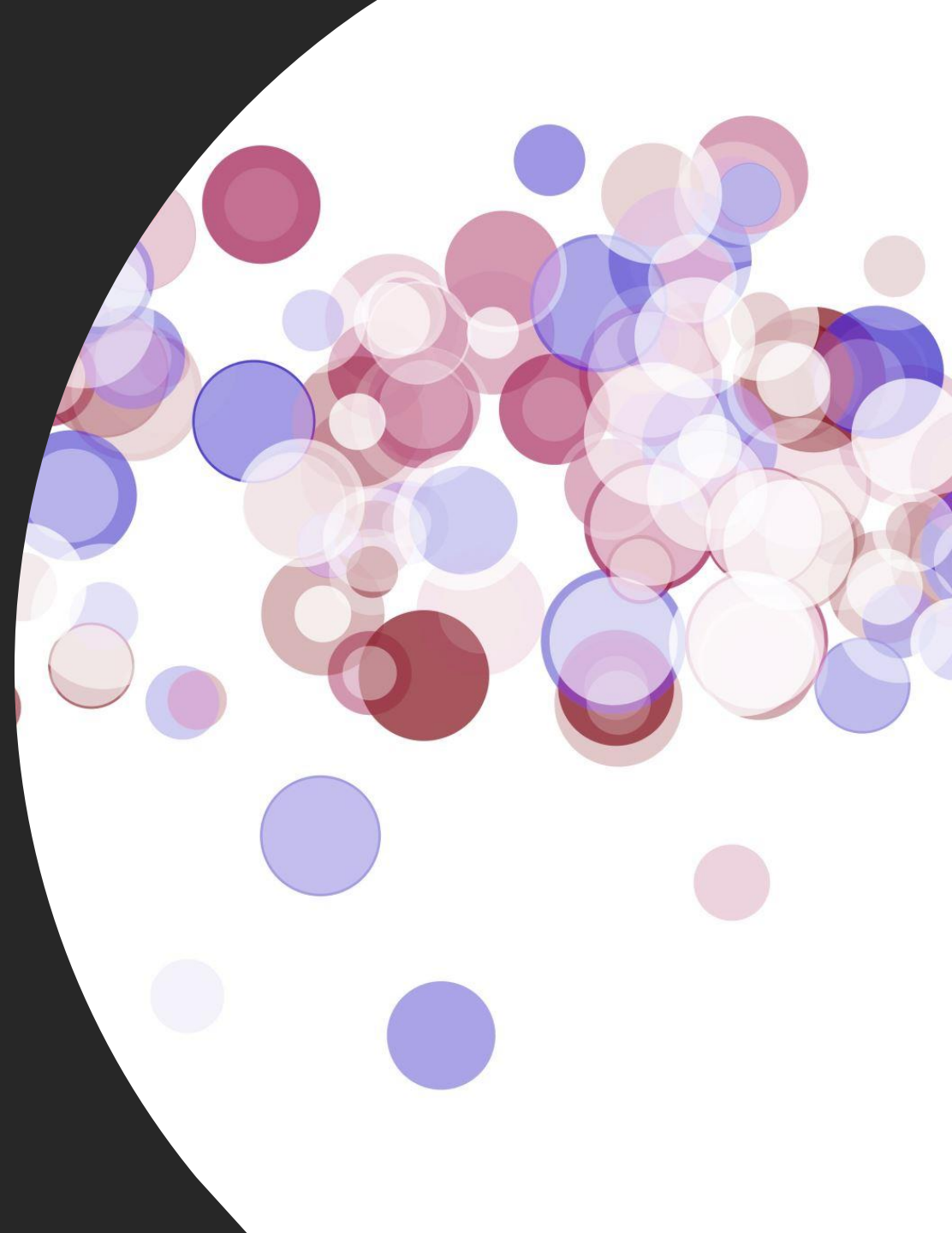


The Junior Mining Game

Using Excel VBA



The Premise

You have been made CEO of a junior mining company. You will develop your mine to seek out gold ore zones to generate revenue and you will incur costs as you do this. **The goal is to increase the share price for investors.** Watch out for dangers.

- Mining Cost:** There is a mining cost to advance the mine both vertically and horizontally.
- Processing Cost:** If you find an ore zone, then you will also incur a processing cost.
- Flooding Cost:** If you find a CAVERN, the mine will flood and must be pumped out, at a cost.
- Rehab Cost:** If you find a FAULT zone, parts of the mine will collapse, which need to be repaired, at a cost.

You will also generate revenue as you mine.

- VEIN:** is a lower gold grade block that will add ounces to your Gold Inventory
- LODE:** is a high-grade block that will add ounces to your Gold Inventory

The money in the BANK will be used to fund mine development and pay rehab or pumping costs. The Bank account can be increased in three ways:

- SELL GOLD:** This liquidates the Gold Inventory at whatever the varying gold price is.
- EQUITY:** Raise money by issuing shares at the current share price.
- DEBT:** Borrow money from lenders and pay a prescribed interest rate and payment each move.

Parameter Input Worksheet

Junior Mining Game Data Inputs

Geology Inputs

GridH	Deposit Width (blks)	70	Number of blocks =	1,750
GridV	Deposit Depth (blks)	25		
Veins	Gold Veins (% of area)	12.0%	Number of blocks =	210
Lodes	Gold Lodes (% of area)	6.0%	Number of blocks =	105
Faults	Faults (% of area)	1.0%	Number of blocks =	17
Caverns	Caverns (% of area)	1.2%	Number of blocks =	21

Change the geological model size and the frequency of veins, lodes, faults, caverns.

Cost Inputs

				Unit Cost	Tonnes	Total Unit
MCV	Mining Cost - Vertical	\$ 260,000	per block	\$100.00	2,600	\$ 260,000
MCH	Mining Cost - Horizontal	\$ 160,000	per block	\$60.00	2,600	\$ 156,000
PG&A	Processing & G&A	\$ 70,000	per block	\$25.00	2,600	\$ 65,000
PumpC	Pumping Cost	\$ 10,000	per block	\$10.00	1,000	\$ 10,000
RehabC	Rehab Cost	\$ 130,000	per block	\$50.00	2,600	\$ 130,000
ExpIC	Exploration Cost	\$ 20,000	per block	\$4,000	10	\$ 20,000

Change the cost inputs used in the game. These are per block (10x10x10m).

Revenue Inputs

AuMax	Gold Price - Max	\$ 2,000	per oz				
AuMin	Gold Price - Min	\$ 1,500	per oz				
	Gold Price Warning	\$ 1,900					
R-Vein	Revenue - Vein	calc	per block	6.0	8.0	2.0	90%
R-Lode	Revenue - Lode	calc	per block	12.0	17.0	5.0	
Shares	Shares - initial	10,000,000					
Bank	Bank - initial	\$ 20,000,000					
Warning	Bank - warning/auto sell	\$ 1,000,000					
IntRate	Interest Rate	10.0%					
Shaft	New Shaft Cost	\$ 2,000,000					

Ore grades are random

Change the revenue factors, grades, recovery, and initial balances used in the game.

The Game Worksheet

The image shows a game worksheet interface with a grid layout. The top section contains various data fields and buttons, while the bottom section displays a mine map.

Data Fields (Rows 1-4):

Bank (\$M)	Gold Oz	Gold Price	EV (\$M)	Shares (M)	Share Pr	RESET MODEL	START GAME	Loan Pay	Path (R,C)	Move Count	SELL GOLD	NEW SHAFT	EXPLORE	EQUITY FINANCE	DEBT FINANCE	REVEAL ALL
\$8.928	3,204	\$1,728	\$14.465	10.000	\$1.45				1	99						
—	Excavated	Veins	Lodes	Caverns	Faults			Loan (\$M)	Max R, C	Loc (R,C)						
	99	200	100	20	16				32 70	18 50						

Mine Map (Rows 5-32):

The mine map is a grid of 28 rows and 70 columns. It features a central shaft (a vertical column of white blocks) and various mine openings and blocks (white blocks) scattered throughout. Labels with red arrows point to specific features:

- Mine Openings:** Points to the top-left and top-right corners of the mine.
- Vein blocks:** Points to a block in the upper-left quadrant.
- Lode blocks:** Points to a block in the upper-middle quadrant.
- Cavern blocks:** Points to a block in the upper-middle quadrant.
- Faults blocks:** Points to a block in the upper-middle quadrant.
- Shaft:** Points to the top of the central vertical shaft.
- Mine Openings:** Points to a block in the lower-right quadrant.

Buttons and Actions:

- RESET Geology:** A red button labeled "RESET MODEL".
- START Game:** A green button labeled "START GAME".
- SELL Gold:** A blue button labeled "SELL GOLD".
- NEW Shaft:** A blue button labeled "NEW SHAFT".
- EXPLORE geology:** A blue button labeled "EXPLORE".
- EQUITY Finance:** A blue button labeled "EQUITY FINANCE".
- DEBT Finance:** A blue button labeled "DEBT FINANCE".
- REVEAL Geology Toggle:** A red button labeled "REVEAL ALL".

Labels and Arrows:

- Bank Account:** Points to the "Bank (\$M)" field.
- Gold Inventory:** Points to the "Gold Oz" field.
- Gold Price:** Points to the "Gold Price" field.
- Enterprise Value:** Points to the "EV (\$M)" field.
- Shares Out:** Points to the "Shares (M)" field.
- Share Price:** Points to the "Share Pr" field.
- RESET Geology:** Points to the "RESET MODEL" button.
- START Game:** Points to the "START GAME" button.
- Loan status:** Points to the "Loan Pay" field.
- Move counters:** Points to the "Path (R,C)" and "Move Count" fields.
- SELL Gold:** Points to the "SELL GOLD" button.
- NEW Shaft:** Points to the "NEW SHAFT" button.
- EXPLORE geology:** Points to the "EXPLORE" button.
- EQUITY Finance:** Points to the "EQUITY FINANCE" button.
- DEBT Finance:** Points to the "DEBT FINANCE" button.
- REVEAL Geology Toggle:** Points to the "REVEAL ALL" button.

How to play

1. Hit RESET MODEL button to reset the Geology and counters and trackers. It may take 10 seconds or more to randomly populate the blocks.
2. Hit START GAME button to begin moving around and mining blocks.
3. Use only the arrow keys, move in any direction (← ↑ → ↓).
4. To undertake an Action, use the mouse to hit the specific action button.
5. To quit the game, press the ESC key
6. If a message box pops up, use mouse to hit OK or just press "ENTER" key

Note: Faults and Caverns are still hidden

Mine Actions

Flooding

Bank (\$M)	Gold Oz	Gold Price	EV (\$M)	Shares (M)	Share Pr	RESET MODEL	START GAME	Loan Pay	Path (R,C)	Move Count	SELL GOLD	NEW SHAFT	EXPLORE	EQUITY FINANCE	DEBT FINANCE	REVEAL ALL
\$5.830	3,251	\$1,891	\$11.977	10,000	\$1.20			Loan (\$M)	1	73						
—	Excavated	Veins	Lodes	Caverns	Faults			Loan (\$M)	Max R, C	Loc (R, C)						
	1	206	104	19	17				32 70	26 54						

Roof Collapses

Bank (\$M)	Gold Oz	Gold Price	EV (\$M)	Shares (M)	Share Pr	RESET MODEL	START GAME	Loan Pay	Path (R,C)	Move Count	SELL GOLD	NEW SHAFT	EXPLORE	EQUITY FINANCE	DEBT FINANCE	REVEAL ALL
\$3.230	3,251	\$1,530	\$8.204	10,000	\$0.82			Loan (\$M)	1	83						
—	Excavated	Veins	Lodes	Caverns	Faults			Loan (\$M)	Max R, C	Loc (R, C)						
	1	206	104	19	16				32 70	31 59						

New Shaft (\$2 million)

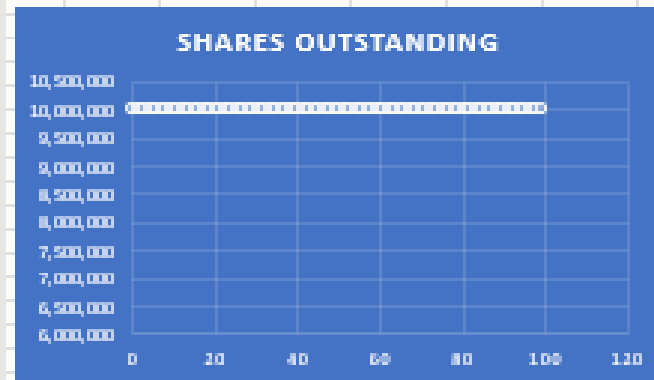
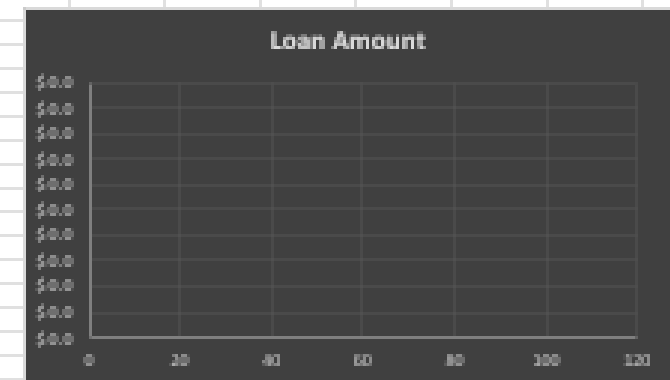
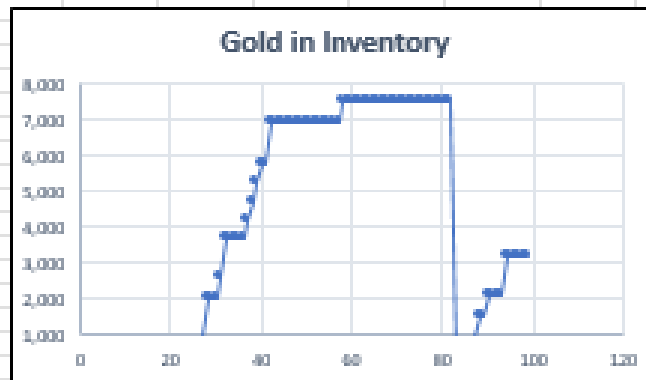
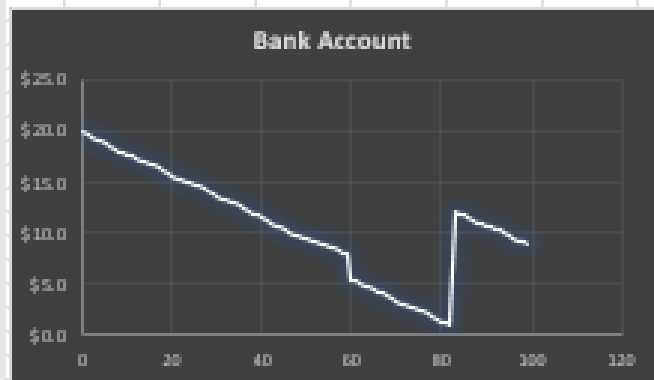
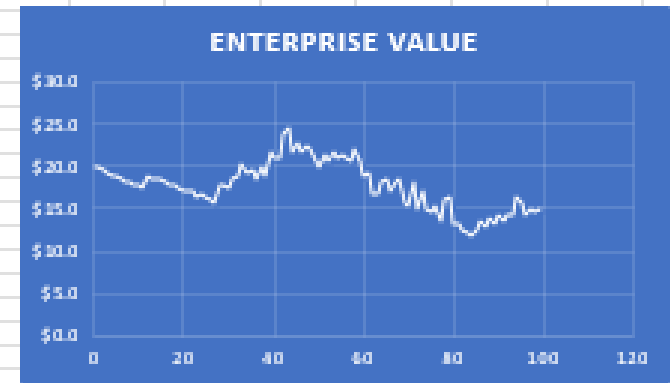
Bank (\$M)	Gold Oz	Gold Price	EV (\$M)	Shares (M)	Share Pr	RESET MODEL	START GAME	Loan Pay	Path (R,C)	Move Count	SELL GOLD	NEW SHAFT	EXPLORE	EQUITY FINANCE	DEBT FINANCE	REVEAL ALL
\$6.910	4,178	\$1,795	\$14.409	10,000	\$1.44			Loan (\$M)	-1	52						
—	Excavated	Veins	Lodes	Caverns	Faults			Loan (\$M)	Max R, C	Loc (R, C)						
	18	206	103	21	16				32 70	17 13						

Explore

Bank (\$M)	Gold Oz	Gold Price	EV (\$M)	Shares (M)	Share Pr	RESET MODEL	START GAME	Loan Pay	Path (R,C)	Move Count	SELL GOLD	NEW SHAFT	EXPLORE	EQUITY FINANCE	DEBT FINANCE	REVEAL ALL
\$14.540	3,107	\$1,739	\$19.943	10,000	\$1.99			Loan (\$M)	1	26						
—	Excavated	Veins	Lodes	Caverns	Faults			Loan (\$M)	Max R, C	Loc (R, C)						
	26	208	103	21	17				32 70	19 38						

Note: Faults and Caverns are still hidden

The Tracker Worksheet

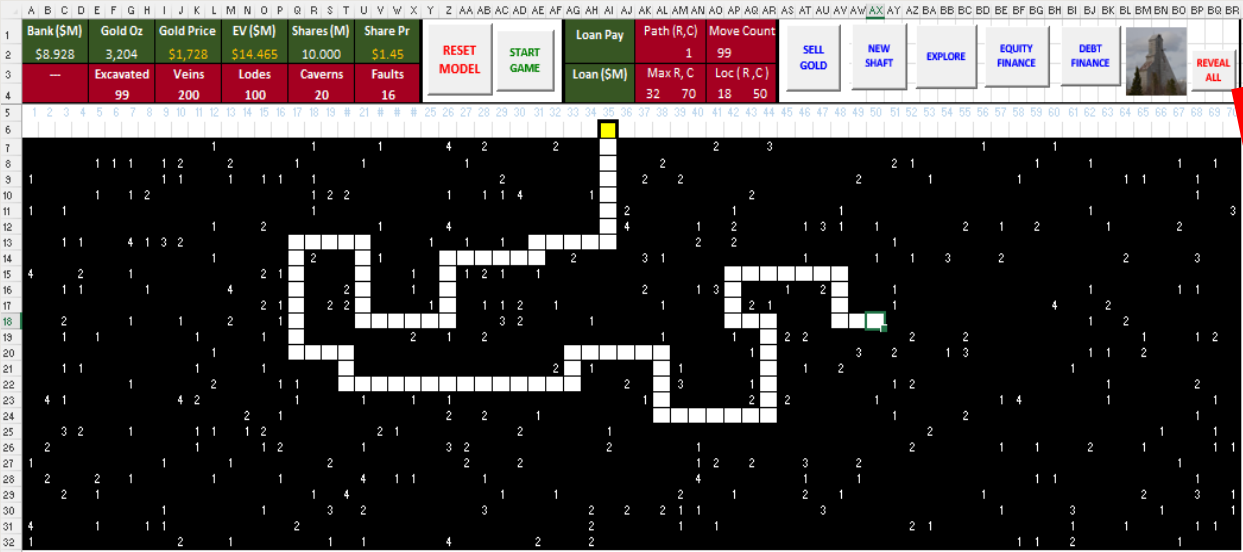
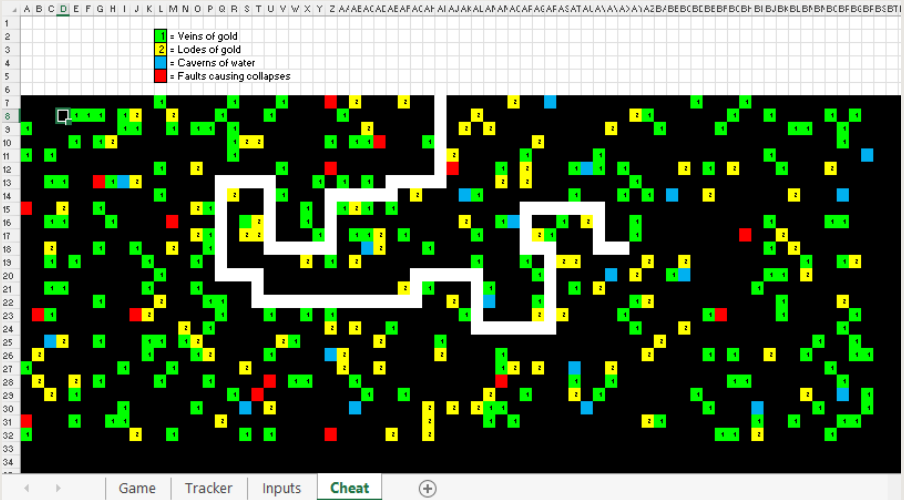
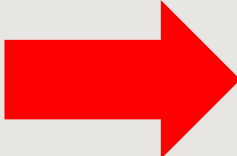


The horizontal axis is the number of moves made.



Cheating: it's easy to get hints

Use the Cheat worksheet to see the color-coded geology.



Use the REVEAL button to toggle the geology codes on and off.

There are plenty of other ways to cheat too.

Strategy Tips

- To start a game, hit button called "RESET MODEL". This takes a few seconds to repopulate all the geology blocks. Then hit the button "START GAME" to begin mining. Hit "ESC" key to quit.
- When the Bank gets dangerously under \$1 M in cash, the entire gold inventory will be sold at the current gold price. **Tip:** Watch the gold price fluctuate and try to sell gold when the price is high.
- If the mine gets too large, floods and collapses can result in high remediation costs. Therefore, create a new shaft (for \$2 million) and start a separate mine. **Tip:** Don't intersect old mine workings or it all becomes one large mine, with a large cost risk.
- You can spend money on exploration to view what is in an area. This cost is based on the size of the exploration area selected. **Tip:** Exploration only highlights the VEINS and LODES. There still may be FAULTS and CAVERNS in that area since there are no guarantees in mining.
- Don't use the cheat options.
- *This game wasn't written by a VBA expert, so there are likely plenty of hidden bugs that may terminate the macros suddenly for no apparent reason. Any notification of bugs or suggested ideas for game improvement would be appreciated.*