

Twenty Questions Tree

Ages 8-14 + parents · 1-4 players · about 25 minutes · no screens

OBJECTIVE

Build a tree of yes/no questions that sorts all 16 Training objects into Animal, Plant, Machine or Thing, using as few questions as you can. Then run 6 Surprise objects your tree has never seen through it. Score for a small tree and for every Surprise it gets right.

MATERIALS

22 Object cards to cut out (16 Training, 6 Surprise), a Tree Mat per team, and a pencil.

SETUP

- 1 Cut out the 22 Object cards. 16 are Training cards with their kind printed on them. 6 are Surprise cards: fold each on the dotted line so the answer is hidden, and set them aside face-down.
- 2 Play solo, or split into two teams. Each team takes a Tree Mat and a pencil.
- 3 The 8 questions are printed on the Tree Mat. Every Object card shows its own YES / NO answer to each one, by number.

BUILD YOUR TREE

- 1 Pick a question and write its number in the top box. Split the Training cards: YES answers into a pile on the left, NO on the right.
- 2 Look at each pile. All one kind? Write that kind in the next box down, and that branch is done. Mixed? Write another question number and split that pile again.
- 3 A branch can ask at most 3 questions, the height of the mat. You can use a question more than once in different branches.
- 4 Check it: send every Training card down your tree from the top. Each one must land on its own kind. If one doesn't, fix the tree before you score.

TEST IT ON SURPRISES

- 1 Take the Surprise cards. For each one, start at the top of your tree and follow its answers down to a kind. Say it out loud.
- 2 Unfold the card to check. Right? Your team scores the points.
- 3 With two teams, run every Surprise through both trees. Different trees can disagree.

HOW TO SCORE

- 1 Perfect tree: 8 minus the number of questions on it (at least 1). A tree with 4 questions scores 4.
- 2 Each Surprise your tree sorts right: +2.
- 3 Most points wins. Ties share the win.

WHAT THE TREE TEACHES

- 1 Features: a computer can't see a dog. It sees answers to questions: alive? makes sounds? Those answers are called features.
- 2 Decision tree: yes/no questions in a row. Real AI systems sort email, photos and loan forms this way, just with thousands of questions.
- 3 Smaller isn't always smarter: the smallest perfect tree uses 3 questions, and every one of those trees gets at least one Surprise wrong.
- 4 Training vs. testing: a tree is only as good as the objects it learned from. Coral and robot dogs weren't in the training pile.
- 5 Edge cases: is a Venus flytrap moving? Is a wind-up car a machine? Real AI meets these all the time, and people have to decide.

VARIANTS

- 1 Smallest tree race: who can find a perfect tree with the fewest questions? (It can be done with 3.)
- 2 Add your own: write a new Object card for something in the room, answers and all. Does your tree sort it right?
- 3 Retrain: after the Surprises, add them to the Training pile and build again. Does the tree change?

PRINT TONIGHT

Plain paper, one side, Actual Size / 100%. Cut out the Object cards and fold each Surprise card on the dotted line so its answer is hidden. Print one Tree Mat per team. You need a pencil.

Object cards: 2 pages. Tree Mat: 1 page, landscape, one per team.