

### September 2019 wordoku

		U				M		
L			N				U	S
		S		I	M			A
M		L				S	I	
E		A				U	N	
		I		T	N			U
A			S				L	T
		T				A		

A
E
I
L
M
N
S
T
U

Solve this wordoku in the same way as a sudoku with letters instead of numbers (each of the nine letters in each row, column and nine-square cell). Once solved, one of the overall diagonals can be rearranged into the name of the third most abundant element in the Earth's crust.

### September 2019 word grid

B	I	N
H	O	Ti
I	N	I

**Prize entry:** Using each element symbol in the grid only once, combine them together to make a single word of 10 letters.

Word.....

**Just for fun:** Construct as many other words as you can using a minimum of three symbols, and each symbol only once.  
 6 words: OK  
 9 words: Good  
 12+ words: Excellent

### September 2019 crossword

1	2		3		4			5		6		7	
							8						
		9									10		
11							12						13
14			15								16		
18								17					
18								19					
						20							
21											22	23	
24	25												
27													
											28		

### September 2019 science scramble

Similar to a word ladder, each answer provides letters that must appear - including duplicates - in the answer immediately following it. The puzzle's final answer is a scientist or someone who contributed to science.

For example:

- 1 sail
- 2 snail
- 3 saline
- 4 minerals
- 5 Neil Armstrong

### Entry form

There are four prize puzzles on this page: crossword (cryptic answers only); wordoku; science scramble; and word grid. For each puzzle, a winner will be selected from all the correct entries received and awarded a £25 book voucher.

You can enter any or all of the prize draws, but each entrant is only eligible to win one of the individual puzzle prizes each month.

Please enter your details below and either post or email this page with your completed entries to us by **20 September 2019**. The winners of this month's puzzles will be published in the October 2019 issue, along with the solutions.

Chemistry World puzzles, Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WF, UK  
 Email: chemistryworld@rsc.org

Name .....

Address .....

Participants are advised that any personal information supplied will be processed in connection with this competition and only in accordance with our privacy statement ([www.chemistryworld.com/privacy](http://www.chemistryworld.com/privacy)).

1 \_\_\_\_\_

Trigonometric function (4)

2 \_\_\_\_\_

Convert into charged particles (6)

3 \_\_\_\_\_

Treat as famous (7)

4 \_\_\_\_\_

What 5 did to the language of chemistry (11)

5 \_\_\_\_\_

French chemist who met his end at the guillotine (7, 9)

**Cryptic (prize entry)**

- Across**
- 9 Across The joyless piper plays for the chemist (6, 9)
  - On reflection, no torpedo has this particle (6)
  - See 1 Across
  - 24 Across Radiochemist, somehow hot to handle, led away (4, 4)
  - Meze around New York a catalyst (6)
  - Oddly ignored ideas about toxins as reactants (8)
  - Route around inn something particular (8)
  - Auction sites with hidden charges? (4)
  - A little gammon may be damaging (4)
  - Teenager prepared beverage (5, 3)
  - Rep's coco about bubbly (8)
  - See 3 Down
  - See 10 Across
  - I carp about Chopin oddly playing this first class music (9)
  - Aerosol sounds like an animal! (6)
  - Perhaps easy maze oddly complex (6)

- Down**
- Hemp pioneer confused physicist (11)
  - 22 Across Letters about odd Brit, not merely a writer (5, 6)
  - Frenzy about this year? (8)
  - Old doctor shy about pic surprisingly (6)
  - Lacking aluminium, national zoo orders water treatment (9)
  - Choose top blend (3)
  - OH, OH, OH (7, 6)
  - Biased to use tinned concoction (11)
  - Many hundreds had snouts broken (9)
  - A German blitz upsets German polymath (8)
  - Adam's ale, very cold and spiked (6)
  - Man with razor goes back inside farm accommodation (5)
  - Fuss primarily about dad's outfit (3)

**Quick (just for fun)**

- Across**
- Greek philosopher, mathematician and astronomer (6)
  - 5, 19 Across Swedish physicist with a unit of measurement named after them (6, 8)
  - Network for delivering electricity to consumers (5, 4)
  - 25 Down Sodium carbonate (4, 3)
  - Dwarf tree (6)
  - Compounds containing the NO<sub>2</sub><sup>-</sup> ion (8)
  - Source of digitalis (8)
  - Jelly-like substance used as a growth medium in microbiology (4)
  - Name of a Greek goddess and of a theory proposed by James Lovelock (4)
  - See 5 Across
  - Famous physicist (8)
  - Birthplace of Marie Curie (6)
  - 10<sup>9</sup> (4)
  - First world war battle where English physicist Henry Moseley died (9)
  - One of the four humours in medieval medicine (6)
  - Fluorescent compounds used to stain proteins, collagen and muscle fibres for microscopy (6)

- Down**
- Pachyderms (11)
  - American physical chemist known for their discovery of the covalent bond (5)
  - Sweetener (8)
  - Quality assurance checks (6)
  - Hygroscopic substance used to dry (9)
  - Flame test colour of lithium (3)
  - American chemical engineer awarded the 2018 Nobel prize in Chemistry for directed evolution of enzymes (7, 6)
  - The action of a liquid changing into the gas phase (11)
  - Vitreous fibre used in the laboratory and for thermal insulation (5, 4)
  - Source of albumen (3, 5)
  - German physicist who has a radiation monitor named after them (6)
  - Chess pieces and birds (5)
  - See 10 Across

**August 2019 solutions and winners**

A	C	C	R	A	W	I	L	D	B	O	A	R	
R	H	N	O	E	E	S							
E	L	E	C	T	R	O	M	A	G	N	E	T	S
N	M	W	D	D	Z	R	A						
A	M	I	D	E	S	S	O	L	E	N	O	I	D
C	R	F	X	N	P	O							
G	R	A	P	P	E	L	L	I	E	T	H	E	R
A	L	O	D	Y	E	S							
D	E	W	A	R	O	V	E	R	D	O	S	E	S
F	E	E	D	S	E	I							
L	O	A	D	D	O	W	N	A	V	O	C	E	T
Y	P	M	A	T	R	I	I						
R	O	B	E	R	T	R	O	B	I	N	S	O	N
N	A	E	R	E	T	N							
E	S	O	T	E	R	I	C	S	A	S	S	Y	

C	R	I	C	K	D	O	W	N	P	I	P	E	
U	M	A	U	I	Y	O							
R	E	M	O	T	E	C	O	N	T	R	O	L	S
I	O	S	T	D	R	Y	A						
E	R	B	I	U	M	B	E	C	H	A	M	E	L
I	K	D	R	U	E	K							
D	A	L	T	O	N	I	S	M	S	Y	R	I	A
A	I	S	E	I	I	L							
C	A	S	T	E	S	A	R	U	H	A	S	H	I
I	A	X	E	E	U	A							
T	I	T	I	C	A	C	A	O	Y	S	T	E	R
E	I	E	T	T	G	I	A						
C	O	O	R	D	I	N	A	T	E	B	O	N	E
N	P	O	L	N	N	O							
I	S	O	T	O	N	I	C	S	U	S	A	N	

**Wordoku**

The name of the English chemist was Anne MALLABAND

**Word grid**

The nine-symbol word was SUPERSTITION

**Science scramble**

- Nile
- Lichen
- Chlorine
- Chronicles
- Caroline Herschel

**August winners**

Science scramble  
Colin Porter  
Ashford, UK

Wordoku  
Steven Anderson  
Cheltenham, UK

Word grid  
H Hunter  
London, UK

Crossword  
Keith F Wagstaff  
Falkirk, UK

*Tom Johnson is an emergency responder at the National Chemical Emergency Centre*

Tyre fires can be severe, particularly in large cases like this. They burn at very high temperatures, have a large surface area ensuring a good supply of oxygen and can ignite other nearby stacks of tyres. Coarse water spray rebounds and does not cool the fire, increasing hazardous run-off. A fine spray is more effective at cooling, but still increases run-off and will bring the plume lower to the ground. Foam is the most effective but can only be available in limited quantities. Dry chemical, earth and sand are also effective, but the fire can smoulder under the surface for several weeks.

**On the spot**



© Jane Webster @ Debut Art