

**EVERYTHING COMES
FROM SOMEWHERE.
IF IT DIDN'T GROW,
IT WAS MINED!**

VIRTUAL YUKON MINING WEEK

MAY 4TH - MAY 8TH

PRESENTED
IN PARTNERSHIP



Activity 5: Elemental Deduction
Activity 6: Mining for Energy
Activity 7: Mining Makes It Possible
Activity 8: Periodic Table Spelling Bee

**CONTEST OPEN TO
GRADES 4-6**

**GRAND PRIZE ENTRIES
OPEN TO ALL**

SUBMISSION:

ON SOCIAL MEDIA - FACEBOOK:

@YukonWomenInMining –
Virtual Yukon Mining Week Event Page
#VYMW2020

BY E-MAIL: submissions@yukonwim.ca

INCLUDE SUBJECT LINE:

Activity Name, Your Name, Your Grade

i.e.: Activity 1: Elemental Deduction, Annabelle Smith, Grade 6

HOW TO PLAY!

- 1 Complete an Activity and Answer the Questions
- 2 Submit Your Activity to Enter into the Grades 4-6 draw by Friday, May 8th at 5PM
- 3 Not in Grades 4-6? No problem! Complete the Activities and be entered into the Grand Prize!
The more activities you complete, the greater your chances of winning!
- 4 Winners will be posted on FACEBOOK:
@YukonWomenInMining – Virtual Yukon Mining Week Event Page and contacted from May 11th – 15th

INCREASE YOUR CHANCES OF WINNING

Complete more activities!
Every completed activity is another time
your name will be in the draw.

GRADE GROUPS:

**K-3 4-6
7-9 10-12**



THE PERIODIC TABLE OF ELEMENTS

H 1 Hydrogen	He 2 Helium
Li 3 Lithium	Be 4 Beryllium
Na 11 Sodium	Mg 12 Magnesium
K 19 Potassium	Ca 20 Calcium
Rb 37 Rubidium	Sr 38 Strontium
Cs 55 Caesium	Ba 56 Barium
Fr 87 Francium	Ra 88 Radium
	Sc 21 Scandium
	Ti 22 Titanium
	V 23 Vanadium
	Cr 24 Chromium
	Mn 25 Manganese
	Fe 26 Iron
	Co 27 Cobalt
	Ni 28 Nickel
	Cu 29 Copper
	Zn 30 Zinc
	Al 13 Aluminium
	Si 14 Silicon
	P 15 Phosphorus
	S 16 Sulfur
	Cl 17 Chlorine
	Ar 18 Iron
	Kr 36 Krypton
	Xe 54 Xenon
	Rn 86 Radon
	Lu 71 Lutetium
	Hf 72 Hafnium
	Ta 73 Tantalum
	W 74 Tungsten
	Re 75 Rhenium
	Os 76 Osmium
	Ir 77 Iridium
	Pt 78 Platinum
	Au 79 Gold
	Hg 80 Mercury
	Tl 81 Thallium
	Pb 82 Lead
	Bi 83 Bismuth
	Po 84 Polonium
	At 85 Astatine
	Rn 86 Radon
	Y 39 Yttrium
	Zr 40 Zirconium
	Nb 41 Niobium
	Mo 42 Molybdenum
	Tc 43 Technetium
	Rh 44 Rhodium
	Ru 45 Rhodium
	Pd 46 Palladium
	Ag 47 Silver
	Cd 48 Cadmium
	In 49 Indium
	Sn 50 Tin
	Sb 51 Antimony
	Te 52 Tellurium
	I 53 Iodine
	Xe 54 Xenon
	Rf 104 Rutherfordium
	Db 105 Dubnium
	Sg 106 Seaborgium
	Hs 107 Bohrium
	Bh 108 Hassium
	Mt 109 Meitnerium
	Ds 110 Darmstadtium
	Rg 111 Roentgenium
	Cn 112 Copernicium
	Uut 113 Ununtrium
	Fler 114 Flerovium
	Uup 115 Ununpentium
	Lv 116 Livermorium
	Uus 117 Ununseptium
	Uuo 118 Ununoctium
	La 57 Lanthanum
	Ce 58 Cerium
	Pr 59 Praseodymium
	Nd 60 Neodymium
	Pm 61 Promethium
	Sm 62 Samarium
	Eu 63 Europium
	Gd 64 Gadolinium
	Tb 65 Terbium
	Dy 66 Dysprosium
	Ho 67 Holmium
	Er 68 Erbium
	Tm 69 Thulium
	Yb 70 Ytterbium
	Ac 89 Actinium
	Th 90 Thorium
	Pa 91 Protactinium
	U 92 Uranium
	Np 93 Neptunium
	Pu 94 Plutonium
	Am 95 Americium
	Cm 96 Curium
	Bk 97 Berkelium
	Cf 98 Californium
	Es 99 Einsteinium
	Fm 100 Fermium
	Md 101 Mendelevium
	No 102 Nobelium

Chemical symbol — **H** — Atomic number

Name — Hydrogen

1

La 57 Lanthanum	Ce 58 Cerium	Pr 59 Praseodymium	Nd 60 Neodymium	Pm 61 Promethium	Sm 62 Samarium	Eu 63 Europium	Gd 64 Gadolinium	Tb 65 Terbium	Dy 66 Dysprosium	Ho 67 Holmium	Er 68 Erbium	Tm 69 Thulium	Yb 70 Ytterbium
Ac 89 Actinium	Th 90 Thorium	Pa 91 Protactinium	U 92 Uranium	Np 93 Neptunium	Pu 94 Plutonium	Am 95 Americium	Cm 96 Curium	Bk 97 Berkelium	Cf 98 Californium	Es 99 Einsteinium	Fm 100 Fermium	Md 101 Mendelevium	No 102 Nobelium

Before you go online, please check with your parents or guardians.
 To learn more about Internet safety, please visit: <http://www.justice.gov.yk.ca/2404.html>



ACTIVITY 5: ELEMENTAL DEDUCTION



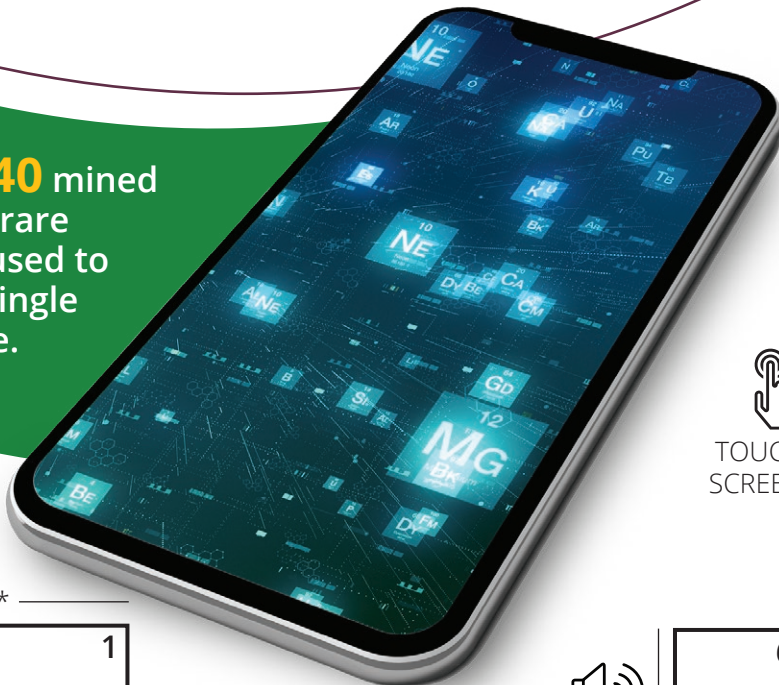
WHAT DO I DO?

Can you find the element symbol to match the product made by mining? Colour in as many elements as you can and submit to win!

WHAT DO I NEED?

The Periodic Table
Online Research

More than **40** mined metals and rare earths are used to produce a single smartphone.



EARBUDS*
PHONE CASES* _____

6	1
Carbon	Hydrogen



BATTERY _____

13	3	27
Aluminium	Lithium	Cobalt

14	50	19
Silicon	Tin	Potassium

49	13	31
Indium	Aluminium	Gallium



TOUCH SCREEN



SOUND

60	5	28	59
Neodymium	Boron	Nickel	Praseodymium



ELECTRONICS

79	29	47	73	74
Gold	Copper	Silver	Tantalum	Tungsten

MINING IS ESSENTIAL FOR INNOVATIVE TECHNOLOGY

Canada's mining industry is providing the responsibly-sourced minerals and metals that power the technologies of today and of the future.

*Oil for these products can also be from non-mined sources.

Resource Credit: Mining Association of Canada | Developed by: Yukon Women in Mining

QUESTION 1:

What is the Periodic Table?

QUESTION 2:

List items in your house that have metals in them that were mined – How many can you find?

1	6
2	7
3	8
4	9
5	10

DON'T FORGET TO SUBMIT BY FRIDAY, MAY 8TH AT 5PM!

**SUBMISSION
PROCESS**

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GR. 4-6
1

ACTIVITY 5: ELEMENTAL DEDUCTION



STANLEY CUP

47	28
Silver	Nickel



ZAMBONI

26	13
Iron	Aluminium



HOCKEY SKATES

24	26
Chromium	Iron
6	
Carbon	



Resource Credit: Mining Association of Canada
Developed by: Yukon Women in Mining

Mining is **responsible** for the most highly coveted hockey trophy in the world.

STANLEY CUP

Named after the former Governor General of Canada, Lord Stanley of Preston was first awarded to the Montreal Hockey Club in 1893. The original Cup was made of silver, while the current Cup is made of a silver and nickel alloy.

QUESTION 3:

Which of the following is an element?
(Circle the correct answer)

- A) WATER B) HEAT C) VOLUME D) GOLD

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GR. 4-6
2

ACTIVITY 5: ELEMENTAL DEDUCTION



SHUTTLE BODY

13	22
Aluminium	Titanium



THERMAL PROTECTION

14	6
Silicon	Carbon

74	73
Tungsten	Tantalum



FUEL

6	1
Carbon	Hydrogen



ROCKET ENGINES

29	41
Copper	Niobium



OPTICS

58
Cerium



CONTROL SYSTEM

14	32
Silicon	Germanium



ASTRONAUT VISORS
RADIATION REFLECTOR

79
Gold

ENERGY SOURCE

92
Uranium



GOLDEN RECORDS OF LIFE ON EARTH

NASA launched the Voyager Golden Records – two gold-plated copper phonograph records containing sounds and image from Earth – into space in 1977. Intended for future spacefarers or intelligent lifeforms, the records contain greetings in 55 languages and sounds ranging from rain and thunder to birds, frogs, laughter and children.

The International Space Station orbits Earth **every 92 minutes**. That's 15-16 sunrises and sunsets a day.

Resource Credit: Mining Association of Canada
Developed by: Yukon Women in Mining

QUESTION 4:

Which Yukon company is currently mining for copper?

(Circle the correct answer)



HINT: Search activity above for a clue.

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GR. 4-6
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ACTIVITY 6: MINING FOR ENERGY



Your home is “on the grid” – connected to electrical power from Yukon’s Hydro Dams. You are interested in supplementary energy using one of two renewable energy options made from mining materials. Choose from one of the two power options and fill in the blanks with the element name and symbol, use spare paper if you need more room.

WHAT DO I NEED?

The Periodic Table
Online Research

More than **220 tonnes** of coal is required to build a wind turbine

BATTERY ENERGY STORAGE

3	28	25
27	6	23

STEEL USED TO BUILD TURBINES

26	6
----	---

BLADES

13

CONTROLS

29	14
----	----

MAGNET GENERATION

26	60
5	66

CORROSION PROTECTION

42
30

WHEN WE EXPLORE FOR MINERALS AND METALS WE ARE FINDING RENEWABLE SOURCES OF ENERGY TOO:

In northern Quebec, Glencore’s Raglan Mine is replacing diesel fuel with wind power. The wind turbine and energy storage facility – the first in Canada – has helped reduce the mine’s greenhouse gas emissions and has the potential to transform the Arctic’s energy landscape.

Developed by: Yukon Women in Mining

Resource Credit: Mining Association of Canada

QUESTION 1:

What year was the periodic table first developed and by who?

QUESTION 2:

Name a Yukon company mining company that is exploring for copper?

HINT: The company name is on Activity 7 Resource Tool

QUESTION 3:

What metals are required for battery energy storage for wind farms?

(Circle the correct answer)

- A) Copper, Silicon, Cobalt, Boron
- B) Molybdenum, Zinc, Iron, Aluminum
- C) Carbon, Zinc, Dysprosium, Iron
- D) Nickel, Lithium, Magnesium, Cobalt

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GR. 4-6
4

ACTIVITY 6: MINING FOR ENERGY



CHOICE 2: SOLAR PANELS

 SOLAR PANELS

48	52	42
4	32	31
49	47	14

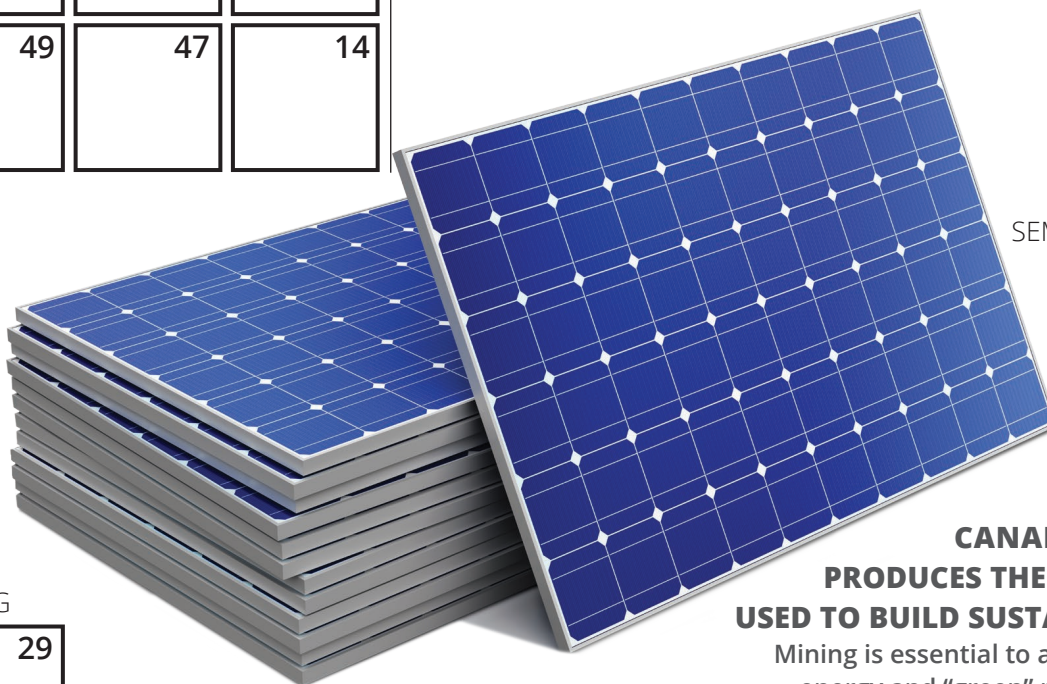
14 of the 19 minerals and metals used in solar Photovoltaics (PV) panels come from **Canadian mines**

 FRAME

13	22
30	12

 SEMI-CONDUCTOR

5
15



 WIRING

29

CANADA'S MINING INDUSTRY PRODUCES THE MINERALS AND METALS USED TO BUILD SUSTAINABLE TECHNOLOGIES

Mining is essential to a low-carbon future with clean energy and "green" products requiring metals and minerals as building blocks.

Resource Credit: Mining Association of Canada | Developed by: Yukon Women in Mining

QUESTION 4:

Which side (left or right) of the periodic table are the metals?

- A) Left B) Right

QUESTION 5:

Can you name a solar company in Yukon?

QUESTION 6:

How many of the 19 minerals and metals used in solar PV panels come from Canadian mines?

(Circle the correct answer)

- A) 11 B) 16
C) 14 D) 19

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GR. 4-6
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ACTIVITY 7: MINING MAKES IT POSSIBLE



WHAT DO I NEED?

The Periodic Table & Online Research

Explore in your house or yard to find a product made from mining elements, minerals and metals that makes your life possible. Create your own guide!

BUT... THERE IS 1 RULE!

You must do your own research! Examples from Activity One and Two cannot be used, nor any of the samples found in Mining Association of Canada's 30 Things.

COMPLETE THE TEMPLATE, OR DRAW YOUR OWN:

- How To:**
- 1) Pick a Product
 - 2) Fill in the template or create your own
 - 3) Minimum Number of Elements: 10
 - 4) Name a Yukon mining or supply/service company connected to your product
 - 5) Have fun!

BELOW IS A COMPLETED SAMPLE

Yukon Company:
WESTERN COPPER AND GOLD

MONITOR MONITOR MONITOR HOSPITAL BED HOSPITAL BED

Cu²⁹ **Au**⁷⁹ **Al**¹³ **C**⁶ **Fe**²⁶

Copper Gold Aluminium Titanium Iron

Zr⁴⁰ **Fe**²⁶ **Cr**²⁴

Zirconium Iron Chromium

Ti²² **Si**¹⁴

Titanium Silicon

Cu²⁹ **Mn**²⁸

Copper Manganese

Pb⁸² **Fe**²⁶

Lead Iron

HOSPITALS

MINING'S ROLE IN PREVENTING INFECTIOUS DISEASE

Hospitals have a potent new tool in their mission to improve patient health and safety. It also happens to be one of the oldest metals known to man - copper. Increasingly, health facilities are using Antimicrobial Copper to prevent Hospital Acquired Infections, as not only does it continuously kill 99.9% of infectious bacteria, but it also has the potential to significantly reduce the costs of infection control.

Resource Credit: Mining Association of Canada | Developed by: Yukon Women in Mining

COVID-19 MESSAGE:

If you are exploring beyond your home:

- Ask a parent or guardian for permission and assistance.
- Practice physical / social distancing: explore in your house or yard
- Avoid touching your face when you are out exploring
- Sneeze or cough into your sleeve
- Wash your hands when you get home with soap and water for 20 seconds

RESOURCE
TOOL

PLEASE USE THIS GUIDE SAMPLE TO COMPLETE ACTIVITY 7

ACTIVITY 7: MINING MAKES IT POSSIBLE



Yukon Company | _____

PRODUCT:

SLOGAN:

↑
Paragraph connecting the product with mining

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GR. 4-6
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ACTIVITY 8: PERIODIC TABLE SPELLING BEE



Elements are the basic building blocks of everything around us. They can be found either in their pure form or chemically combined with other elements to make compounds.

Minerals are elements or compounds that occur naturally in the Earth's crust. Rocks are mixtures formed of minerals.

How many words can you spell from the 114 elements symbols? Challenge yourself to make three-letter, four-letter, five-letter and even six-letter words.

Resource Credit: Mining Matters

H ¹ Hydrogen																	He ² Helium						
Li ³ Lithium	Be ⁴ Beryllium																	B ⁵ Boron	C ⁶ Carbon	N ⁷ Nitrogen	O ⁸ Oxygen	F ⁹ Fluorine	Ne ¹⁰ Neon
Na ¹¹ Sodium	Mg ¹² Magnesium																	Al ¹³ Aluminium	Si ¹⁴ Silicon	P ¹⁵ Phosphorus	S ¹⁶ Sulfur	Cl ¹⁷ Chlorine	Ar ¹⁸ Argon
K ¹⁹ Potassium	Ca ²⁰ Calcium	Sc ²¹ Scandium	Ti ²² Titanium	V ²³ Vanadium	Cr ²⁴ Chromium	Mn ²⁵ Manganese	Fe ²⁶ Iron	Co ²⁷ Cobalt	Ni ²⁸ Nickel	Cu ²⁹ Copper	Zn ³⁰ Zinc	Ga ³¹ Gallium	Ge ³² Germanium	As ³³ Arsenic	Se ³⁴ Selenium	Br ³⁵ Bromine	Kr ³⁶ Krypton						
Rb ³⁷ Rubidium	Sr ³⁸ Strontium	Y ³⁹ Yttrium	Zr ⁴⁰ Zirconium	Nb ⁴¹ Niobium	Mo ⁴² Molybdenum	Tc ⁴³ Technetium	Rh ⁴⁴ Ruthenium	Ru ⁴⁵ Rhodium	Pd ⁴⁶ Palladium	Ag ⁴⁷ Silver	Cd ⁴⁸ Cadmium	In ⁴⁹ Indium	Sn ⁵⁰ Tin	Sb ⁵¹ Antimony	Te ⁵² Tellurium	I ⁵³ Iodine	Xe ⁵⁴ Xenon						
Cs ⁵⁵ Caesium	Ba ⁵⁶ Barium	Lu ⁷¹ Lutetium	Hf ⁷² Hafnium	Ta ⁷³ Tantalum	W ⁷⁴ Tungsten	Re ⁷⁵ Rhenium	Os ⁷⁶ Osmium	Ir ⁷⁷ Iridium	Pt ⁷⁸ Platinum	Au ⁷⁹ Gold	Hg ⁸⁰ Mercury	Tl ⁸¹ Thallium	Pb ⁸² Lead	Bi ⁸³ Bismuth	Po ⁸⁴ Polonium	At ⁸⁵ Astatine	Rn ⁸⁶ Radon						
Fr ⁸⁷ Francium	Ra ⁸⁸ Radium	Lr ¹⁰³ Lawrencium	Rf ¹⁰⁴ Rutherfordium	Db ¹⁰⁵ Dubnium	Sg ¹⁰⁶ Seaborgium	Hs ¹⁰⁷ Bohrium	Bh ¹⁰⁸ Hassium	Mt ¹⁰⁹ Meitnerium	Ds ¹¹⁰ Darmstadtium	Rg ¹¹¹ Roentgenium	Cn ¹¹² Copernicium	Uut ¹¹³ Ununtrium	Fl ¹¹⁴ Flerovium	Uup ¹¹⁵ Ununpentium	Lv ¹¹⁶ Livermorium	Uus ¹¹⁷ Ununseptium	Uuo ¹¹⁸ Ununoctium						
La ⁵⁷ Lanthanum	Ce ⁵⁸ Cerium	Pr ⁵⁹ Praseodymium	Nd ⁶⁰ Neodymium	Pm ⁶¹ Promethium	Sm ⁶² Samarium	Eu ⁶³ Europium	Gd ⁶⁴ Gadolinium	Tb ⁶⁵ Terbium	Dy ⁶⁶ Dysprosium	Ho ⁶⁷ Holmium	Er ⁶⁸ Erbium	Tm ⁶⁹ Thulium	Yb ⁷⁰ Ytterbium										
Ac ⁸⁹ Actinium	Th ⁹⁰ Thorium	Pa ⁹¹ Protactinium	U ⁹² Uranium	Np ⁹³ Neptunium	Pu ⁹⁴ Plutonium	Am ⁹⁵ Americium	Cm ⁹⁶ Curium	Bk ⁹⁷ Berkelium	Cf ⁹⁸ Californium	Es ⁹⁹ Einsteinium	Fm ¹⁰⁰ Fermium	Md ¹⁰¹ Mendelevium	No ¹⁰² Nobelium										

THREE LETTERS

C At

FOUR LETTERS

K I Te

FIVE LETTERS

S Po O N

SIX LETTERS

Cl O U Dy

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GR. 4-6
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ACTIVITY NAME:

YOUR NAME:

YOUR GRADE:



EXTRA PAGE - PRINT AS NEEDED

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