

Name _____ Date _____ Time taken _____

What this sheet trains

Divided attention - holding a second rule in mind while your main attention is busy elsewhere. This is the skill behind listening to a teacher while taking notes, or checking your working while solving the next step.

Strategy: anchor and sweep. Give the main task your focus and let the second task run as a quick, automatic check - do not swap your full attention back and forth.

1 Read and tally

Main task: read the passage once. Second task: the counting rule below.

Counting rule

Every time you read the word ammonia, make one tally mark in the box at the foot of the page. Do not go back and re-read. One pass only.

About half the nitrogen in the protein of a living human being was fixed industrially, in a reactor running the process Fritz Haber and Carl Bosch developed before the First World War. Nitrogen gas is abundant and almost inert, and forcing it to combine with hydrogen into ammonia takes an iron catalyst, temperatures above four hundred degrees and pressures of a couple of hundred atmospheres. The hydrogen almost always comes from steam reforming of methane, which releases carbon dioxide, and the whole process consumes close to two per cent of the world's energy. Ammonia is therefore both the foundation of the modern food supply and a large, concentrated source of emissions.

The obvious substitution is to make the hydrogen by electrolysing water with renewable electricity. The chemistry is settled and the engineering is not exotic. The difficulty is that a Haber-Bosch plant is built to run continuously for years, and wind and sunlight do not. Green ammonia projects in Chile, Oman and Western Australia therefore need either storage, a grid connection firm enough to cover the gaps, or a reactor redesigned to tolerate being throttled, and each of those raises the capital cost of a product that has competed on price alone for a century. The buyers are mostly farmers, who cannot pass an ammonia premium on to anyone.

This is why ammonia is now discussed as a fuel and not only as a feedstock, and the enthusiasm deserves careful handling. Shipping ammonia is routine, burning it releases no carbon dioxide, and a cargo carries hydrogen more densely than liquid hydrogen does, which makes ammonia attractive as a way to move renewable energy between continents. But every conversion step loses energy, and a tonne of green ammonia burned in a ship's engine is a tonne not spread on a field. If cheap green hydrogen arrives in limited quantity, the first claim on it belongs to the fertiliser the world already depends upon.

Tally here - one mark per ammonia

Make the marks as you read, then write your total before turning the page.

Total

1 Questions - cover the passage first

Answer from memory. Do not look back at the passage.

My tally total

From page 1

Q1. What is the Haber-Bosch process for, and why does it currently release carbon dioxide?

Q2. Why is intermittent renewable power awkward for an ammonia plant?

Q3. Why might green ammonia stay expensive even if renewable electricity becomes very cheap?

Q4. What priority does the writer argue for, and what does that argument assume?

2 Grid sweep with a running count

Main task: cross out targets. Second task: keep a count in your head.

Rules - read both before you start, then start the timer

Main: cross out every number that is a multiple of 7.

Second: count - silently, no marks - how many numbers end in 4. Write the total in the box only when you have finished the whole grid.

381	997	509	441	541	440	684	632	328	682	228	459
846	324	121	659	926	863	940	456	363	694	534	221
188	500	581	560	210	125	289	895	967	269	830	415
762	111	187	469	856	717	322	615	664	583	581	111
257	754	579	764	917	204	423	410	326	120	712	182
545	443	871	357	829	804	997	873	453	815	933	139
818	689	561	863	705	526	418	846	692	630	520	366
439	126	442	131	844	648	328	946	936	809	242	969

Stop the timer when the grid is finished, not when you write the total.

Numbers ending in 4

Write it once the grid is done

3 Copy and total

Main task: copy each row of digits. Second task: keep a running total.

Rules

Main: copy each four-digit group into the box beside it, in order.

Second: add the two middle digits of every row to a running total as you go.

Write the running total in the box at the end of each row - from memory, not by going back and adding up at the end.

	Copy here	Running total
7 9 2 1		
1 2 7 5		
5 7 3 6		
4 1 6 9		
1 5 2 1		
5 5 3 5		
3 8 1 2		
8 5 9 9		
6 1 9 2		
2 2 5 1		
5 8 6 7		
6 6 3 1		

4 Bridging - answer in a sentence each

Where this shows up outside the sheet.

Q1. Which task went first, and can you say what the other one cost you while you held on to it?

Q2. When you sit two papers in one day, how does the second one feel different, and what do you change?

Q3. Do you check your notes against the textbook, or trust what you wrote in the room?

Answer key

Task 1 · tally
ammonia

8

Task 2 · crossed out
multiples of 7

12

Task 2 · counted
ending in 4

10

Task 3 · final total
two middle digits

115

Task 1 - suggested answers

Q1. It combines nitrogen with hydrogen to make ammonia for fertiliser; the hydrogen is made from methane, which releases carbon dioxide.

Q2. The plant is designed to run continuously for years, so gaps in wind or sun must be covered by storage, a firm grid or a costlier redesign.

Q3. The extra capital for storage or a flexible reactor still has to be recovered from farmers, who cannot pass the cost on.

Q4. That fertiliser should have first claim on scarce green hydrogen; it assumes supply will stay limited rather than becoming abundant.

Notes for the parent or teacher

- Mark the two tasks separately. A student who scores well on the main task and loses the count has not failed - that is the normal pattern, and it is the thing worth discussing.
- Do not prompt or remind during a task. The reminder is the skill.
- An untimed run is a valid run. Record the time only if the student wants to beat it next week.
- Repeat the sheet after a week rather than straight away. Spacing is what makes the gain stick.
- This is attention practice, not an assessment. It does not diagnose anything, and no sheet of this kind should be read as a measure of ability.