Cookie Mining

Time: 10-15 minutes (very easy to shorted/lengthen)

Materials: chocolate chip cookies / paperclips / toothpicks / square paper

Preparation: none

Summary: Demonstrate some of the considerations in choosing and working at a mine site, including materials used and waste management.

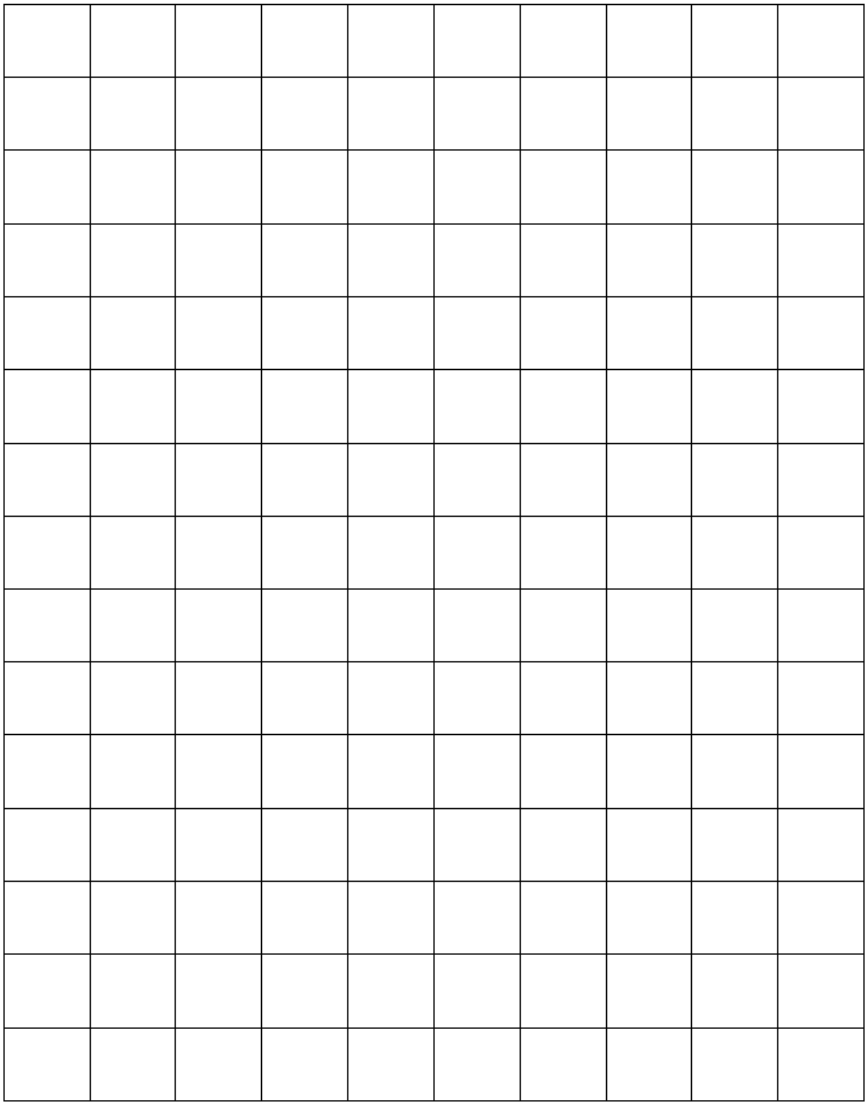
Instructions: *(best carried out in small groups or individually)*

1. Each group has an initial budget of £20 billion
2. A 'mine site' (cookie) costs £6b, tools cost £5b (paperclip) / £3b (toothpick)
3. Decide on number of mine sites and purchase equipment
4. Place the mine sites on the square paper and draw round the outline
5. Start the clock – mining costs are £1b per minute and groups should call time when they think they have exhausted all of the resources from their sites and sufficiently tidied up the surrounding areas
6. Each whole extraction of a chocolate chip earns £3b, the equivalent of a whole in pieces earns £2b
7. Reclamation costs for contaminated land are £1b per square outside the initial mine site area (determined by an independent investigator!)

Attached is an instructions sheet with the information required, along with a template for working out profit (costs can be adjusted as necessary)

Notes:

Some enterprising groups may work out that they can break toothpicks in half and have two tools for the price of one – up to you whether you allow this or not! Switched on groups will also realise that putting the two sites adjacent at the start makes the clean-up easier – this makes an interesting discussion about the value of one large site vs. several smaller sites.



Cookie Mining - Instructions

Initially, you have £20 billion to invest.

Available tools

£3b	**Toothpick**
£5b	**Paperclip**

Mining costs

£6b	**Per mine site (cookie)**
£1b	**Per minute of mining operation**

Profits

£3b	**Per whole chocolate chip**
£2b	**Per whole chocolate chip equivalent in pieces**

Fines

£1b	**Reclamation fee per square (outside the original site)**

You may purchase as many mine sites and tools as you wish to start (up to a total value of £20b). Mark the initial boundary of the mine site/s (draw round the cookie). You cannot use your hands, only the tools purchased. If a tool is broken it can no longer be used. The aim is to extract as many chocolate chips from the cookie as possible, using only the tools you have purchased, and then clean up the mine site so that there are minimal environmental impacts. You will be fined for any waste material that is not within the original mine site when you call time.

Can you make a tasty profit?

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Cookie Mining – Profit Calculation

INITIAL INVESTMENT:					=	£20b **A**
SITES PURCHASED:		sites	x	£6b	=	**B_1**
TOOLS PURCHASED:		toothpick/s	x	£3b	=	**B_2**
		paperclip/s	x	£5b	=	**B_3**
TIME TAKEN:		minutes	x	£1b	=	**B_4**
RECLAMATION FEE:		squares	x	£1b	=	**B_5**
WHOLE:		chips	x	£3b	=	**C_1**
FRAGMENTS:		chips	x	£2b	=	**C_2**

TOTAL COST:	$[B_1 + B_2 + B_3 + B_4 + B_5]$	
TOTAL INCOME:	$[C_1 + C_2]$	

PROFIT:	[A - TOTAL COST + TOTAL INCOME]	

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