12 Christmas Brain Teasers

Riddles and logic puzzles for the holidays — from the twelve days of Christmas to the case of Santa's missing cookies. Answers at the back.

1. The Twelve Days

EASY

In the old carol, on the first day of Christmas you get one gift. On the second day you get two turtle doves and another partridge; on the third, three French hens plus everything from day two again; and so on. Counting every gift from all twelve days, how many presents is that?

2. One Bulb Out

EASY

A string of 64 Christmas lights has one dud bulb, and the whole string stays dark until you find it. Your tester can check any stretch of the string and tell you whether the dud is somewhere in it. What's the smallest number of tests that is guaranteed to find the bad bulb?

3. The Toppled Snowman

EASY

On Christmas morning the snowman in the front garden lay in pieces. It had been −8 °C all night and was still −8 °C at breakfast. "It must have melted in the night and toppled over," said nephew Pete. Who knocked the snowman down?

4. The Advent Door

EASY

Ella opens one advent calendar door every morning, starting on 1 December. This year, 1 December falls on a Tuesday. On which day of the week does she open door 24?

5. Ribbon Round the Box

EASY

A present is a box 30 cm long, 20 cm wide and 10 cm tall. The ribbon goes once round the box lengthwise and once round it widthwise — over the top and under the bottom both times — and 30 cm more makes the bow. How much ribbon do you need?

6. The Gingerbread Thief

MEDIUM

Four gingerbread men vanished from the cooling rack. One of four cousins took them; the thief lies and the other three tell the truth.

- **Holly:** "It wasn't Ivy."
- **Ivy:** "Jasper took them."
- **Jasper:** "Ivy is lying."
- **Kris:** "Holly is telling the truth."

Who took the gingerbread?

7. Secret Santa

MEDIUM

Ann, Bo, Cass, Dee and Eli drew names for the office Secret Santa. Each buys exactly one present for someone else, and the presents go round in one big loop.

- Ann buys for Cass.
- Dee buys for Bo.
- Eli doesn't buy for Ann.
- Cass doesn't buy for Dee.

Who buys Eli's present?

8. The Reindeer Line-up

MEDIUM

Six reindeer pull the sleigh in three pairs — front, middle and back — each pair with a left and a right place.

- Dasher and Dancer pull side by side.
- Comet pulls front right.
- Vixen pulls on the left, somewhere in front of Cupid.
- Prancer isn't in the middle pair.
- Dasher pulls on the right.

Who pulls front left?

9. Gift Tags

MEDIUM

Four children each get one big present: a sled, a telescope, a puppet or a train set.

- Mia's present isn't the sled or the train set.
- Nate didn't get the telescope or the train set.
- Olive didn't get the telescope or the puppet.
- Pip's present needs snow.

Who gets the puppet?

10. Who Unplugged the Lights?

HARD

Someone unplugged the Christmas lights in the middle of the carols. Only **one** of these three statements is true.

- **Noel:** "I didn't do it."
- **Opal:** "Noel didn't do it."
- **Piers:** "Noel did it."

Who unplugged the lights?

11. Elves and Imps

HARD

In the toy workshop every helper is either an elf, who always tells the truth, or an imp, who always lies. Whoever broke the train set is an imp.

- **Bramble:** "Clove didn't break it."
- **Clove:** "Fennel is an imp."
- **Fennel:** "Bramble broke it."

Who broke the train set?

12. Who Ate Santa's Cookies?

HARD

On Christmas Eve the family went to bed one at a time, at 10:00, 10:30, 11:00, 11:30 and midnight. At a quarter to twelve the plate of cookies for Santa was still full — so the cookie thief was the last one up.

- Gran went to bed before Leo.
- Dad went to bed an hour after Mum.
- Ruby went to bed half an hour after Leo.

Who ate Santa's cookies?

Answer key

1. **The Twelve Days. 364** — one for every day of the year but one. Day *n* brings 1 + 2 + … + *n* gifts, so the twelve days add up to 1 + 3 + 6 + 10 + 15 + 21 + 28 + 36 + 45 + 55 + 66 + 78 = 364.
2. **One Bulb Out. Six.** Test half the string each time and keep the half with the dud: 64 → 32 → 16 → 8 → 4 → 2 → 1.
3. **The Toppled Snowman. Pete.** Snow doesn't melt at −8 °C — and the only person explaining it away is the one who did it.
4. **The Advent Door. Thursday.** Door 24 comes 23 days after door 1: three whole weeks and two days, so two days after Tuesday.
5. **Ribbon Round the Box. 170 cm.** Lengthwise: 2 × (30 + 10) = 80 cm. Widthwise: 2 × (20 + 10) = 60 cm. Plus 30 cm for the bow.
6. **The Gingerbread Thief. Jasper.** If Holly were the thief, her lie would make Ivy guilty too. If Kris were the thief, his lie would make Holly a liar as well. If Ivy were the thief, honest Holly would be wrong about her. That leaves Jasper: he lies about Ivy, Ivy rightly names him, and Holly and Kris are honest.
7. **Secret Santa. Cass.** Cass can't buy for herself, for Dee (clue 4), for Bo (Dee does) or for Ann (Ann buys for Cass, and that would close a loop of two). So Cass buys for Eli. The whole loop: Ann → Cass → Eli → Dee → Bo → Ann.
8. **The Reindeer Line-up. Vixen.** Dasher and Dancer share a pair, and it isn't the front one (Comet is there). If they were at the back, Prancer would have to be front left, leaving the middle pair to Vixen and Cupid side by side — but Vixen must be in front of Cupid. So Dasher and Dancer are the middle pair and Prancer is at the back. Vixen is on the left and ahead of Cupid, so she pulls front left.
9. **Gift Tags. Nate.** Pip's present needs snow, so Pip gets the sled. Olive can't have the telescope or the puppet, so she gets the train set. That leaves the telescope and the puppet for Mia and Nate, and Nate didn't get the telescope.
10. **Who Unplugged the Lights?. Noel.** Noel's and Opal's statements say the same thing, so they're either both true or both false. Two true statements would be one too many, so both are false — Noel did it — and Piers's is the one true statement.
11. **Elves and Imps. Fennel.** If Fennel were an elf, Bramble would be the culprit — an imp, whose lie would make Clove the culprit too. So Fennel is an imp. Then Clove's statement is true, so Clove is an elf, and elves don't break train sets. Fennel lies, so Bramble didn't break it either. The culprit is Fennel.
12. **Who Ate Santa's Cookies?. Ruby.** Mum and Dad went to bed an hour apart: 10:00 and 11:00, 10:30 and 11:30, or 11:00 and midnight. Leo and Ruby need two times half an hour apart. With Mum at 10:30 and Dad at 11:30, the times left (10:00, 11:00, midnight) are never half an hour apart. With Mum at 11:00 and Dad at midnight, Leo and Ruby would need 10:00 and 10:30 — but Gran went to bed before Leo. So Mum 10:00, Gran 10:30, Dad 11:00, Leo 11:30 and Ruby at midnight.

Want a bigger mystery?

A new free floor-plan murder mystery every day at **roomformurder.com** — place the suspects, find who was alone with the victim. Free printable cases with answers at roomformurder.com/printable.