history of the Tibetan institution of reincarnation. New York: Columbia University Press. ISBN 9780231538602. OCLC 905914446. ^ Miller, George, ed. (1996). To The Spice Islands and Beyond: Travels in Eastern Indonesia. New York: Oxford University Press. pp. xv. ISBN 967-65-3099-9. ^ Luc-Normand Tellier (2009). "Urban world history: an economic and geographical perspective". PUQ. p.308. ISBN 2-7605-1588-5 ^ a b c d e f Ricklefs (1991), page 27 ^ a b Ricklefs (1991), page 28 ^ Polybius: The Rise Of The Roman Empire, Page 36, Penguin, 1979. Langer, William. An Encyclopedia of World History (5th ed. 1973); highly detailed outline of events online free Media related to 16th century at Wikimedia Commons Timelines of 16th century events, science, culture and persons Retrieved from " 4 The following pages link to 16th century External tools (link count transclusion count sorted list) · See help page for transcluding these entries Showing 50 items. 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If YES, check below for the right solutions... NOTE: All answers are checked twice before publishing them to you. So, please share if it helps you. Vocabulary: periodic trends, atomic radius, electron affinity, electron cloud, the valence electron, group, ion, ionization energy, metal, non-metal, nucleus, period, picometer, energy level. Q.1. On the image above, the two magnets are the same. Which paperclip would be harder to remove?Ans: As per the images shown, paper clip B has a thinner book on it than paper clip A. The magnetic force released by the magnet increases as the distance between the paper clips decreases. This makes paper clip B harder to remove than paper clip A. Magnet attracts more in paper clip B due to its shorter distance. Q.2. Which magnet would be most likely to attract additional paper clips?Ans: B Q.3. What is the relationship between the thickness of the book and the ability of the magnet to hold on to and attract paper clips?Ans: The thicker the book the less attraction the magnet will have with the paper clip. The book thickness blocks the strength of a magnet's ability to attract things. Just as the thickness of a book changes... (Note: we are skipping the intro part so that we can directly jump into the Q&A section) The atomic radius is a measure of the size of the electron cloud or the region where electrons can be found. To begin, check that H(hydrogen) is selected in Group 1 on the left. Turn on "Show Ruler". To measure the radius, drag one end of the ruler to the proton in the nucleus and the other end to the electron. Click "Save Radius" to record the value. Q.1. What is the radius of hydrogen?Ans: By definition, the atomic radius is the measure of the space where the atom is found. Hence, the atomic radius of hydrogen in this exercise is 53pm. Q.2. On the right side of the Gizmo, select Li. Connect the right side of the ruler to the outermost electron, or valence electron. What is the radius of lithium?Ans: 167 pm Question: What factors affect the radius of an atom? Q.1. Predict: How do you think the radius of an atom will change as you move down a group (vertical column) in the periodic table?Ans: As you move down, the atomic radius will increase. This is because the distance between a positively charged nucleus and a negatively charged electron increases as the number of energy levels increases. Q.2. Collect data: Use the ruler to measure the atomic radii of the group 1 element. As you do so, count the energy levels (shown as rings of electrons) in each atom. Record in the tableAns: ElementHLiNaKRbCsNumber of energy levels123456Atomic radius (pm)53pm167pm190pm243pm265pm298pm Q.3. Observe: What happens to the radius as you move down group 1?Ans: It increases Q.4. Explore: Turn off "Show Ruler". Select "Li", and then select "Be". Observe the radii of the elements in group 2. Then look at other groups. What pattern do you see?Ans: The nucleus is getting bigger and the electron cells get smaller. Q.5. Draw a conclusion: In general, what is the effect of the number of energy levels on the radius of an atom?Ans: As the group and number of energy levels increases, the atomic radius increases. Q.6.