Unit Review Answers (Student textbook pages 158–161)

Connect to the Big Ideas

1. Presentations will vary. Silicon is a semi-conductor. It is used in electronics because it controls the flow of electrons better than a conductor like copper or an insulator like carbon. Posters and pamphlets should show the properties of silicon that relate to conductivity.

2.

Plus	Minus	Interesting
• use less energy • does not use tungsten metal (which is a limited resource)	• use mercury which is toxic • expensive • look strange in some open lamps • does not come in small sizes for unique	• bulbs are being produced in different sizes

Decisions and blogs will vary but positions should be justified with at least one piece of evidence.

Knowledge and Understanding

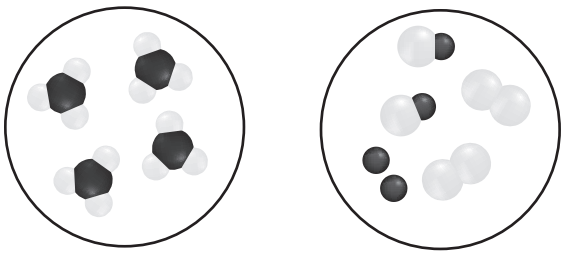
3. **a)** physical
b) physical
c) chemical
d) physical
e) physical
f) physical
g) chemical

4. Reactivity with water.

5. If a substance dissolves in water, it is soluble. The property is solubility.

6. If ice was denser than water, fish would die in the winter. People would not walk or skate on ponds in winter.

7.



Pure substances are made of one type of particle. Mixtures are made of more than one type of particle.

8. Concept maps will vary. An element is made of the same kind of atom. Compounds are two or more atoms joined together. The atoms joined in a compound can be the same element or different elements. A pure substance can be an element or a compound.

9. **a)** element
b) mixture
c) mixture
d) compound
e) compound

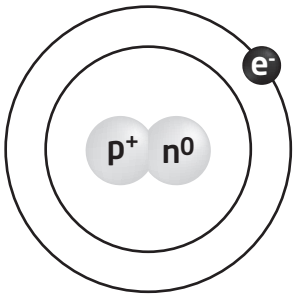
10. Bleach is poisonous so it kills germs. It is a disinfectant. Bleach reacts with molecules that give things their colour, and will destroy them. Bleach is poisonous and will harm you if you swallow it. It will take colour out of things it is spilled on accidentally.

11. Venn diagrams should include these points.

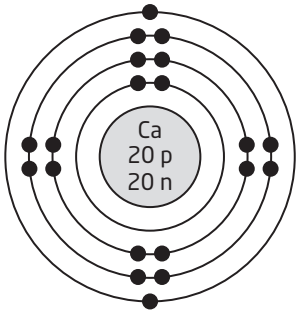
Metals	Similarities	Non-metals
• conductive • some have lustre • some are magnetic • malleable • ductile	• made of atoms • can be solid or liquid	• non-conductive • can be gas • non-magnetic • dull

12. Atomic number tells how many protons are in the nucleus of the atom.

13.



14.



15. Metals are on the left side, non-metals on the right. Metals are more reactive as you go down a group, non-metals are more reactive as you go up a group. Noble gases are not reactive at all. As you go across a period, electrons are added to the atom one at a time. As you go down a group, electron shells are added one at a time.

16. A: group, B: period, C: metals, D: noble gases

17. **a)** C
b) F
c) CO_2
d) H_2O_2
e) K

18.

19. Copper is ductile and a good conductor.

Thinking and Investigation

20. Answers may vary. For example, flour does not dissolve in water. Baking soda does. Baking soda will react with vinegar and flour will not.

21. Test the conductivity. If it conducts electricity, it is a metal.

22. No, they contain different numbers of protons which means they have different atomic numbers.

23. **a)** pure water will contain only the compound water: H_2O.

b) magnesium: Mg, calcium: Ca, sodium: Na

24. Possible answers could be: Light a splint → place in gas → does it pop? (hydrogen test)

Light a splint, blow it out → place in gas → does it relight? (oxygen test)

Light a splint → place in gas → does it go out? (carbon dioxide test)

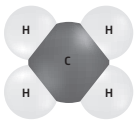
Fill balloon with gas → rinse balloon with limewater → is it cloudy? (carbon dioxide test)

Communication

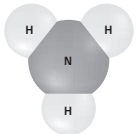
25. Answers will vary. Should not show pictures of energy.

26. **a)** H_20

b) CH_4



c) NH_3



27. Atoms and molecules are small peices of matter called particles. Molecules are made of atoms stuck together. Imagine that you have some lego, each peice of lego would be like an atom. The object you build with your lego is like a molecule.

28. Batteries contain cadmium, lithium, and acid. Cadmium is a heavy metal with toxic properties. Acid is corrosive. Batteries should be collected and then taken to the hazardous waste depot. A poster or PA message should warn of the dangers and explain where to find the collection box.

29. Benefits: kills germs, removes stains. Hazards: poisonous, Employees should wash hands after touching it or wear gloves. Poster should include these facts and include pictures to explain the hazards and the precautions.

Application

30. Paper is smooth and thin so it can be written on and does not take up much space. Facial tissue is soft and absorbent. Cardboard is stiff. Chemical property: they all burn.

31. The letter should show understanding that a pure substance is made of only one type of particle and that labelling something as pure water means that it only contains water. The company claims it is pure but it is really a mixture containing magnesium, calcium, sodium, and water.

32. **a)** Ca, calcium

b) C, carbon

c) Ne, neon

33.

Property	Use
• photosensitive when combined with nitrate • toxic • shiny • conductive • malleable • low melting temperature	• photography • antiseptic • mirrors • high end electronics, silver cadmium batteries • coins • jewellry • dental fillings

34. Calcium is in the third row of the periodic table. This tells me that it has three energy levels.

35. wear goggles, wear gloves, poison

36. The subscript of 2 tells me that nitrogen gas is made of two atoms of nitrogen connected as a molecule.

37. Na_3PO_4 tells me that the molecule contains 3 atoms of nitrogen, 1 atom of phosphorus, and 4 atoms of oxygen.

Literacy Test Prep

Multiple Choice

34 b)

35 d)

36 d)

37 a)

Written Answer

38 Answers may vary, but should include two properties and their importance. For example, Aluminum is light (has low density). This will make the airplane lighter so it can get off the ground easier and use less fuel. Aluminum does not corrode easily which means that the airplane will not rust quickly.