LANGUAGES AND CODING: WHO IS THE ENIGMATIC CHARACTER?

Students should work in groups, each group taking on one of the texts to find one of the codewords. If appropriate, put students into groups according to the language(s) they study – but without giving too much information away! The four codewords will together confirm the identity of the Enigmatic Character. Answer to the clues are given here, together with the codewords and the plain text for each section of code.

An Enigmatic Character (who was mentioned in the VC session earlier) is hiding his/her identity in coded messages. Can you discover who it is?

Like the British code-breakers working at Bletchley Park during WWII, you have access to some weather reports. These may be in English, French, Spanish or German. You will need to:

• Use the information gained from the Frequency Analysis task to decide which language each text was originally in. Note that accents were removed before coding the original text.
• Solve the clues. Each will give you 3 coordinates: (sentence number, word number, letter), so for instance (2, 14, 3) means the 2nd sentence, 14th word, 3rd letter. Some clues are written as coordinates in brackets, so (letters in the alphabet, disciples, dozen) would give (26, 12, 12). Other clues give you a single number and you have to work out how these numbers in the order given should be put into coordinates.
• Use the coordinates to find the letters in the coded text to get a code-word in the original language of the piece of text.
• Put these together with what you heard in the VC session earlier to find the identity of this Enigmatic Character.
• If you want to decode the text, go ahead, but you can find the identity of the Enigmatic Character without it.

Text 1

ATETPIDN LP WALIXLP, IYT UTXIYTA YXJ WTTP QTAN EODZ ULIY X DOI OH
JPOU XPZ LET.
ITMRTAXICATJ YXQT WTTP WTDOU HATTGLPF HOA MCEY OH IYT ILMT, JO WDXES
LET YXJ XDJO EXCJTZ RAOWDTMJ.
IOZXN LJ XFXLP AXIYTA EODZ XPZ EDOCZN ULIY X WXPZ OH AXLP, JDTTI
XPZ JYOU JRATXZLPF POAIYTXJI IO XHHTEI MCEY OH IYT EOCPIAN.
JOMT WALFYI OA JCPPN JRTDDJ XAT ROJJLWDT LP IYT JOCIYUTJI, ULIY ULPZJ
JIXAILPF IO TXJT, TJRTELXDDN LP IYT JOCIY.
IYT RATQXLDLPF ULPZ ZLATEILOP LJ TBRTEITZ IO MOQT IO IYT JOCIYUTJI, UYLEY
JYOCDZ YXQT IYT THHTEI OH AXLJLPF ITMRTAXICATJ JO IYXI WN IYT JIXAI OH
PTBI MOPIY ITMRTAXICATJ ULDD WT MOAT OA DTJJ POAMXD ULIY AXLP MOAT
DLSTDN IYXP JPOU.

English original:
Recently in Britain, the weather has been very cold with a lot of snow and ice. Temperatures have been below freezing for much of the time, so black ice has also caused problems. Today is again rather cold and cloudy with a band of rain, sleet and show spreading northeast to affect much of the country. Some bright or sunny spells are possible in the southwest, with winds starting to ease, especially in the south. The prevailing wind direction is expected to move to the southwest, which should have the effect of raising temperatures so that by the start of next month temperatures will be more or less normal with rain more likely than snow.

Clues for codeword 1

Clue	Sentence coordinate	Word coordinate	Letter Coordinate	Letter in text
(a pair, number of senses, unique)	2	5	1	H
Multiply 83 by 2 until you have a number starting with 5, then sort it into 3 appropriate coordinates	5	31	2	O
First three numbers in the previous coordinates	5	3	1	U
Multiply the 7th prime number by 5 until you have a number starting with 2, then sort it into 3 appropriate coordinates	2	12	5	S
(first prime number, 2 to the power of 4, ace)	2	16	1	E
(x, $x + 2$, $x - 3$) where x is the 3rd prime number	5	7	2	O
(2nd triangle number, 4th square number, 3rd square number)	3	16	9	F
8th prime number times 3rd square number	1	7	1	W
(triple, players in a football match, a third of 3)	3	22	1	I
(vertices on a pentagram, 10 more than the 7th triangle number, vertices on a triangle)	5	38	3	S
(3^0, 3^2, 3^1)	1	9	3	D
(x^2, x^0, x^1) where x is the first prime number	4	1	2	O
(sides on a pentagon, twice the 7th prime number, double the first prime number)	5	34	4	M

Language: English
Codeword: House of Wisdom
Translation into English:
Identity of the Enigmatic Character: Al-Kindi

Text 2

LD GETATEZ AELT RFZ EY LD CZKYYBZLTFDDLED YEHZ QFGT SDV EY CFB NLEG YWHDEE SDV ELY.

TEUPEZFTSZED GFCED UELYYTEDY SDTEZ VEU CEMZLEZPSDQT, YK VFYY BGLTAELY ASYFTAGLWHE PZKBGEUE BEZELTET HFT.

HESTE LYT EY RLEVEZ ALEUGLWH QFGT SDV BERKGQT SDV ELDE MZKDT FSY ZECED, YWHDEEZECED SDV YWHDEE BZELTET YLWH CECED DKZVKYTED SBEZ ELDED CZKYYED TELG VEY GFDVEY FSY.

LU YSVREYTED QFDD EY YKDDLCE LDTEZNFGGE CEBED ULT YWHRFWHEZEU RLDV, BEYKDVEZY LU YSVED.

VEZ RLDV RLZV YLWH NKZZFSYYLWHTGLWH DFWH YSVREYTED VZEHED, RFY VLE TEUPEZFTSZED EZHKHED RLZV, YK VFYY EY FDMCFDC DFWHYTED UKDFTY RLEVEZ DKZUFGE TEUPEZFTSZED SDV EHEZ ZECED FGY YWHDEE CEBED RLZV.

German original:

In letzter Zeit war es in Grossbritannien sehr kalt und es gab viel Schnee und Eis. Temperaturen lagen meisstens unter dem Gefrierpunkt, so dass Blitzeis zusatzliche Probleme bereitet hat. Heute ist es wieder ziemlich kalt und bewolkt und eine Front aus Regen, Schneeregen und Schnee breitet sich gegen Nordosten uber einen grossen Teil des Landes aus. Im Sudwesten kann es sonnige Intervalle geben mit schwacherem Wind, besonders im Suden. Der Wind wird sich vorraussichtlich nach Sudwesten drehen, was die Temperaturen erhohen wird, so dass es Anfang nachsten Monats wieder normale Temperaturen und eher Regen als Schnee geben wird.

Clues for codeword 2

Clue	Sentence coordinate	Word coordinate	Letter Coordinate	Letter in text
(3rd prime number, 7th prime number, 1 less than the 1st prime number)	5	17	1	F
(faces on a tetrahedron, 4th triangle number, unique)	4	10	1	R
Cube 7, then arrange the answer into coordinates	3	4	3	E
Square 19, then arrange the answer into coordinates	3	6	1	Q
(Vertices on a pentagram, yards on a cricket pitch, vertices on a triangle)	5	22	3	U
(Ace, 2nd cube number, cube root of previous answer)	1	8	2	E
(Suits in pack of cards, 3rd triangle number, number of wives King Henry VIII had)	4	6	6	N
(1st prime number, players in a hockey team, 3rd Fibonacci number)	2	11	2	Z
(2^0, 2^1, 2^2)	1	2	4	A
10th prime number x 6th prime number x 2nd prime number, then sorted into appropriate coordinates	1	13	1	N
(4th Fibonacci number, 5th Fibonacci number, 2nd Fibonacci number)	3	5	1	A
(2^2, 2^0, 3^0)	4	1	1	L
(x, x – 1, 1) where x is the number of human senses	5	4	1	Y
(vertices of a rhombus, baker's dozen, pair)	4	13	2	S
10th prime multiplied by 2 until you have a 3 digit number starting with 2, then rearrange into coordinates	2	3	2	E

Language: German
Codeword: Frequenzanalyse
Translation into English: Frequency analysis
Identity of the Enigmatic Character: Al-Kindi

Text 3

Spanish original:

El Reino Unido ha experimentado recientemente climas muy frios, hielo y nieve. Las temperaturas se han mantenido por debajo de cero grados y el agua congelada y el hielo han causado numerosos problemas. Hoy no ha sido una excepcion, marcado por temperaturas bajas y lluvias en un dia muy nublado. El granizo y la nieve del noroeste afectara a la mayor parte del pais. El sol podra brillar a intervalos sobre todo en el suroeste, donde se espera tambien que los vientos aminoren, especialmente hacia el sur. Los vientos seran mayormente en direccion suroeste y esto traera consigo un ligero aumento de las temperaturas. Esto se vera reflejado al comienzo del mes entrante cuando las temperaturas subiran y la lluvia sustituira a la nieve.

YC XYHKU GKHQU TI YPDYXHAYKWIQU XYSHYKWYAYKWY SCHAIN AGL VXHUN, THYCU L KHYFY.
CIN WYADYXIWGXIN NY TIK AIKWYKHQU DUX QYZIEU QY SYXU OXIQUN L YC IOGI SUKOYCIQI L YC THYCU TIK SIGNIQU KGAYXUNUN DXUZCYAIN.
TUL KU TI NHQU GKI YPSYDSHUK, AIXSIQU DUX WYADYXIWGXIN ZIEIN L CCGFHIN YK GK QHI AGL KGZCIQU.
YC OXIKHRU L CI KHYFY QYC KUXUYNWY IVYSWIXI I CI AILUX DIXWY QYC DIHN.
YC NUC DUQXI ZXHCCIX I HKWYXFICUN NUZXY WUQU YK YC NGXUYNWY, QUKQY NY YNDYXI WIAZHYK MGY CUN FHYKWUN IAHKUXYK, YNDYSHICAYKWY TISHI YC NGX.
CUN FHYKWUN NYXIK AILUXAYKWY YK QHXYSSHUK NGXUYNWY L YNWU WXIYXI SUKNHOU GK CHOYXU IGAYKWU QY CIN WYADYXIWGXIN.
YNWU NY FYXI XYVCYEIQU IC SUAHYKRU QYC AYN YKWXIKWY SGIKQU CIN WYADYXIWGXIN NGZHXIK L CI CCGFHI NGNWHWGHXI I CI KHYFY.

Clues for codeword 3

Clue	Sentence coordinate	Word coordinate	Letter Coordinate	Letter in text
(3rd prime number, 7th prime number less 1, 1st triangle number)	5	16	1	M
(x, x^2, x) where x is the number of vertices in a triangle	3	9	3	A
(3^1, 2^0, 3^0)	3	1	1	T
(x, $x + y$, y) where x is the 1st prime number and y is the 3rd	2	7	5	E
(vertices on a pentagon, ounces in a pound, unique)	5	16	1	M
(sides on a pentagon, previous century, 3rd square number)	5	20	9	A
(2^1, 2^2, 2^0)	2	4	1	T
(x/4, x, x/2) where x is the number of inches in a foot	3	12	6	I
(days in a week, deadly sins, spatial dimensions)	7	7	3	C
(factorial 3, baker's dozen, 4th Fibonacci number)	6	13	3	O
(3rd Fibonacci number, 6th triangle number, 3rd triangle number)	2	21	6	Y
(suits in a pack of cards, cube root of 125, cube root of 64)	4	5	4	F

(seasons, commandments, binary)	4	10	1	O
(deuce, Rugby Union team, 1st Fibonacci number)	1	6	3	S
(cube root of 8, sum of 1st 3 triangle numbers, a sixth of 6)	2	10	1	O
(x/3, 2x, x) and a clue for x is the Trinity	1	6	3	S
(x, $\sqrt{x}$, x^0) where x is the number of lines of symmetry on a square	4	2	1	O
(5th Fibonacci number, adult, number of lines of symmetry on a non-equilateral isosceles triangle)	5	18	1	F
(number of lines of symmetry on a rectangle, unlucky for some, a pair)	2	13	2	O

Language: Spanish
Codeword: Matematico y filosofo
Translation into English: Mathematician and philosopher
Identity of the Enigmatic Character: Al-Kindi

Text 4

YAQATTAZH AZ EYBZCA DYAHBEZA, IA HATFL B AHA HYAL KYVGC BXAQ DABJQVJF CA ZAGEA AH CA EIBQA.
GI B EAIA IB FIJFBYH CJ HATFL, AH IA XAYEIBL B BJLLG FVLA CAL FYVDIATAL.
IA HATFL C'BJMVJYC'PJG ALH AZQVYA BLLAN KYVGC AH ZJBEAJR BXAQ JZA DBZCA CA FIJGA AH CA ZAGEA L'AHAZCBZH XAYL IA ZVYC ALH FVJY HVJQPAY HVJH IA FBWL.
UJAIUJAL AQIBGYQGAL LVZH FVLLGDIAL CBZL IA LJC VJALH, BXAQ JZ XAZH KBGDIGLLBZH, AZ FBYHGQJIGAY CBZL IA LJC.
VZ FYAXVGH UJA IA XAZH LA CAFIBQAYB XAYL IA LJC VJALH, QA UJG CAXYBGH FYVXVUJAY JZ YAQPBJKKATAZH, CA LVYHA UJA IAL HATFAYBHJYAL CJ TVGL FYVQPBGZ LAYVZH FIJL VJ TVGZL ZVYTBIAL AH IB FIJGA FIJL FYVDBDIA UJA IB ZAGEA.

French original:
Recemment en Grande-Bretagne, le temps a ete tres froid avec beaucoup de neige et de glace. Il a gele la plupart du temps, et le verglas a aussi pose des problemes. Le temps d'aujourd'hui est encore assez froid et nuageux avec une bande de pluie et de neige s'etendant vers le nord-est pour toucher tout le pays. Quelques eclaircies sont possibles dans le sud-ouest, avec un vent faiblissant, en particulier dans le sud. On prevoit que le vent se deplacera vers le sud-ouest, ce qui devrait provoquer un rechauffement, de sorte que les temperatures du mois prochain seront plus ou moins normales et la pluie plus probable que la neige.

Clues for codeword 4

Clue	Sentence coordinate	Word coordinate	Letter Coordinate	Letter in text
(trinity, sum of the first 3 square numbers, 3rd Fibonacci number)	3	14	2	I
(pair, Rugby Union team, lives of a cat)	2	15	9	L
(unique, 3rd prime number, 1st prime number)	1	5	2	A
(vertices on a pentagram, 7th prime number, cube root of 64)	5	17	4	P
(Islamic pillars of faith, double the 8th prime number, Olympic rings)	5	38	5	A
(x, x^2, $2x + 1$) where x is the 4th Fibonacci number	3	9	7	R
(suits in a pack of cards, days in a week, times the Earth circles the Sun in a year)	4	7	1	L
$11^2 + 11 - 1$, then sort into appropriate coordinates	1	3	1	E
Square of the 3rd prime number multiplied by the 5th prime number, and sorted into appropriate coordinates	2	7	5	L
(2nd square number, 1st triangle number, 4th Fibonacci number)	4	1	3	A
(3^1, 3^2, 4th prime number)	3	9	7	R
(5th Fibonacci number, 6th Fibonacci number, 3rd Fibonacci number)	5	8	2	A
(cube root of 125, 2^5, 2^1)	5	32	2	B
(2nd triangle number, you can drive, quadruped)	3	17	4	E

Language: French
Codeword: Il a parle l'Arabe
Translation into English: He spoke Arabic
Identity of the Enigmatic Character: Al-Kindi