Electronegativity Trends

New Regents original practice • Name: _____ Date: _____
Show your work for written answers.

Electronegativity compares how strongly atoms attract electrons in a chemical bond. Use supplied numerical values when a calculation is requested.

1 What property is described by a higher electronegativity value?

(1) Greater attraction for shared electrons

(2) Greater mass of a neutron

(3) Greater number of neutrons in every isotope

(4) Greater ability to reflect visible light

2 Sodium and chlorine are in the same period. Use their periodic positions to explain why chlorine generally attracts shared electrons more strongly. [1]

Answer and work

3 Which element is generally more electronegative than bromine because it is above bromine in the same group?

(1) Potassium

(2) Chlorine

(3) Krypton

(4) Iodine

4 Explain how an increase in distance and shielding can affect an atom’s attraction for shared electrons down a group. [1]

Answer and work

Reading a Periodic-Table Excerpt

Use the information below to answer the questions.

The table gives rounded electronegativities for four elements. Use the group and period columns to make comparisons.

Element	Group	Period	Electronegativity
Na	1	3	0.93
Al	13	3	1.61
Cl	17	3	3.16
Br	17	4	2.96

5 Which listed element has the greatest electronegativity?

(1) Na

(2) Al

(3) Cl

(4) Br

6 Calculate the difference between the supplied values for Al and Na. [1]

Answer and work

7 Which comparison uses two elements in the same group?

(1) Na and Al

(2) Na and Cl

(3) Al and Br

(4) Cl and Br

8 A student claims that electronegativity falls as group number increases across Period 3. Use two rows from Period 3 to evaluate the claim. [1]

Answer and work