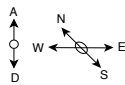


# Answers

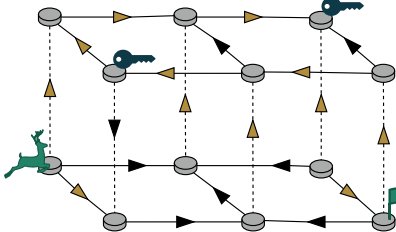
## The GCHQ Christmas Challenge



### Cyber Security



Rudolph needs to escape from this cyberspace maze by reaching the flag. He starts where indicated and can move North/East/South/West to points along the same layer, or he can Ascend/Descend between layers (as shown by the dashed lines).



He can only go in the direction of the arrows. If he touches a key, then ALL the gold arrows will swap direction. What is his shortest route to get to the flag – and can you describe it using one 7-letter word?



**ANSWER:** Rudolph's route is: South, East, Ascend, West, East, East, Descend. The initial letters spell **SEAWEED**.



### Languages

If a French ailurophile fancies a chat, what does a Polish cynophile fancy?



**ANSWER:** An ailurophile likes cats, and 'chat' is French for 'cat'. Similarly a cynophile like dogs, and the Polish for 'dog' is **PIES**.



### Coding

F	O	R
M	A	T
I	O	N

1. Replace all the blue cells with a letter from PART
2. Replace all the green cells with a letter from EYES
3. Replace all the gold cells with a letter from UNCURL

After each step you should have three 3-letter words in the rows of the grid, and you need to finish with a 9-letter word in the same formation as FORMATION.



**ANSWER:** The steps are: 1

F	A	R
P	A	T
T	O	N

2

F	A	R
P	E	T
T	O	Y

3

C	A	R
P	E	N
T	R	Y

This gives the answer **CARPENTRY**.



### Analysis

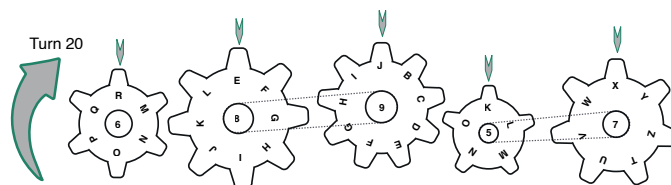
The Director has written his usual Christmas message, but now uncover the odd one out amongst the words forming these two sentences. It's odd because it's **not odd**!



**ANSWER:** All but one of the words in this question have an odd number of letters. The odd one out, which has an even number of letters, is, appropriately, **DIRECTOR**.



### Engineering



**ANSWER:** Turning the wheels 20 places clockwise, anticlockwise, anticlockwise, clockwise, clockwise respectively results in the letters at the top spelling out **PICKY**.



### Codebreaking

xibu4xpset beesftt jt pvucpbse.hsje.sfkpjot



**ANSWER:** Taking the letter (or number) before each letter (or number) in the codetext gives 'what3words address is **outboard.grid.rejoins**'.



### Mathematics

If 2=GROWTH and 6=EXIST, then 9= what seven letter word which describes what you'll be doing with your presents on Christmas Day?



**ANSWER:** The letters of 'two' appear backwards in 'growth' and the letters of 'six' appear backwards in 'exist'. The letters of 'nine' appear backwards in **OPENING**.

**ANSWER:** Looking at the front of the card, the symbols for each question can be found together in two groups – Mathematics, Languages, Engineering and Analysis, Cyber Security, Coding – and then Codebreaking on its own. Using the groups to arrange the answers to the questions into what3words addresses gives:

☆ opening.pies.picky (which is on **CHRISTMAS** Island)

☆ director.seaweed.carpentry (which is in the village of **GREET**)

☆ outboard.grid.rejoins (which is in the village of **INGS**)

So our seasonal message is **CHRISTMAS GREETINGS**.

#GCHQChristmasChallenge

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