



Alexander Graham Bell

Video Comprehension

Watch the video then answer the questions with as much detail as possible:

1. What inspired Alexander to want to learn about how sound works?

2. What did his father do?

3. How did he help his mother to hear during a party?

4. What challenge was he set by his father?

5. What was the telegraph machine?

6. How were communications sent before the telegraph machine?

7. What were the drawbacks of the telegraphs machine?

8. What was Alexander's idea to improve sending messages?

9. Who helped him?



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5. What was Alexander's idea to improve sending messages?

6. What had he invented?

Word Bank

piano

vibration

strings

communication

telephone

messages



Internet Hack

I can use rounding.



Dear Agent,

There has been a breach in Internet security, and we need you to help protect the data before it is stolen!

The IP numbers attached to this document have fallen into the hands of despicable criminals. Soon, they will have worked out the patterns to unlock the codes and steal important and secretive information.

Can you help us find the codes to lock the files before they access them?

To find the code to lock the files, you must round the IP number to the nearest 10, 100 and 1000.

Good Luck Agent!

Round each IP number to the nearest 10, 100 and 1000 to find the code.

For example:

Mr Amadi Owoh

IP Number: 4239

Code: 4240, 4200, 4000

Mr Nigel Mikkelsso

IP Number: 6902

Code: _____

Mrs Rita Clarence

IP Number: 7264

Code: _____

Mr Thomas Matthews

IP Number: 7619

Code: _____

Mr Matt Richards

IP Number: 3759

Code: _____

Mr Grayson Tull

IP Number: 74 929

Code: _____

Miss Jacqui Kneel

IP Number: 15 575

Code: _____

Mrs Sarah White

IP Number: 9493

Code: _____

Mr Arif Dawar

IP Number: 3724

Code: _____

Miss Rachel Knit

IP Number: 4957

Code: _____

Mr James Ramone

IP Number: 27 845

Code: _____

Mr Antony Truddard

IP Number: 4827

Code: _____

Mrs Gita Patel

IP Number: 41 487

Code: _____

Miss Emma Prigg

IP Number: 21 306

Code: _____

Miss Ruby Pritchard

IP Number: 29 849

Code: _____

Mr Ji Cheng

IP Number: 8705

Code: _____



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Good Luck Agent!

Round each account number to the nearest 10, 100, 1000 and 10 000 to find the codes.

<p>For example: Mr Amadi Owoh IP Number: 42 239 Code: 42 240, 42 200, 42 000, 40 000</p>	<p>Mr Nigel Mikkelsso IP Number: 28 948 Code: _____ _____</p>	<p>Mrs Rita Clarence IP Number: 42 498 Code: _____ _____</p>	<p>Mr Thomas Matthews IP Number: 19 398 Code: _____ _____</p>
<p>Mr Matt Richards IP Number: 38 204 Code: _____ _____</p>	<p>Mr Grayson Tull IP Number: 413 933 Code: _____ _____</p>	<p>Miss Jacqui Kneel IP Number: 145 575 Code: _____ _____</p>	<p>Mrs Sarah White IP Number: 94 493 Code: _____ _____</p>
<p>Mr Arif Dawar IP Number: 37 254 Code: _____ _____</p>	<p>Miss Rachel Knit IP Number: 244 957 Code: _____ _____</p>	<p>Mr James Ramone IP Number: 257 845 Code: _____ _____</p>	<p>Mr Antony Truddard IP Number: 44 827 Code: _____ _____</p>
<p>Mrs Gita Patel IP Number: 451 487 Code: _____ _____</p>	<p>Miss Emma Prigg IP Number: 251 306 Code: _____ _____</p>	<p>Miss Ruby Pritchard IP Number: 129 849 Code: _____ _____</p>	<p>Mr Ji Cheng IP Number: 284 705 Code: _____ _____</p>



Internet Hack

I can use rounding.



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Can you help us find the codes to lock the files before they access them?

To find the code to lock the files, you must round the IP number to the nearest 10, 100, 1000, 10 000 and 100 000.

Good Luck Agent!

Round each account number to the nearest 100, 1000, 10 000 and 100 000 to find the codes.

<p>For example: Mr Amadi Owoh IP Number: 42 239 Code: 42 200, 42 000, 40 000, 0</p>	<p>Mr Nigel Mikkelsso IP Number: 288 948 Code: _____ _____</p>	<p>Mrs Rita Clarence IP Number: 432 458 Code: _____ _____</p>	<p>Mr Thomas Matthews IP Number: 293 392 Code: _____ _____</p>
<p>Mr Matt Richards IP Number: 198 375 Code: _____ _____</p>	<p>Mr Grayson Tull IP Number: 498 232 Code: _____ _____</p>	<p>Miss Jacqui Kneel IP Number: 593 484 Code: _____ _____</p>	<p>Mrs Sarah White IP Number: 944 493 Code: _____ _____</p>
<p>Mr Arif Dawar IP Number: 337 554 Code: _____ _____</p>	<p>Miss Rachel Knit IP Number: 2 344 957 Code: _____ _____</p>	<p>Mr James Ramone IP Number: 74 538 Code: _____ _____</p>	<p>Mr Antony Truddard IP Number: 387 386 Code: _____ _____</p>
<p>Mrs Gita Patel IP Number: 371 486 Code: _____ _____</p>	<p>Miss Emma Prigg IP Number: 172 384 Code: _____ _____</p>	<p>Miss Ruby Pritchard IP Number: 854 583 Code: _____ _____</p>	<p>Mr Ji Cheng IP Number: 918 492 Code: _____ _____</p>

Internet Hack Answer Sheet

	Internet Hack LA	Internet Hack MA	Internet Hack HA
Mr Nigel Mikkelsen	6900	28 950	288 900
	6900	28 900	289 000
	7000	29 000	290 000
		30 000	300 000
Mrs Rita Clarence	7260	42 500	432 400
	7300	42 500	432 000
	7000	42 000	430 000
		40 000	400 000
Mr Thomas Matthews	7620	19 400	293 400
	7600	19 400	293 000
	8000	19 000	290 000
		20 000	300 000
Mr Matt Richards	3760	38 200	198 400
	3800	38 200	198 000
	4000	38 000	200 000
		40 000	200 000
Mr Grayson Tull	74 930	413 930	498 200
	74 900	413 900	498 000
	75 000	414 000	500 000
		410 000	500 000
Miss Jacqui Kneel	15 580	145 580	593 500
	15 600	145 600	593 000
	16 000	146 000	590 000
		150 000	600 000
Mrs Sarah White	9490	94 490	944 500
	9500	94 500	944 000
	9000	94 000	940 000
		90 000	900 000

	Internet Hack LA	Internet Hack MA	Internet Hack HA
Mr Arif Dawar	3720	37 250	337 600
	3700	37 300	338 000
	4000	37 000	340 000
		40 000	300 000
Miss Rachel Knit	4960	244 960	2 345 000
	5000	245 000	2 345 000
	5000	245 000	2 340 000
		240 000	2 300 000
Mr James Ramone	27 850	257 850	74 500
	27 800	257 800	75 000
	28 000	258 000	70 000
		260 000	100 000
Mr Antony Truddard	4830	44 830	387 400
	4800	44 800	387 000
	5000	45 000	390 000
		40 000	400 000
Mrs Gita Patel	41 490	451 490	371 500
	41 500	451 500	371 000
	41 000	451 000	370 000
		450 000	400 000
Miss Emma Prigg	21 310	251 310	172 400
	21 300	251 300	172 000
	21 000	251 000	170 000
		250 000	200 000
Miss Ruby Pritchard	29 850	129 850	854 600
	29 800	129 800	855 000
	30 000	130 000	850 000
		130 000	900 000
Mr Ji Cheng	8710	284 710	918 500
	8700	284 700	918 000
	9000	285 000	920 000
		280 000	900 000

Order and Compare Numbers

Aim: I can order and compare numbers.

1. Use the following symbols to compare the following numbers: $<$, $=$ or $>$

2783 2873

3041 3014

9377 9773

2. Order the following sets of numbers from smallest to largest:

3838, 3883, 8388, 8838, 3383

--	--	--	--	--

6701, 6071, 1076, 1067, 7016

--	--	--	--	--

9008, 8009, 908, 8090, 9080

--	--	--	--	--

3. Explain why $6581 > 6518$.

4. Explain how to order the following numbers from smallest to greatest: 4514, 451, 4415, 1445, 4414.

Order and Compare Numbers

Aim: I can order and compare numbers.

A set of single-digit cards is required for these tasks.

Work with a partner, checking your work together.

Compare

1. From a set of single-digit cards, deal four cards each. Use the cards to make a number.

Toss a coin. If the coin lands on heads, the greater number wins a point. If the coin lands on tails, the smaller number wins a point.

Keep a record of your score.

Write the numbers in your books with the relevant comparison symbol to keep a record.

2. Take it in turns to take four digit cards from a set.

Make a four-digit number and place it in the following grid.

Take it in turns to create a number. If a partner cannot put a number in the grid, the other player gains a point. Keep a record of your score.

--	--	--	--	--

smallest

greatest

--	--	--	--	--

smallest

greatest

--	--	--	--	--

smallest

greatest

--	--	--	--	--

smallest

greatest

--	--	--	--	--

smallest

greatest

Order and Compare Numbers

Aim: I can order and compare numbers.

1. Use the following symbols to compare the following numbers: $<$, $=$ or $>$

$$34\ 414 \quad \square \quad 34\ 144$$

$$56\ 656 \quad \square \quad 56\ 655$$

$$10\ 010 \quad \square \quad 11\ 010$$

2. Order the following sets of numbers from smallest to largest:

72 727, 27 727, 27 277, 77 227, 72 272

--	--	--	--	--

61 234, 61 423, 6432, 62 431, 62 143

--	--	--	--	--

39 009, 30 090, 30 900, 39 090, 30 009

--	--	--	--	--

3. Explain why $78\ 632 > 78\ 362$.

4. Explain how to order the following numbers from smallest to greatest: 87 878, 88 787, 88 887, 87 787, 78 778.

Order and Compare Numbers

Aim: I can order and compare numbers.

A set of single-digit cards is required for these tasks.

Work with a partner, checking your work together.

Compare

1. From a set of single-digit cards, deal five cards each. Use the cards to make a number.

Toss a coin. If the coin lands on heads, the greater number wins a point. If the coin lands on tails, the smaller number wins a point.

Keep a record of your score.

Write the numbers in your books with the relevant comparison symbol to keep a record.

2. Take it in turns to take four digit cards from a set.

Make a five-digit number and place it in the following grid.

Take it in turns to create a number. If a partner cannot put a number in the grid, the other player gains a point. Keep a record of your score.

--	--	--	--	--

smallest

greatest

--	--	--	--	--

smallest

greatest

--	--	--	--	--

smallest

greatest

--	--	--	--	--

smallest

greatest

--	--	--	--	--

smallest

greatest

Order and Compare Numbers

Aim: I can order and compare numbers.

1. Use the following symbols to compare the following numbers: $<$, $=$ or $>$

676 767 677 767

100 010 10 100

782 391 782 481

2. Order the following sets of numbers from smallest to largest:

320 023, 302 023, 323 230, 302 203, 323 203

--	--	--	--	--

110 011, 101 101, 10 101, 10 011, 101 001

--	--	--	--	--

785 392, 857 392, 587 392, 578 392, 758 392

--	--	--	--	--

3. Explain why $382\ 562 > 380\ 652$.

4. Explain how to order the following numbers from smallest to greatest: 656 566, 665 656, 665 565, 655 556, 565 665.

Order and Compare Numbers

Aim: I can order and compare numbers.

A set of single-digit cards is required for these tasks.

Work with a partner, checking your work together.

Compare

1. From two sets of single-digit cards, deal six cards each. Use the cards to make a number.
Toss a coin. If the coin lands on heads, the greater number wins a point. If the coin lands on tails, the smaller number wins a point.
Keep a record of your score.

Order

2. Take it in turns to take six digit cards from a set.
Make a six-digit number and place it in the following grid.
Take it in turns to create a number. If a partner cannot put a number in the grid the other player gains a point. Keep a record of your score.

--	--	--	--	--

smallest

greatest

--	--	--	--	--

smallest

greatest

--	--	--	--	--

smallest

greatest

--	--	--	--	--

smallest

greatest

--	--	--	--	--

smallest

greatest

Order and Compare Numbers

Aim: I can order and compare numbers.

Work with a partner, checking your work together.

Compare

1. Each partner writes a number on a small whiteboard or piece of paper, hidden from their partner. Each partner can ask, in turn, three questions of their partner, with yes or no answers. They then estimate whether their number is smaller or greater than their partner's number.

Keep a record of your score.

Write the numbers in your books with the relevant comparison symbol to keep a record.

Order

2. Cut out six small pieces of paper to fit the grid below. The activity is done without talking.

Each partner writes three numbers on a piece of paper, hidden from their partner. Take it in turns to place the numbers on the grid, keeping the numbers on the grid in order from smallest to greatest. If a partner cannot place one of their numbers, they can move an existing number on the grid instead.

The aim is to place all the numbers on the grid in the least amount of turns possible.

--	--	--	--	--

smallest

greatest

Order and Compare Numbers

Answers

Lower Ability

1. $2783 < 2873$
 $3041 > 3014$
 $9377 < 9773$

2.

3383	3838	3883	8388	8838
1067	1076	6071	6701	7016
908	8009	8090	9008	9080

3. Both 6581 and 6518 have six thousands and five hundreds. However, 6581 has eight tens, which is more than the one ten in 6518, so 6581 is greater than 6518.
4. All the numbers have four digits except 451, which only has three, or has no thousands, so is the smallest.

1445 only has one thousand, so is smaller than the other three remaining numbers, which all have four thousands.

The next largest numbers are 4414 and 4415, which have four hundreds, as the other, 4514, has five hundreds. 4414 and 4415 are consecutive numbers with 4414 the smaller as it has four ones and 4415 has five ones.

This leaves 4514 as the largest number. The order is: 451, 1445, 4414, 4415, 4514.

Middle Ability

1. $34\ 414 > 34\ 144$
 $56\ 656 > 56\ 655$
 $10\ 010 < 11\ 010$

2.

27 277	27 727	72 272	72 727	77 227
6432	61 234	61 423	62 143	62 431
30 009	30 090	30 900	39 009	39 090

3. Both 78 632 and 78 362 have seven ten thousands and eight thousands. However 78 632 has six hundreds, which is more than the three hundreds in 78 362, so 78 632 is greater than 78 362.
4. All the numbers have five digits. However, all have eight ten thousands except 78 778, which only has seven ten thousands so is the smallest number.

The two numbers 87 878 and 87 787 have seven thousands, so they are the next numbers in the sequence as the other numbers have eight thousands. 87 787 is smaller than 87 878 because it has seven hundreds compared to eight hundreds.

Of the final two numbers, 88 787 and 88 878, 88 787 is smaller as it has seven hundreds, which is less than the eight hundreds in 88 878.

The order is: 78 778, 87 787, 87 878, 88 787, 88 878.

Order and Compare Numbers

Answers

Higher Ability

1. $676\ 767 < 677\ 767$
 $100\ 010 > 10\ 100$
 $782\ 391 < 782\ 481$

2.

302 023	302 203	320 023	323 203	323 230
10 011	10 101	101 001	101 101	110 011
578 392	587 392	758 392	785 392	857 392

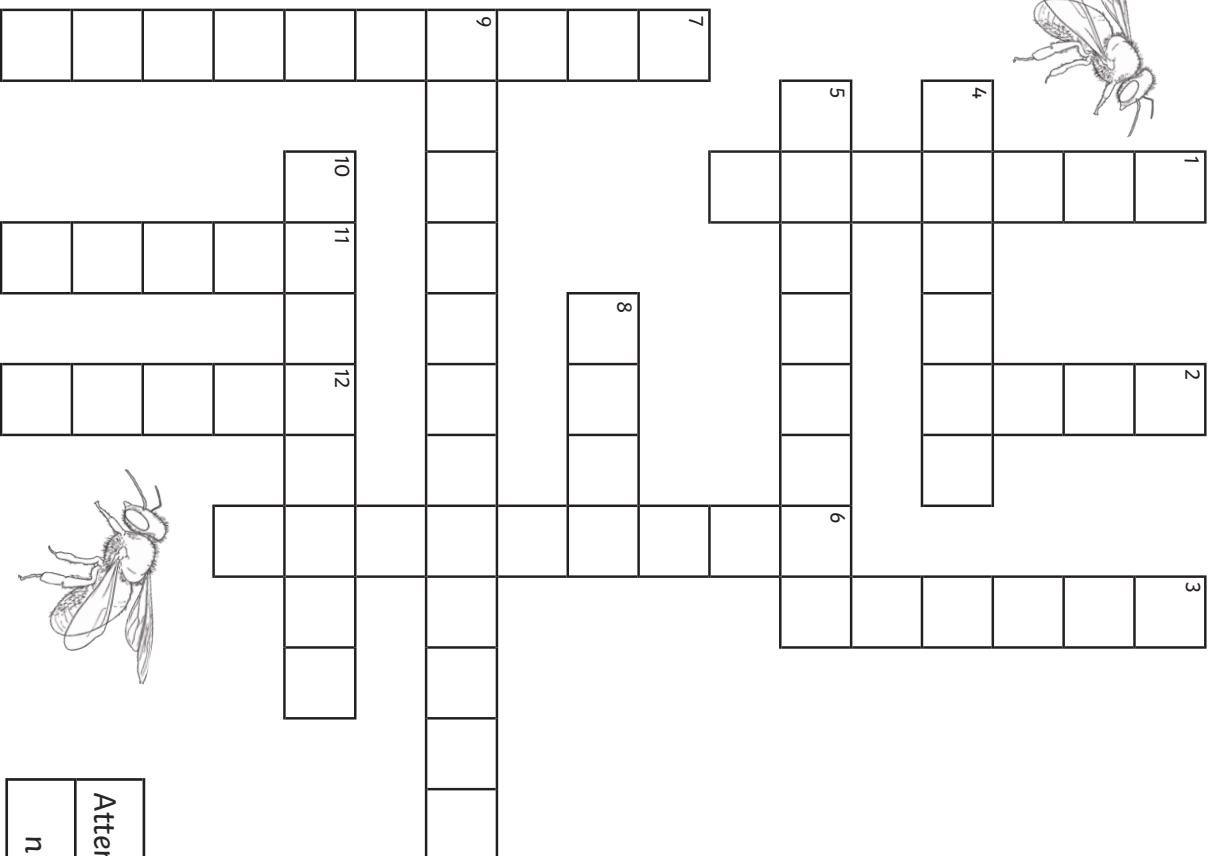
3. Both 382 562 and 380 652 have three hundred thousands and eight ten thousands. However 382 562 has two thousands, which is more than the 0 thousands in 380 652, so 382 562 is greater than 380 652.
4. All the numbers have six hundred thousands except 565 665, so this is the smallest.

Next, looking at the ten thousands, 655 556 and 656 566 have five ten thousand, whereas the other numbers have six ten thousands. The five thousands in 655 556 make it smaller than 656 566.

Finally 665 656 and 665 565 both have five thousands, but 665 565 has five hundreds, which is less than the six hundreds in 665 656.

The order is: 565 665, 655 556, 656 566, 665 565, 665 656.

Scientists and Inventors



Across

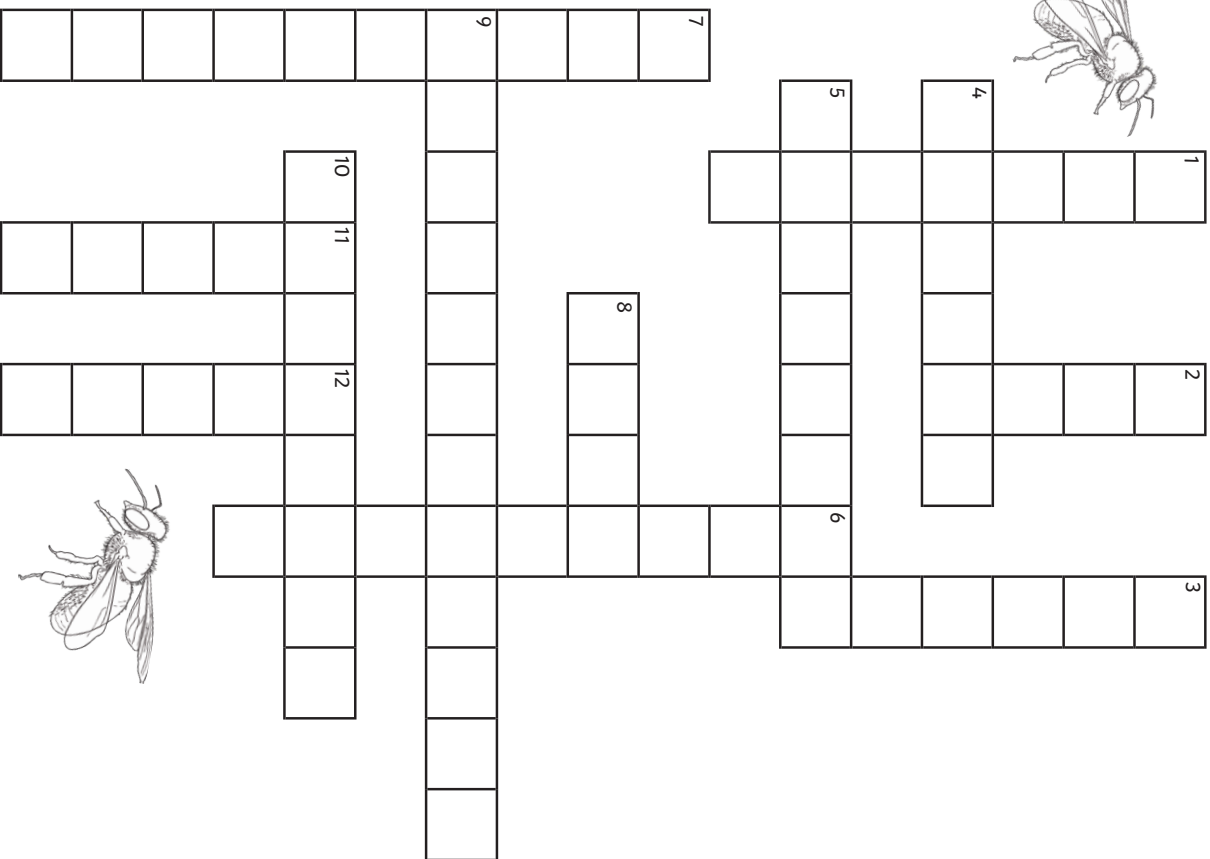
- Da Vinci drew sketches of inventions such as a _____ machine and an armoured chariot.
- Some scientists think that Stonehenge was used as an astronomical _____.
- Eva Crane was a scientist who studied _____ and how they live.
- David _____ is a famous naturalist and wildlife film-maker.
- CSI technicians analyse _____ to prove or disprove theories.

Down

- Before she became interested in bees, Eva Crane was a _____ physicist.
- Margaret Hamilton invented the software and the computer programme that took Apollo 11 to the _____.
- Stephanie Kwolek invented a material called _____.
- Neil _____ was on board Apollo 11 and was the first person to set foot on the Moon.
- Chromatography is a technique for _____ mixtures.
- Leonardo da _____ was a scientist, artist and inventor.
- Neil deGrasse Tyson campaigned for Pluto to be reclassified as a _____ planet.

Attenborough	bees	separating	Moon	evidence	Vinci
nuclear	flying	Armstrong	dwarf	calendar	Kevlar

Scientists and Inventors



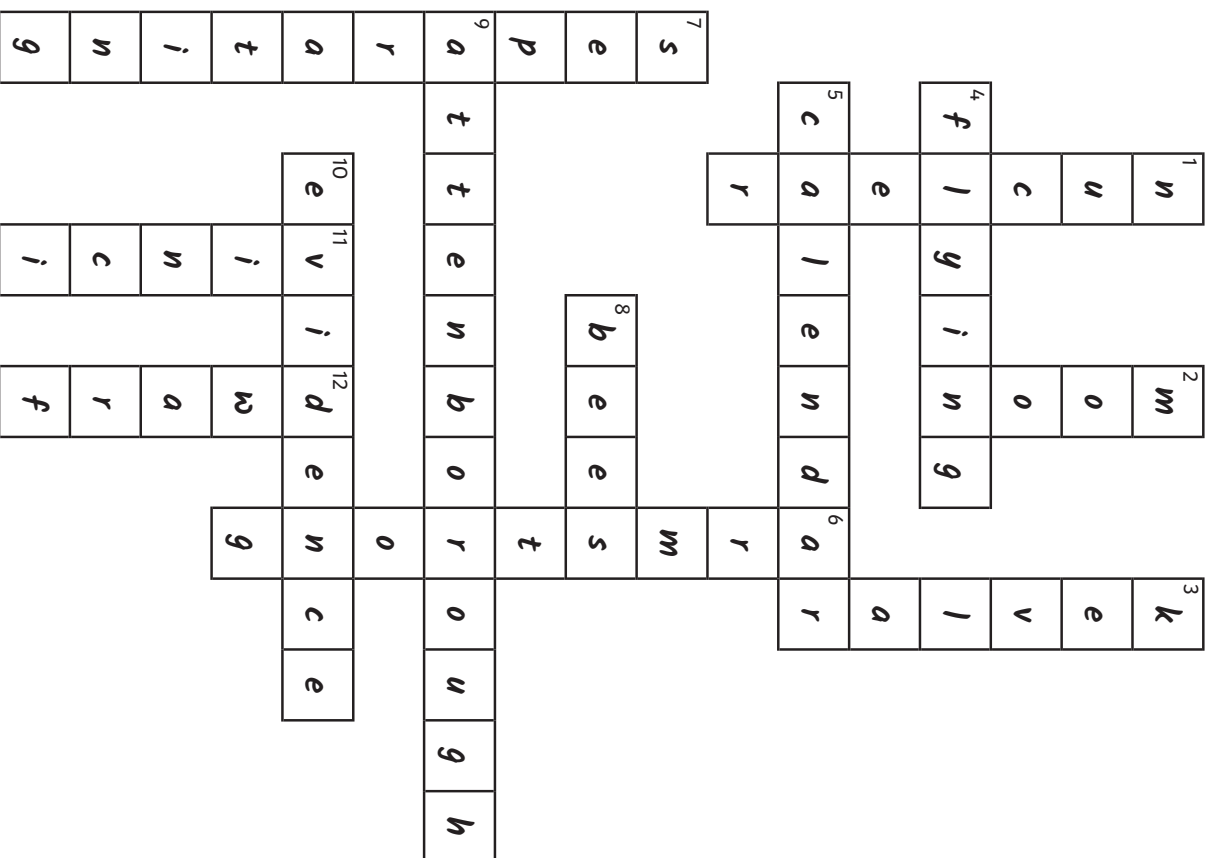
Across

4. Da Vinci drew sketches of inventions such as a _____ machine and an armoured chariot.
5. Some scientists think that Stonehenge was used as an astronomical _____.
8. Eva Crane was a scientist who studied _____ and how they live.
9. David _____ is a famous naturalist and wildlife film-maker.
10. CSI technicians analyse _____ to prove or disprove theories.

Down

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2. Margaret Hamilton invented the software and the computer programme that took Apollo 11 to the _____.
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6. Neil _____ was on board Apollo 11 and was the first person to set foot on the Moon.
7. Chromatography is a technique for _____ mixtures.
11. Leonardo da _____ was a scientist, artist and inventor.
12. Neil deGrasse Tyson campaigned for Pluto to be reclassified as a _____ planet.

Scientists and Inventors Answers



Across

- Da Vinci drew sketches of inventions such as a **flying** machine and an armoured chariot.
- Some scientists think that Stonehenge was used as an astronomical **calendar**.
- Eva Crane was a scientist who studied **bees** and how they live.
- David **Attenborough** is a famous naturalist and wildlife film-maker.
- CSI technicians analyse **evidence** to prove or disprove theories.

Down

- Before she became interested in bees, Eva Crane was a **nuclear** physicist.
- Margaret Hamilton invented the software and the computer programme that took Apollo 11 to the **moon**.
- Stephanie Kwolek invented a material called **kevlar**.
- Neil **Armstrong** was on board Apollo 11 and was the first person to set foot on the Moon.
- Chromatography is a technique for **separating** mixtures.
- Leonardo da **Vinci** was a scientist, artist and inventor.
- Neil deGrasse Tyson campaigned for Pluto to be reclassified as a **dwarf** planet.