Codes and ciphers: open practice pack

25 untimed puzzles on a difficulty 1–5 ladder.

Detail	Value
Pack	puzzles-code-and-cipher
Source	puzzles
Pack version	v1
Worksheet items	25
Authored hints	25
Worked explanations	25

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Learner worksheet

Nothing here is timed and nothing is scored. Read the enciphered text, work the system out on paper, then check yourself against the explanation, which names the technique and shows the arithmetic step by step. Every puzzle is self-contained: the system, and the key or crib you need to recover it, is always given. Alphabet positions run A = 1 to Z = 26, and any shift running past Z wraps back round to A.

Choose one answer for each item. Keep the authored hints, answer key, and worked explanations separate until you are ready to check your work.

Difficulty 1

Start here and establish the method before moving up the ladder.

1. puz-code-and-cipher-01: One step forward

Difficulty: Difficulty 1

Every letter of the message was replaced by the letter one place further on in the alphabet. What was the original message?

Each letter moved one place forward. Ciphertext: DPME SBJO

Worked example: A becomes B.

- A. EQNF TCKP
- B. COLD RAIN
- C. BNKC QZHM
- D. COLD SBJO

Your answer: _____

2. puz-code-and-cipher-02: Three places along

Difficulty: Difficulty 1

Each letter of a short instruction was moved three places forward through the alphabet. What did the instruction say?

Each letter moved three places forward. Ciphertext: DGG VDOW

Worked example: A becomes D.

- A. GJJ YGRZ
- B. BEE TBMU
- C. ADD SALT
- D. DGG SALT

Your answer: _____

3. puz-code-and-cipher-03: Numbers for letters

Difficulty: Difficulty 1

Each letter of a word was replaced by its position in the alphabet, counting A as 1. What was the word?

Alphabet positions, one number per letter. Ciphertext: 3 12 5 1 14

Worked example: 1 becomes A.

- A. CLEAN
- B. DMFBO
- C. NAELC
- D. CABEAAD

Your answer: _____

4. puz-code-and-cipher-04: Back to front

Difficulty: Difficulty 1

Each word of the message was written backwards, but the words were left in their original order. What was the message?

Every word reversed; word order untouched. Ciphertext: NEPO EHT ROOD

Worked example: TAC becomes CAT.

- A. ROOD EHT NEPO
- B. ENOP HET ORDO
- C. OPEN THE DOOR
- D. DOOR THE OPEN

Your answer: _____

5. puz-code-and-cipher-05: Four symbols

Difficulty: Difficulty 1

A message was written with symbols in place of letters, using this legend: # = A, * = R, + = E, ~ = D. Each group of symbols is one word. What does the message say?

Symbol substitution, legend supplied in the prompt. Ciphertext: # *+~ ~++*

Worked example: * becomes R.

- A. A RDE EDDR
- B. DEER RED A
- C. A DER REED
- D. A RED DEER

Your answer: _____

Difficulty 2

Continue in order; use the worked explanations from earlier rungs when needed.

6. puz-code-and-cipher-06: The crib at the front

Difficulty: Difficulty 2

A shift cipher was used, but the size of the shift was not recorded. You are told that the first word of the message is THE. What does the whole message say?

Shift of unknown size; the first word is known to be THE. Ciphertext: YMJ UFYM NX HQJFW

- A. SGD OZSG HR BKDZQ
- B. UIF QBUI JT DMFBS
- C. THE PATH IS CLEAR
- D. DRO ZKDR SC MVOKB

Your answer: _____

7. puz-code-and-cipher-07: The alphabet reflected

Difficulty: Difficulty 2

Each letter was swapped for the letter the same distance from the other end of the alphabet, so the first letter pairs with the last. What was the message?

Mirrored alphabet: first pairs with last, second with second-last, and so on. Ciphertext: DZIN SZMWH

Worked example: A becomes Z.

- A. CYHM RYLVG
- B. WARM HANDS
- C. NIZD HWMZS
- D. WARM SZMWH

Your answer: _____

8. puz-code-and-cipher-08: An alphabet built from a keyword

Difficulty: Difficulty 2

A substitution alphabet was built by writing the keyword PLANET first, then the remaining letters of the alphabet in their usual order. That row was placed under a normal A to Z row, and each letter of the message was replaced by the letter beneath it. What was the message?

Keyword alphabet: PLANET, then B C D F G H I J K M O Q R S U V W X Y Z. Ciphertext: IEES PS JKKJ

Worked example: P becomes A.

- A. GYYN UN HIIH
- B. DEER MR FGGF
- C. TPPD AD UVVU
- D. MEET AT NOON

Your answer: _____

9. puz-code-and-cipher-09: Half the letters gone

Difficulty: Difficulty 2

The spaces were stripped out of a message and then every second letter was deleted, leaving the first, third, fifth and so on. Which message produces the surviving string?

Spaces removed, then every second letter deleted. Ciphertext: TEODSR

- A. THE ROOF IS DRY
- B. THE ROADS DRY
- C. THE ROAD IS DRIER
- D. THE ROAD IS DRY

Your answer: _____

10. puz-code-and-cipher-10: A shift for digits

Difficulty: Difficulty 2

A reference number was disguised by increasing every digit by four, with anything past nine wrapping round to zero, so 8 became 2. What was the original number?

Each digit increased by four, wrapping past nine back to zero. Ciphertext: 7150 3826

- A. 3716 9482
- B. 6173 2849
- C. 1594 7260
- D. 3110 3422

Your answer: _____

11. puz-code-and-cipher-11: Two rails

Difficulty: Difficulty 2

The letters of a message were written along two rails, taking the first letter on the top rail, the second on the bottom, the third on the top, and so on. The top rail was then read out, followed by the bottom rail. Which message was enciphered?

Two-rail fence: top rail read out first, then the bottom rail. Ciphertext: SNHLNWEDEPO

Worked example: PLANT becomes PATLN.

- A. SEND THE MAPS
- B. HELP IS ON WAY
- C. WE LAND AT SIX
- D. SEND HELP NOW

Your answer: _____

Difficulty 3

Continue in order; use the worked explanations from earlier rungs when needed.

12. puz-code-and-cipher-12: No crib at all

Difficulty: Difficulty 3

A shift cipher was used and neither the size of the shift nor any word of the message is known. The word lengths and spacing have been kept. What does the message say?

Shift of unknown size; word lengths preserved. Ciphertext: P ZLL H ZOPW

- A. J TFF B TIJQ
- B. I SEE A SHIP
- C. H RDD Z RGHO
- D. W GSS O GVWD

Your answer: _____

13. puz-code-and-cipher-13: The mirror without a map

Difficulty: Difficulty 3

Every letter was replaced by its partner counted from the opposite end of the alphabet, so the letter at position n becomes the letter at position 27 minus n. What was the message?

Mirrored alphabet, no worked mapping supplied. Ciphertext: GSV OZHG GIZRM

- A. THE LAST TRAIN
- B. FRU NYGF FHYQL
- C. TFI BMUT TVMEZ
- D. TRAIN LAST THE

Your answer: _____

14. puz-code-and-cipher-14: Three rails

Difficulty: Difficulty 3

A message was written in a zig-zag across three rails, running down to the third rail and back up to the first, over and over. The three rails were then read out in order, top to bottom. Which message was enciphered?

Three-rail fence: rails read out top, middle, bottom. Ciphertext: BGKRNTEESIHY

- A. SHUT THE GATES
- B. BREAK THE SEAL
- C. BRING THE KEYS
- D. BRING THE MAPS

Your answer: _____

15. puz-code-and-cipher-15: Columns out of order

Difficulty: Difficulty 3

A message was written left to right in rows of four letters, filling three complete rows. The columns were then read downwards and sent in the order 3, 1, 4, 2. What was the message?

Twelve letters in three rows of four; columns sent in the order 3, 1, 4, 2. Ciphertext: OHTCEGSEELTA

- A. OEEHGLTSTCEA
- B. CLOSE THE GATE
- C. OCSLHEETTGEA
- D. GATEETHECLOS

Your answer: _____

16. puz-code-and-cipher-16: Shifted, then flipped

Difficulty: Difficulty 3

Two operations were used on this message. Every letter was moved four places forward through the alphabet, and then each word was written backwards. What was the message?

Shift of four forwards, then each word reversed. Ciphertext: HRMJ ILX CIO

- A. JMRH XLI OIC
- B. NQVL BPM SMG
- C. DNIF EHT YEK
- D. FIND THE KEY

Your answer: _____

17. puz-code-and-cipher-17: Positions plus three

Difficulty: Difficulty 3

Each letter was turned into its alphabet position, then three was added to every number. The slashes mark the ends of words. What was the message?

Alphabet positions with three added to each; slashes separate words. Ciphertext: 21 8 4 7 / 23 11 8 / 16 4 19

- A. READ THE MAP
- B. XKGJ ZNK SGV
- C. SFBE UIF NBQ
- D. UHDG WKH PDS

Your answer: _____

Difficulty 4

Continue in order; use the worked explanations from earlier rungs when needed.

18. puz-code-and-cipher-18: Which keyword built the alphabet

Difficulty: Difficulty 4

A substitution alphabet was built by writing a keyword first, dropping any letter that had already appeared, then adding the unused letters of the alphabet in order; that row sits under a plain A to Z row. The first word

of the message is THE. Which keyword was used?

Keyword alphabet of unknown keyword; the message begins with THE. Ciphertext: TEN AIUN OMMR

- A. LAGOON
- B. PARROT
- C. BALLOON
- D. BALCONY

Your answer: _____

19. puz-code-and-cipher-19: The order the steps were taken

Difficulty: Difficulty 4

Ignoring spaces, each letter was moved forward by a repeating key of one place then four places, one then four, across the whole message. The resulting ten letters were then written out backwards. What was the message?

Repeating key of one and four places forward, then the whole string reversed. Ciphertext: KBFFLUODEQ

- A. MDZNQKBEXJ
- B. PACK THE BAG
- C. QEDOULFFBK
- D. RIESVPGJCO

Your answer: _____

20. puz-code-and-cipher-20: A key of two letters

Difficulty: Difficulty 4

The key BE was repeated across the message, ignoring spaces, and each key letter's alphabet position was added to the position of the letter beneath it, wrapping past Z back to A. What was the message?

Key BE repeated: add 2 to the first letter, 5 to the second, and so on. Ciphertext: OJGYCYFFYS

Worked example: A under key B becomes C.

- A. MEET AT DAWN
- B. JHBWXWADTQ
- C. QOIDEDHKAX
- D. MHEWAWDDWQ

Your answer: _____

21. puz-code-and-cipher-21: The group that fails its check

Difficulty: Difficulty 4

Each group is four letters followed by a check letter. The check letter's alphabet position equals the total of the four letters' positions, with 26 taken off as often as needed to leave a total between 1 and 26. One group was altered in transmission. Which group is it?

Four data letters plus a check letter in each group. Ciphertext: BEADL CAGEP FLAXM GRIPX

- A. BEADL
- B. CAGEP

- C. GRIPX
- D. FLAXM

Your answer: _____

22. puz-code-and-cipher-22: Five bits per letter

Difficulty: Difficulty 4

Each letter was written as its alphabet position in binary, using five bits with the largest value on the left, so the bits stand for 16, 8, 4, 2 and 1. What was the word?

Five-bit binary, one group per letter, largest value on the left. Ciphertext: 00011 01000 00001 10010 10100

- A. XBPIE
- B. DIBSU
- C. CHART
- D. TRAHC

Your answer: _____

Difficulty 5

Continue in order; use the worked explanations from earlier rungs when needed.

23. puz-code-and-cipher-23: A key of three letters

Difficulty: Difficulty 5

The key CAB was repeated across the message, ignoring spaces, and each key letter's alphabet position was added to the letter beneath it, wrapping past Z back to A. What was the message?

Key CAB repeated: add 3, then 1, then 2, and repeat. Ciphertext: KJFHUJHNCS

- A. HIDE THE MAP
- B. HGCERGEKZP
- C. NKHKVLKOEV
- D. JHCGSGGLZR

Your answer: _____

24. puz-code-and-cipher-24: The message carries its key

Difficulty: Difficulty 5

One letter of this ciphertext stands on its own and is not part of the message: it is the key. Its alphabet position is the number of places every other letter was moved forward. What was the message?

A shift cipher whose key letter travels inside the ciphertext. Ciphertext: XYNW CQN PJCN I

- A. APY ESP RLEP K
- B. OPEN THE GATE
- C. GHWF LZW YSLW
- D. OPEN THE GATE Z

Your answer: _____

25. puz-code-and-cipher-25: Two systems, one message

Difficulty: Difficulty 5

This message was enciphered with exactly one of two systems: a mirrored alphabet, where the letter at position n becomes the letter at position 27 minus n, or a shift of five places forward. Decide which was used, then give the message.

One of two named systems was used; the other was not. Ciphertext: HSLIG DZOP

- A. CNGDB YUJK
- B. UFYVT QMBC
- C. SHORT WALK
- D. WALK SHORT

Your answer: _____

Authored hints

Only hints supplied by the puzzle authors are included. Items without a source hint are listed as missing; no hint text is generated or inferred.

0 worksheet items do not have an authored hint. No hint text was generated for them.

puz-code-and-cipher-01: The worked example tells you which direction the encipherer moved. You need to travel the other way.

puz-code-and-cipher-02: Work out the size of the step from the worked mapping before you touch the message itself.

puz-code-and-cipher-03: Write the alphabet out with 1 under A and count along; the gaps between numbers are part of the message.

puz-code-and-cipher-04: The word boundaries are doing real work here. Ask whether the reversal applies inside each word or across the whole line.

puz-code-and-cipher-05: Copy the legend out in front of you and decode one symbol at a time, keeping the groups in the order they are printed.

puz-code-and-cipher-06: Line the known word up against the first three ciphertext letters and count the gap between one pair.

puz-code-and-cipher-07: Write the alphabet forwards on one line and backwards directly beneath it, then read straight down.

puz-code-and-cipher-08: Write both rows out and always start your lookup in the row the ciphertext belongs to.

puz-code-and-cipher-09: Do not try to fill the gaps in. Encipher each candidate yourself and compare the results letter by letter.

puz-code-and-cipher-10: Handle the digits under four first and decide what wrapping downwards should give before touching the rest.

puz-code-and-cipher-11: Count the letters first. An odd total tells you how many letters ride on each rail before you interleave anything.

puz-code-and-cipher-12: Start with the words that are only one letter long, then look at the pair of identical letters.

puz-code-and-cipher-13: Subtract each letter's position from 27 and check your rule on the shortest word before doing the rest.

puz-code-and-cipher-14: Only every fourth letter lands on the top rail. Extract those three letters for each candidate before doing any more work.

puz-code-and-cipher-15: Cut the ciphertext into equal blocks first, then label each block with the column number it was sent as.

puz-code-and-cipher-16: Deal with the operation that was applied last before the one applied first, and treat each word separately.

puz-code-and-cipher-17: Strip the offset off every number first, and keep the letters in a separate column from the arithmetic.

puz-code-and-cipher-18: Write out each candidate alphabet in full, dropping repeats, then check every letter of the known word before deciding.

puz-code-and-cipher-19: Ask which step was performed last, and remember that a key tied to position stops matching once the letters move.

puz-code-and-cipher-20: Write the repeating key out underneath the ciphertext letter by letter before you subtract anything.

puz-code-and-cipher-21: Add the four data letters in each group and reduce the total below 27 before comparing it with the check letter.

puz-code-and-cipher-22: Write 16, 8, 4, 2, 1 above the five columns and add up only the columns holding a one.

puz-code-and-cipher-23: Number the letters one to ten and write the repeating key underneath before subtracting anything.

puz-code-and-cipher-24: Decide which letter is doing the work of a key, and remember that whatever it is, it is not part of what you read out.

puz-code-and-cipher-25: Try both systems on the first three or four letters only, and keep the one that starts producing vowels in sensible places.

Answer key

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Codes and ciphers: open practice pack answer key

Item	Choice	Answer
puz-code-and-cipher-01	B	COLD RAIN
puz-code-and-cipher-02	C	ADD SALT
puz-code-and-cipher-03	A	CLEAN
puz-code-and-cipher-04	C	OPEN THE DOOR
puz-code-and-cipher-05	D	A RED DEER
puz-code-and-cipher-06	C	THE PATH IS CLEAR
puz-code-and-cipher-07	B	WARM HANDS
puz-code-and-cipher-08	D	MEET AT NOON
puz-code-and-cipher-09	D	THE ROAD IS DRY
puz-code-and-cipher-10	A	3716 9482
puz-code-and-cipher-11	D	SEND HELP NOW

puz-code-and-cipher-12	B	I SEE A SHIP
puz-code-and-cipher-13	A	THE LAST TRAIN
puz-code-and-cipher-14	C	BRING THE KEYS
puz-code-and-cipher-15	B	CLOSE THE GATE
puz-code-and-cipher-16	D	FIND THE KEY
puz-code-and-cipher-17	A	READ THE MAP
puz-code-and-cipher-18	C	BALLOON
puz-code-and-cipher-19	B	PACK THE BAG
puz-code-and-cipher-20	A	MEET AT DAWN
puz-code-and-cipher-21	D	FLAXM
puz-code-and-cipher-22	C	CHART
puz-code-and-cipher-23	A	HIDE THE MAP
puz-code-and-cipher-24	B	OPEN THE GATE
puz-code-and-cipher-25	C	SHORT WALK

Worked explanations

puz-code-and-cipher-01: This is a shift cipher, and the first rule of shift ciphers is that you undo a shift by moving the opposite way. The message was written by stepping one place forward, so you step one place back: D becomes C, P becomes O, M becomes L, E becomes K minus one, which is D. That gives the first word, and the same single step back turns SBJO into RAIN. Stepping forward again instead simply enciphers the text a second time and produces nothing readable, which is the commonest slip on any shift puzzle. Deciphering only the second half of a message and leaving the rest alone is the other slip to watch for. The rule applies to every letter.

puz-code-and-cipher-02: Count the gap first, then apply it to every letter. The worked mapping shows A arriving at D, a gap of three, so each ciphertext letter travels three places back: D to A, G to D, G to D, and V to S, D to A, O to L, W to T. Getting the size of the step wrong by one is the classic error here, moving back only two places turns DGG into a perfectly ordinary word, which is exactly why a partly readable result is not proof that you have the right key. Check the whole message, not the first word.

puz-code-and-cipher-03: This is a straight alphabet-position code, so the whole job is counting carefully from A. Position 3 is C, 12 is L, 5 is E, 1 is A, and 14 is N. Two habits protect you here. Count A as 1 rather than 0, since starting from zero pushes every letter one place along and produces a string that looks like a genuine cipher but is not. And respect the spaces between the numbers: reading 12 as a 1 followed by a 2 splits one letter into two and lengthens the word, which is a good sign you have mis-grouped the digits.

puz-code-and-cipher-04: This is a transposition: the letters are all correct and only their order has changed, so no alphabet arithmetic is needed. Reverse each word inside its own boundaries and NEPO becomes OPEN, EHT becomes THE, ROOD becomes DOOR. The trap is reversing the entire line in one sweep, which also flips the order of the words and yields a sentence with the right words in the wrong places. Note that ROOD reversed is a real word either way round, so always test your rule on every word before trusting it.

puz-code-and-cipher-05: A supplied legend turns the puzzle into careful copying, so work symbol by symbol and left to right: # is A, then * + ~ is R, E, D, then ~ + + * is D, E, E, R. Two slips account for most errors on legend puzzles. Mixing up two entries, reading + as D and ~ as E, scrambles the letters inside each word while leaving the word lengths intact, which makes it hard to spot. Reading a group from right to left produces real words as well, so the fact that your result looks like English is never enough on its own; confirm the direction of reading on a group you already trust.

puz-code-and-cipher-06: A crib is a piece of plaintext you already know, and it hands you the key in one subtraction. T is position 20 and the ciphertext letter standing for it is Y at 25, so every letter was moved five places forward; H at 8 arriving as M at 13 confirms it. Now take five places back off everything: UFYM becomes PATH, NX becomes IS, HQJFW becomes CLEAR. Neighbouring shifts are the tempting failures. Four places back turns YMJ into UIF and six turns it into SGD, both of which look like words at a glance without being any. Always verify a recovered shift on a second word before committing to it.

puz-code-and-cipher-07: A mirrored alphabet pairs position n with position 27 minus n, and because the pairing is symmetrical the same rule both enciphers and deciphers. D sits at 4, and 27 minus 4 is 23, which is W; Z at 26 pairs with 1, giving A; I at 9 pairs with 18, R; N at 14 pairs with 13, M. That yields the first word, and the same sum unlocks the second. The mirror is easy to confuse with a plain one-step shift, which produces a similar-looking string of consonants, and with a reversal of the letter order, which leaves every letter unchanged and merely rearranges them. Test any rule you suspect on a letter whose partner you can name instantly.

puz-code-and-cipher-08: With a keyword alphabet the two rows are not interchangeable, so deciphering means finding each ciphertext letter in the lower row and reading the plain letter above it. I is ninth in the keyword row, and the ninth ordinary letter is I's plain partner M; E sits fifth in both rows; S is nineteenth in the keyword row, above which sits T. That gives MEET, and the same lookups give AT and NOON. Running the table the wrong way round, treating the ciphertext as plain and reading downwards, produces a fluent-looking string and is the single commonest error with keyword alphabets. Treating the pair as a plain shift because P happens to sit above A fails as soon as the second letter refuses to fit.

puz-code-and-cipher-09: A deletion cipher cannot be run backwards, so test the candidates forwards instead: strip the spaces, number the letters, and keep the odd ones. THEROADISDRY gives T, E, O, D, S, R, matching exactly. Do the length check first: six survivors can only come from a message of eleven or twelve letters, which disposes of the fourteen-letter candidate before you write anything down. Then watch what a dropped letter does: shortening the message by one flips every later letter into the other half, so the eleven-letter version without the word IS keeps a completely different set. Only the fourth letter separates the roof from the road, which is why you check each position rather than the general shape.

puz-code-and-cipher-10: A shift works on any ordered set, and the digits nought to nine behave exactly like a ten-letter alphabet. Undo the step by taking four off each digit and wrapping the other way when you go below nought: 7 becomes 3, 1 becomes 7 because one less four is minus three and minus three plus ten is seven, 5 becomes 1, 0 becomes 6. The wrap is where care is needed. Leaving the small digits untouched because subtraction looks impossible is the standard slip, and it shows up as digits that never change. Rearranging the digits before shifting is the other trap: the disguise here changes values, never positions.

puz-code-and-cipher-11: In a rail fence nothing is substituted, so the letters you are given are the letters of the message in a different order. Since every candidate here has eleven letters, six of them land on the top rail and five on the bottom, and the quickest route is to encipher each candidate rather than guess where the split falls. Take the odd-numbered letters of SENDHELPNOW and you get SNHLNW, then the even-numbered ones give EDEPO, which is exactly the string supplied. The usual failure is splitting the ciphertext down the middle: with an odd number of letters the top rail always carries one more than the bottom, and a split in the wrong place scrambles the interleave from the first letter onwards.

puz-code-and-cipher-12: With no crib you attack the shape of the text instead of its letters. Two one-letter words appear, and in ordinary English a single-letter word is almost always A or I. That gives the standing P a shift of seven or fifteen, and the standing H a shift of seven or twenty-five, so only seven satisfies both. Two short words have pinned the key between them. Stepping back seven then turns ZLL into SEE, which the doubled letter had already made likely, and ZOPW into SHIP. Shifts one either side are the tempting failures, since they preserve the English-looking word lengths while producing no readable word at all. Word shape and repeated letters, not letter counts, are what crack a short shift message.

puz-code-and-cipher-13: Work the subtraction rather than trusting your memory of the pairs: G is at 7, and 27 minus 7 is 20, which is T; S at 19 gives 8, H; V at 22 gives 5, E. The three-letter word therefore reads THE,

which is a strong sign the rule is right, and the same subtraction unpacks the rest. The mirror is regularly confused with a rotation of thirteen places, because both are their own inverse, but a rotation adds a constant while the mirror subtracts from a constant, and the two agree on no letter at all. Reading a correctly deciphered message from the wrong end is the other near miss: the words come out right, so only their order gives the mistake away.

puz-code-and-cipher-14: The zig-zag over three rails repeats with a period of four, so letters 1, 5 and 9 sit on the top rail, letters 3, 7 and 11 sit on the bottom, and everything else fills the middle. Every candidate here has twelve letters, which means three on top, six in the middle and three at the bottom, and the top rail alone is enough to decide: BRINGTHEKEYS gives B, G and K, matching the opening of the ciphertext, while a message ending in MAPS gives B, G and M. Read the middle rail as a check and you get R, N, T, E, E, S. Counting the rails as though the letters were dealt out in plain rotation rather than bouncing back is the usual error, and it puts the wrong letters on the bottom rail every time.

puz-code-and-cipher-15: Rebuild the grid before you read anything. Twelve letters in three rows means each column holds three letters, so cut the ciphertext into OHT, CEG, SEE, LTA, and those blocks are columns 3, 1, 4 and 2 in that order, not columns 1 to 4. Put them back where they belong, so CEG is the first column and LTA the last, then read across the rows: CLOS, ETHE, GATE. Taking the blocks as columns 1, 2, 3, 4 keeps every letter but places them all wrongly, which is the mistake to guard against; writing the blocks across the rows instead of down the columns fails the same way. Notice too that reading the correct grid from the bottom row upwards opens with a genuine word, so a readable fragment is never proof that the grid is the right way up.

puz-code-and-cipher-16: When two operations are stacked you undo them in reverse order: turn each word the right way round first, then take the shift off. HRMJ reversed is JMRH, and stepping four places back gives F, I, N, D; ILX becomes XLI and then THE; CIO becomes OIC and then KEY, where C wraps back past A to Y. Stopping after only one of the two steps is what catches people out, and it is easy to spot in your own working: undo the shift but forget the reversal and you get the message with every word spelled backwards, while undoing the reversal alone leaves a string that is still four places out. Shifting the wrong way as well as reversing compounds both errors and leaves nothing readable.

puz-code-and-cipher-17: Do the arithmetic before you do the alphabet. Take three off each number to get 18, 5, 1, 4 then 20, 8, 5 then 13, 1, 16, and only then convert: 18 is R, 5 is E, 1 is A, 4 is D. Two errors dominate this format. Converting the numbers straight to letters without removing the offset gives a string that is still three places out, which is a shift cipher in disguise rather than the message. Counting the alphabet from nought instead of one shifts every letter by a further place, and the tell-tale sign is that a value of 1 comes out as B. Adding the offset again instead of removing it doubles the error rather than cancelling it.

puz-code-and-cipher-18: Build each candidate alphabet in full and test every letter of the crib, not just the first one you can check. The crib demands three things at once: plain T must map to T, plain H to E, and plain E to N. Two candidates fail on T straight away, because the letters they take from the front of the alphabet drag the twentieth position off T. Of the two that survive T, one seats D rather than E in the eighth position and so fails on H. The keyword that works is the one losing two letters to repeats, a doubled consonant and a doubled vowel, which leaves five distinct letters with twenty-one following them. Deciphering the rest confirms it: the message names a blue door.

puz-code-and-cipher-19: A positional key does not survive being rearranged, so with a shifting key and a transposition the order of undoing genuinely matters. Reverse the string first to put every letter back under the key number it was enciphered with, giving QEDOULFFBK, then take off one, four, one, four in turn: Q back one is P, E back four is A, D back one is C, O back four is K. Strip the key before reversing and each letter meets the wrong half of the key, which throws every letter exactly three places out, alternately backwards and forwards: a distinctive signature worth recognising, because it tells you the arithmetic was right and only the order was wrong. Reversing without stripping the key, or adding the key a second time, leaves the text untouched in the other respect.

puz-code-and-cipher-20: A repeating key is a shift that changes with position, so the first move is to write the

key out under the ciphertext: B E B E and so on, meaning 2, 5, 2, 5. Then subtract each key number from the letter above it: O at 15 less 2 is 13, M; J at 10 less 5 is 5, E; G at 7 less 2 is 5, E; Y at 25 less 5 is 20, T. Two errors are worth naming. Treating the whole thing as one Caesar shift of two produces a fluent-looking start before falling apart, which is why you check the middle of a message rather than its opening. Beginning the key on the wrong letter shifts the whole pattern and corrupts every position, and adding the key instead of removing it enciphers the text a second time.

puz-code-and-cipher-21: A check letter is a checksum, so you verify rather than decode: total the four data letters, reduce below 27, and compare. The first group totals 2 plus 5 plus 1 plus 4, which is 12 and matches L. The second gives 3 plus 1 plus 7 plus 5, or 16, matching P. The fourth gives 7 plus 18 plus 9 plus 16, which is 50; take 26 off and 24 remains, matching X. The remaining group totals 6 plus 12 plus 1 plus 24, which is 43, and 43 less 26 is 17: Q, not the M that was sent. Forgetting to reduce large totals is what makes a sound group look broken, so always subtract 26 before declaring a mismatch. Notice that a failed check tells you a group is corrupt but never which character inside it changed.

puz-code-and-cipher-22: Convert each group to a number by adding the place values where a 1 appears, then read that number as an alphabet position. The first group has ones in the 2 and 1 columns, giving 3, which is C; the second has a single one in the 8 column, giving H; the third is 1, A; the fourth is 16 plus 2, or 18, R; the fifth is 16 plus 4, or 20, T. Reading a group from the right reverses the place values and silently produces a different legal letter, which is why the direction has to be fixed before you start. Counting the alphabet from nought rather than one adds a further place to every letter, and reading the groups in reverse order gives the word backwards.

puz-code-and-cipher-23: With a three-letter key the pattern repeats every third position, so the discipline is to write 3, 1, 2, 3, 1, 2 under the ciphertext and keep the columns straight; one slipped column corrupts everything after it. Subtracting gives K less 3 is H, J less 1 is I, F less 2 is D, H less 3 is E, and so on; at the ninth letter C less 2 is A, whereas a key that has slipped a place would take it below A and wrap it round to Z. A single shift of three, taken from the first key letter alone, reproduces the opening of the message convincingly and then decays into nonsense. A strong reminder to read a decipherment through to its last letter. Starting the key one place late is the other failure, and it also survives the first letter or two.

puz-code-and-cipher-24: An embedded key has to be identified before it can be used, and here the single letter standing alone at the end is the one carrying it. I sits at position 9, so every other letter was moved nine places forward and must be brought nine places back: X at 24 becomes 15, O; Y becomes P; N becomes E; W becomes N. The two traps are symmetrical. Take the key from the wrong end and you shift by 24 instead of 9, producing a full-length string of plausible-looking rubbish. Use the right key but decipher the key letter as well, and you get the correct message with a stray Z hung on the end, a good sign that you forgot the key was never part of the text. Shifting forward instead of back doubles the offset rather than removing it.

puz-code-and-cipher-25: When two systems are on the table, test both on the shortest stretch you can and let the readable result decide. Taking five places off the opening gives C, N, G, D, B, a cluster with no vowel and no English shape, so that system can be set aside after four letters. The mirror gives 27 less 8 is 19, S; 27 less 19 is 8, H; 27 less 12 is 15, O, and a word emerges, which is the evidence you were looking for. Finish rather than stop there: the second word resolves the same way. A rotation of thirteen places is the near miss to avoid, because like the mirror it undoes itself and so feels interchangeable with it, yet it agrees with the mirror on no letter at all. Reading a correct decipherment from the wrong end is the other way to lose a solved puzzle.

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