

AP Chemistry

Summer Reading and Assignment

PLEASE PICK UP PACKET IN FRONT OFFICE.

2023-24

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Welcome to AP Chemistry! AP Chemistry builds on prior knowledge from Honors Chemistry. You will need to spend the summer reviewing skills learned in Honors Chemistry. There will be some things you will need to memorize to be successful in this course. Those items are attached.

College Board organizes our material into 9 units. You will cover Unit 1 this summer at home. When we meet in August, we will briefly discuss the unit, and you will be able to ask questions in class. A test over Unit 1 will be given the second week of school. We will be moving quickly through this unit to we make sure we have time to cover all of the material and leave time for review before the AP exam next Spring.

You will watch the videos assigned and fill out the study guides as you watch. They will be turned in for a daily grade the first day of class. Feel free to email me if you have any questions. Expect to spend a total of about 2 hours on this part of the summer assignment. Each video is about 15 minutes on average, and there are 9. So, you can easily do one a day and knock this out in just a little over a week with a small time commitment each day. I recommend doing it in July instead of June so it is fresh on your mind. The material in unit 1 is largely review, but a few things are new material.

Links to the Unit 1 videos: Note:

You can search on You Tube: "Shanna Barkume AP Chemistry CED Unit 1" and view full playlist and find the videos in order. They have a red/orange background.

1.1

https://www.youtube.com/watch?v=YBXHe3FKn3A&list=PLzFCBCoiEwAdzTtiGRh9_EU67okAuMAk4&index=1

1.2

https://www.youtube.com/watch?v=jjlkBCJ58lw&list=PLzFCBCoiEwAdzTtiGRh9_EU67okAuMAk4&index=2

1.3

https://www.youtube.com/watch?v=1wlztEkLsY8&list=PLzFCBCoiEwAdzTtiGRh9_EU67okAuMAk4&index=3

1.4

https://www.youtube.com/watch?v=hifgg0489nc&list=PLzFCBCoiEwAdzTtiGRh9_EU67okAuMAk4&index=4

1.5 (2 videos)

https://www.youtube.com/watch?v=S6iNAvmnyG8&list=PLzFCBCoiEwAdzTtiGRh9_EU67okAuMAk4&index=5

https://www.youtube.com/watch?v=ntu3hwPo3ZE&list=PLzFCBCoiEwAdzTtiGRh9_EU67okAuMAk4&index=6

1.6

https://www.youtube.com/watch?v=acRPplg3l9k&list=PLzFCBCoiEwAdzTtiGRh9_EU67okAuMAk4&index=7

1.7

https://www.youtube.com/watch?v=Q6IWu14txdw&list=PLzFCBCoiEwAdzTtiGRh9_EU67okAuMAk4&index=8

1.8

https://www.youtube.com/watch?v=8al5h7ggpCQ&list=PLzFCBCoiEwAdzTtiGRh9_EU67okAuMAk4&index=9

Please work hard memorizing the monoatomic and polyatomic ions in this packet that need to be committed to memory. Flash cards are a good suggestion. You will be allowed a periodic table but it only has the symbols not element names. A great website to use for practice quizzes is: <https://www.sciencegeek.net/APchemistry/Quizzes/Ions/>

You also need to memorize the six strong acids. A list of those is in this packet.

Recommended Optional AP Chemistry Review books:

Cracking the AP Chemistry Exam, (any year after 2014), by Paul Foglino, The Princeton Review

AP Chemistry Crash Course, 2nd Edition, by Adrian Dingle, Research & Education Association

Useful Websites:

<https://www.khanacademy.org/science/ap-chemistry-beta?msclkid=d0e4a375b2e511ec91a3d7dc303e3058>

<http://www.bozemanscience.com/ap-chemistry/?msclkid=e5c5cdafb2e511ec85606598440ca907>

<https://www.sciencegeek.net/APchemistry/index.shtml?msclkid=fb152a71b2e511eca1c800d40f9bcad5>

I am excited to partner with you in this journey this year! I might be a pharmacist, but I started as an education major. The Lord has always placed a love of teaching in my heart, and I am grateful I get to share my passion for learning with you!

AP Chemistry Summer Assignment Packet

1. Memorize the following monoatomic and polyatomic ions. Be prepared for a quiz the first few weeks of school.

Flash cards are a good suggestion. You will be allowed a periodic table (symbols only.) A great website to use for practice quizzes is: <https://www.sciencegeek.net/APchemistry/Quizzes/Ions/>

acetate CH_3COO^-

carbonate CO_3^{2-}

bicarbonate HCO_3^{1-}

nitrate NO_3^{1-}

sulfate SO_4^{2-}

hydroxide OH^{1-}

hydronium H_3O^+

phosphate PO_4^{3-}

2. Memorize the following diatomic elements:

Hydrogen, oxygen, nitrogen, fluorine, chlorine, bromine, and iodine all form molecules of two atoms of the same element.

H_2 , N_2 , O_2 , F_2 , Cl_2 , Br_2 , I_2

I'll Have Neil Over For Clam Brains

- | Elements To Memorize | | | | | | | | | | | | | | | | He | | | | | | | | | | | | | | | | |
|----------------------|-----------------------------|------------------------------|------------------------|------|--|-----|--|----|--|-----|--|------|--|------|--|---------------------|-----------------------------|--------------------------------|------------------------------|-------------------------------|-------------------------------|------------------------------|----------------------------|-------------------------------|-------------------------------|--------------------------------|---------------------------------|------------------------------|---------------------------------|------------------------------|----------------------------|----------------------|
| IA | | IIA | | IIIa | | IVA | | VA | | VIA | | VIIa | | VIII | | IX | | | | | | | | | | | | | | | | |
| 1 | H Hydrogen 1+ | | | | | | | | | | | | | | | He Helium | | | | | | | | | | | | | | | | |
| 2 | Li Lithium 1+ | Be Beryllium 2+ | | | | | | | | | | | | | | | B Boron 3+ | C Carbon 4- | N Nitrogen 3- | O Oxygen 2- | F Fluorine 1- | Ne Neon | | | | | | | | | | |
| 3 | Na Sodium 1+ | Mg Magnesium 2+ | | | | | | | | | | | | | | | Al Aluminum 3+ | Si Silicon 4- | P Phosphorus 3- | S Sulfur 2- | Cl Chlorine 1- | Ar Argon | | | | | | | | | | |
| 4 | K Potassium 1+ | Ca Calcium 2+ | | | | | | | | | | | | | | | Sc Scandium 3+ | Ti Titanium 4+ | V Vanadium 5+ | Cr Chromium 3+ | Mn Manganese 2+ | Fe Iron 2+ | Co Cobalt 2+ | Ni Nickel 2+ | Cu Copper 1+, 2+ | Zn Zinc 2+ | Ga Gallium 3+ | Ge Germanium 4+ | As Arsenic 3- | Se Selenium 2- | Br Bromine 1- | Kr Krypton |
| 5 | Rb Rubidium 1+ | Sr Strontium 2+ | | | | | | | | | | | | | | | Y Yttrium 3+ | Zr Zirconium 4+ | Nb Niobium 5+ | Mo Molybdenum 6+ | Tc Technetium 7+ | Ru Ruthenium 8+ | Rh Rhodium 9+ | Pd Palladium 10+ | Ag Silver 1+ | Cd Cadmium 2+ | In Indium 3+ | Sn Tin 2+, 4+ | Sb Antimony 3-, 5+ | Te Tellurium 2- | I Iodine 1- | Xe Xenon |
| 6 | Cs Cesium 1+ | Ba Barium 2+ | La Lanthanum | | | | | | | | | | | | | | | Hf Hafnium 4+ | Ta Tantalum 5+ | W Tungsten 6+ | Re Rhenium 7+ | Os Osmium 8+ | Ir Iridium 9+ | Pt Platinum 10+ | Au Gold 3+ | Hg Mercury 1+, 2+ | Tl Thallium 3+, 1+ | Pb Lead 2-, 4+ | Bi Bismuth 3-, 5+ | Po Polonium | At Astatine | Rn Radon |
| 7 | Ra Radium 2+ | Ac Actinium | | | | | | | | | | | | | | | Pb Lead 2-, 4+ | Bi Bismuth 3-, 5+ | Po Polonium | At Astatine | Rn Radon | | | | | | | | | | | |
| Lanthanides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Actinides | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| PERIODIC TABLE OF THE ELEMENTS | | | | | | | | | | | | | | | | | |
|--------------------------------|---------------------------|----------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| 1 H 1.008 | | | | | | | | | | | | | | | | | 2 He 4.00 |
| 3 Li 6.94 | 4 Be 9.01 | | | | | | | | | | | | | | | 5 B 10.81 | 6 C 12.01 |
| 11 Na 22.99 | 12 Mg 24.30 | 13 Al 26.98 | 14 Si 28.09 | 15 P 30.97 | 16 S 32.06 | 17 Cl 35.45 | 18 Ar 39.95 | | | | | | | | | | |
| 19 K 39.10 | 20 Ca 40.08 | 21 Sc 44.96 | 22 Ti 47.87 | 23 V 50.94 | 24 Cr 52.00 | 25 Mn 54.94 | 26 Fe 55.85 | 27 Co 58.93 | 28 Ni 58.69 | 29 Cu 63.55 | 30 Zn 65.38 | 31 Ga 69.72 | 32 Ge 72.63 | 33 As 74.92 | 34 Se 78.97 | 35 Br 79.90 | 36 Kr 83.80 |
| 37 Rb 85.47 | 38 Sr 87.62 | 39 Y 88.91 | 40 Zr 91.22 | 41 Nb 92.91 | 42 Mo 95.95 | 43 Tc (97) | 44 Ru 101.1 | 45 Rh 102.91 | 46 Pd 106.42 | 47 Ag 107.87 | 48 Cd 112.41 | 49 In 114.82 | 50 Sn 118.71 | 51 Sb 121.76 | 52 Te 127.60 | 53 I 126.90 | 54 Xe 131.29 |
| 55 Cs 132.91 | 56 Ba 137.33 | 57 *La 138.91 | 72 Hf 178.49 | 73 Ta 180.95 | 74 W 183.84 | 75 Re 186.21 | 76 Os 190.2 | 77 Ir 192.2 | 78 Pt 195.08 | 79 Au 196.97 | 80 Hg 200.59 | 81 Tl 204.38 | 82 Pb 207.2 | 83 Bi 208.98 | 84 Po (209) | 85 At (210) | 86 Rn (222) |
| 87 Fr (223) | 88 Ra (226) | 89 *Ac (227) | 104 Rf (267) | 105 Db (270) | 106 Sg (271) | 107 Bh (270) | 108 Hs (277) | 109 Mt (276) | 110 Ds (281) | 111 Rg (282) | 112 Cn (285) | 113 Nh (285) | 114 Fl (289) | 115 Mc (288) | 116 Lv (293) | 117 Ts (294) | 118 Og (294) |

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|--------------------|--------|--------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| *Lanthanide Series | | | | | | | | | | | | | |
| 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 |
| Ce | Pr | Nd | Pm | Sm | Eu | Gd | Tb | Dy | Ho | Er | Tm | Yb | Lu |
| 140.12 | 140.91 | 144.24 | (145) | 150.4 | 151.97 | 157.25 | 158.93 | 162.50 | 164.93 | 167.26 | 168.93 | 173.05 | 174.97 |
| †Actinide Series | | | | | | | | | | | | | |
| 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 |
| Th | Pa | U | Np | Pu | Am | Cm | Bk | Cf | Es | Fm | Md | No | Lr |
| 232.04 | 231.04 | 238.03 | (237) | (244) | (243) | (247) | (247) | (251) | (252) | (257) | (258) | (259) | (262) |

| SOLUBLE IONIC COMPOUNDS | INSOLUBLE IONIC COMPOUNDS |
|---|---|
| 1. Group 1A ions (Li ⁺ , Na ⁺ , K ⁺ , etc.) and ammonium ion (NH ₄ ⁺) are soluble. | 1. (Hydroxides) OH ⁻ and (Sulfides) S ²⁻ are insoluble except when with Group 1A ions (Li ⁺ , Na ⁺ , K ⁺ , etc.), ammonium ion (NH ₄ ⁺) and Ca ²⁺ , Sr ²⁺ , Ba ²⁺ . |
| 2. (Nitrates) NO ₃ ⁻ , (acetates) CH ₃ COO ⁻ or C ₂ H ₃ O ₂ ⁻ , and most perchlorates (ClO ₄ ⁻) are soluble. | 2. (Carbonates) CO ₃ ²⁻ and (Phosphates) PO ₄ ³⁻ are insoluble except when with Group 1A ions (Li ⁺ , Na ⁺ , K ⁺ , etc.), ammonium ion (NH ₄ ⁺). |
| 3. Cl ⁻ , Br ⁻ , and I ⁻ are soluble, except when paired with Ag ⁺ , Pb ²⁺ , Cu ⁺ and Hg ₂ ²⁺ . | |
| 4. (Sulfates) SO ₄ ²⁻ are soluble, except those of Ca ²⁺ , Sr ²⁺ , Ba ²⁺ , Ag ⁺ , and Pb ²⁺ . | |

| Strong Acids | Strong Bases |
|--------------------------------|---------------------|
| HCl | LiOH |
| HBr | NaOH |
| HI | KOH |
| HNO ₃ | Ca(OH) ₂ |
| H ₂ SO ₄ | Sr(OH) ₂ |
| HClO ₄ | Ba(OH) ₂ |

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| H 1s | <div>Electron Configuration Table</div> | | | | | | | | | | | | | | | | He 1s | | | | | | |
| Li 2s | Be | | | | | | | | | | | | | | | B 2p | C | N | O | F | Ne | | |
| Na 3s | Mg | | | | | | | | | | | | | | | Al 3p | Si | P | S | Cl | Ar | | |
| K 4s | Ca | Sc | Ti | V | Cr | Mn | Fe | Co | Ni | Cu | Zn | Ga | Ge | As | Se | Br | Kr | | | | | | |
| Rb 5s | Sr | Y | Zr | Nb | Mo | Tc | Ru | Rh | Pd | Ag | Cd | In | Sn | Sb | Te | I | Xe | | | | | | |
| Cs 6s | Ba | La* | Hf | Ta | W | Re | Os | Ir | Pt | Au | Hg | Tl | Pb | Bi | Po | At | Rn | | | | | | |
| Fr 7s | Ra | Ac | Rf | Db | Sg | Bh | Hs | Mt | Ds | Rg | | | | | | | | | | | | | |
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