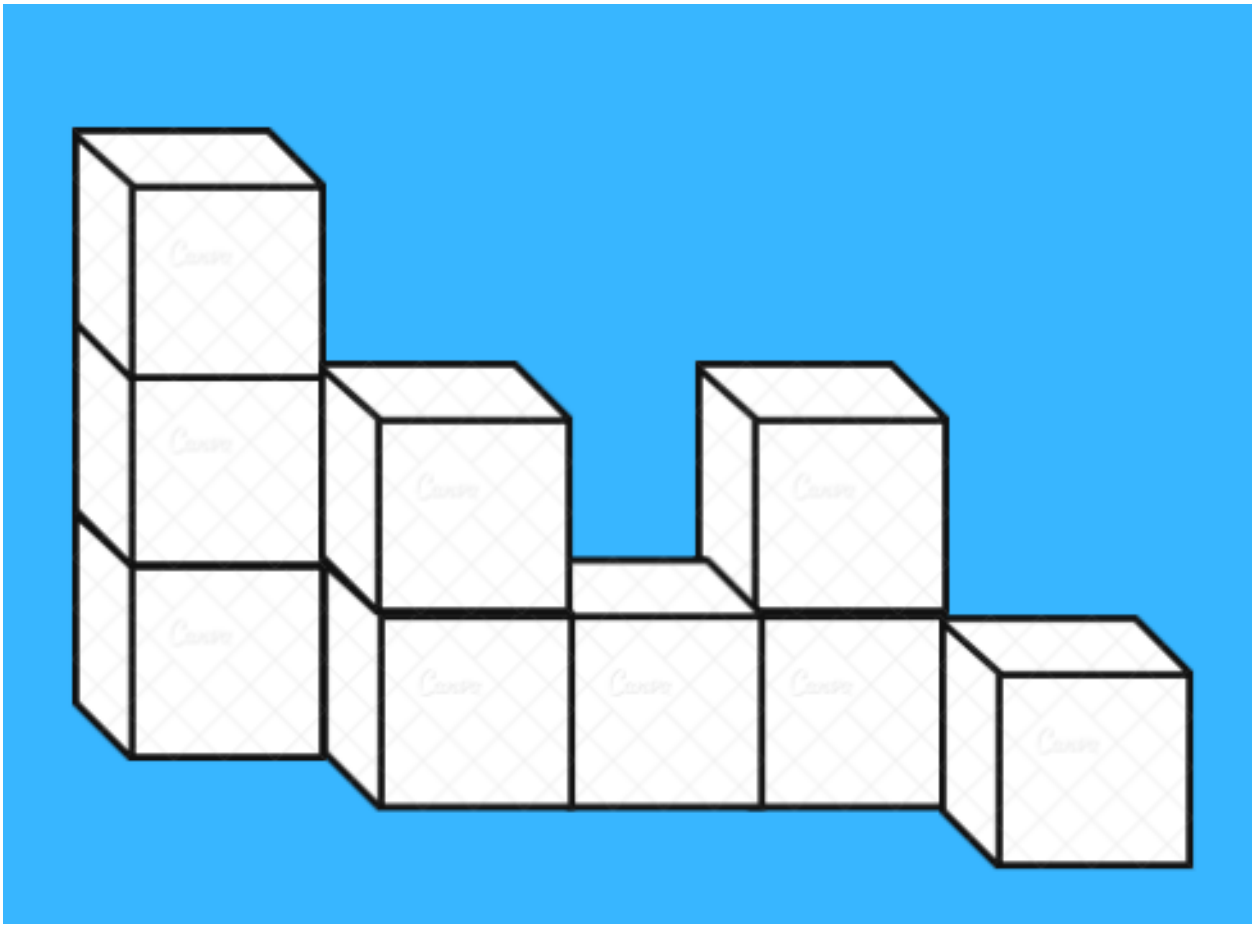
Cube counting is one question type you'll encounter on the DAT's Perceptual Ability Test, or PAT section. **This is your guide to tackling cube counting**: read on to learn what to expect and how to breeze through these questions with ease!

What to expect

On the Dental Admission Test, you will have a total of 15 cube counting questions (#61–75 of the PAT section). You will see figures formed by various arrangements of stacked cubes. The number of questions associated with each figure varies, but there will nearly always be 2–4 questions for each figure. This is unique to cube counting; for the other PAT question types, each figure has only one question associated with it. Here's a simple example of a cube counting figure:

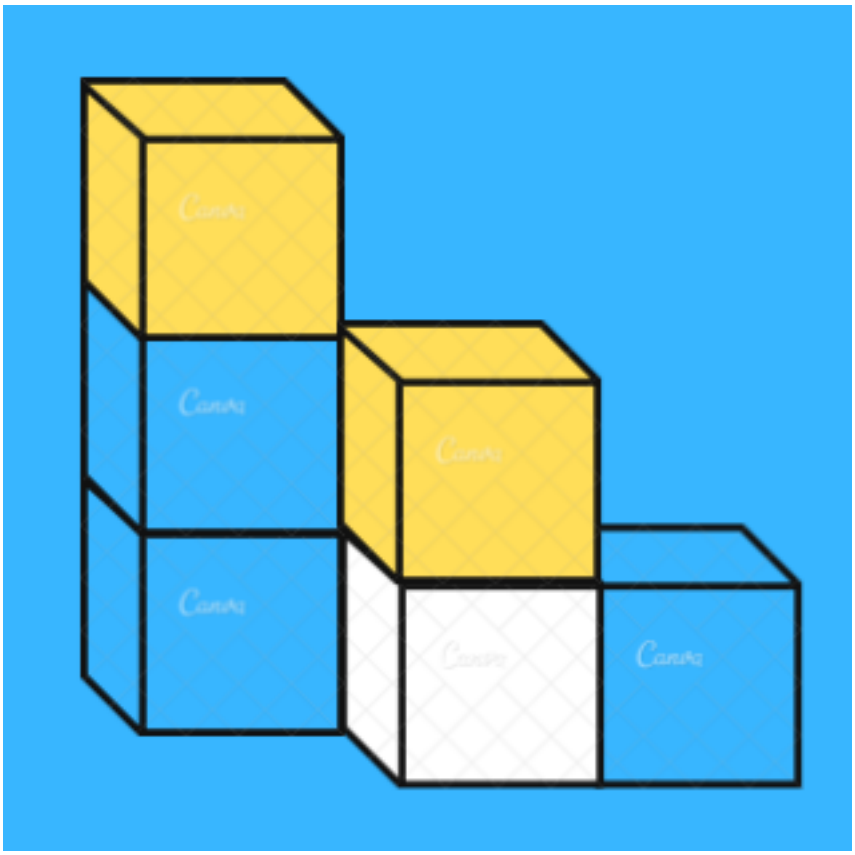


Now, imagine that the exterior of the figure is painted.

How many cubes have 1 side painted?

How many cubes have 2 sides painted?

3 sides? 4 sides? 5 sides?



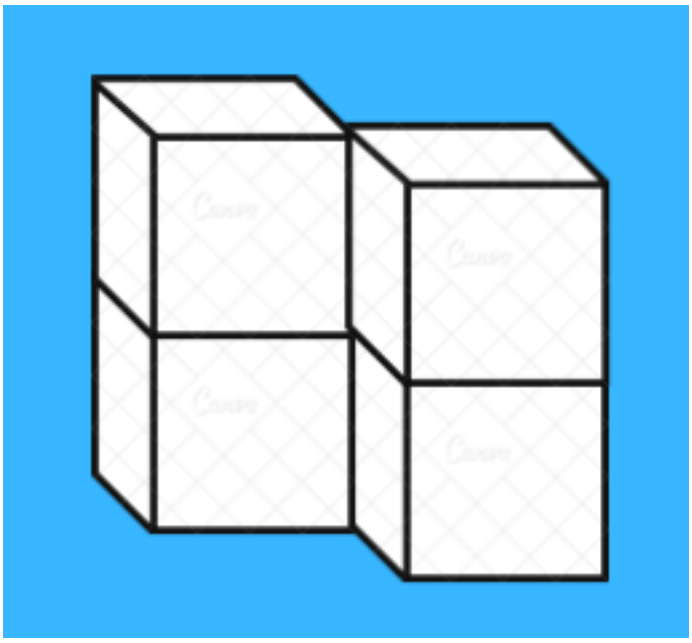
In this example, the yellow cubes have 5 sides painted, the blue cubes have 4 sides painted, and the white cube has 3 sides painted.

These are the types of questions you will be presented with.

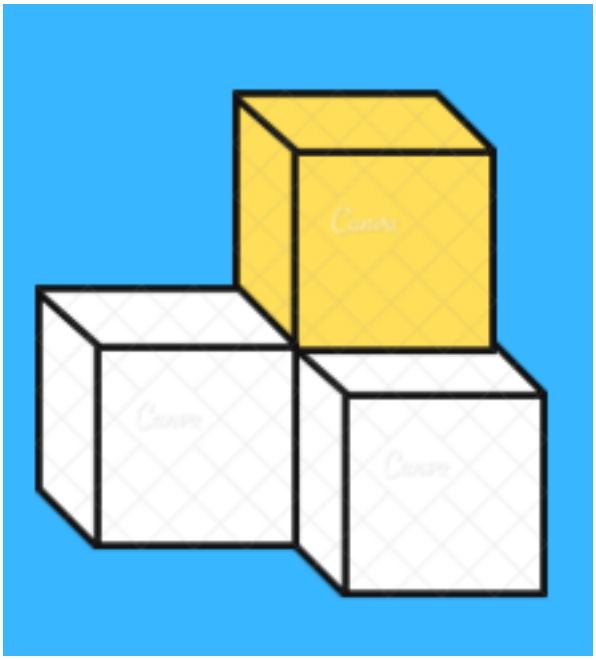
The rules

Like other PAT question types, cube counting has its own set of rules. Here they are:

- Only the **exposed sides** of the cubes are painted. That is, the bottom/underside of a cube resting on the ground or on top of another cube will NOT be painted. Likewise, any sides blocked by adjacent cubes will NOT be painted.
- There will be **no *needlessly* hidden cubes**. The writers of the DAT won't try to trick you with random cubes that aren't visible from the perspective from which the figure is drawn. However, **there can be hidden cubes if there are *necessary* to support another cube**. Take the following examples:



There are no hidden cubes in this figure. Every cube shown is appropriately supported.



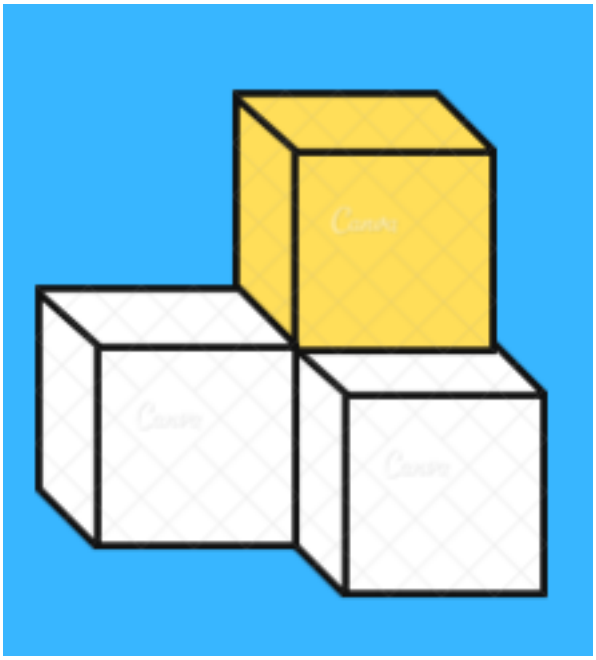
There is a hidden cube. At first glance, you might think there are 3 cubes in this image. However, there must be 4 cubes! One is hidden from direct sight, but we know it must exist to support the top cube (colored yellow). Otherwise, the top cube would be attached only by its edges.

What are “floating cubes”?

Until 2020, DAT cube counting did not include “floating” cubes (cubes that are unsupported at the bottom). However, figures with “floating” cubes are now fair game. At first, this can be

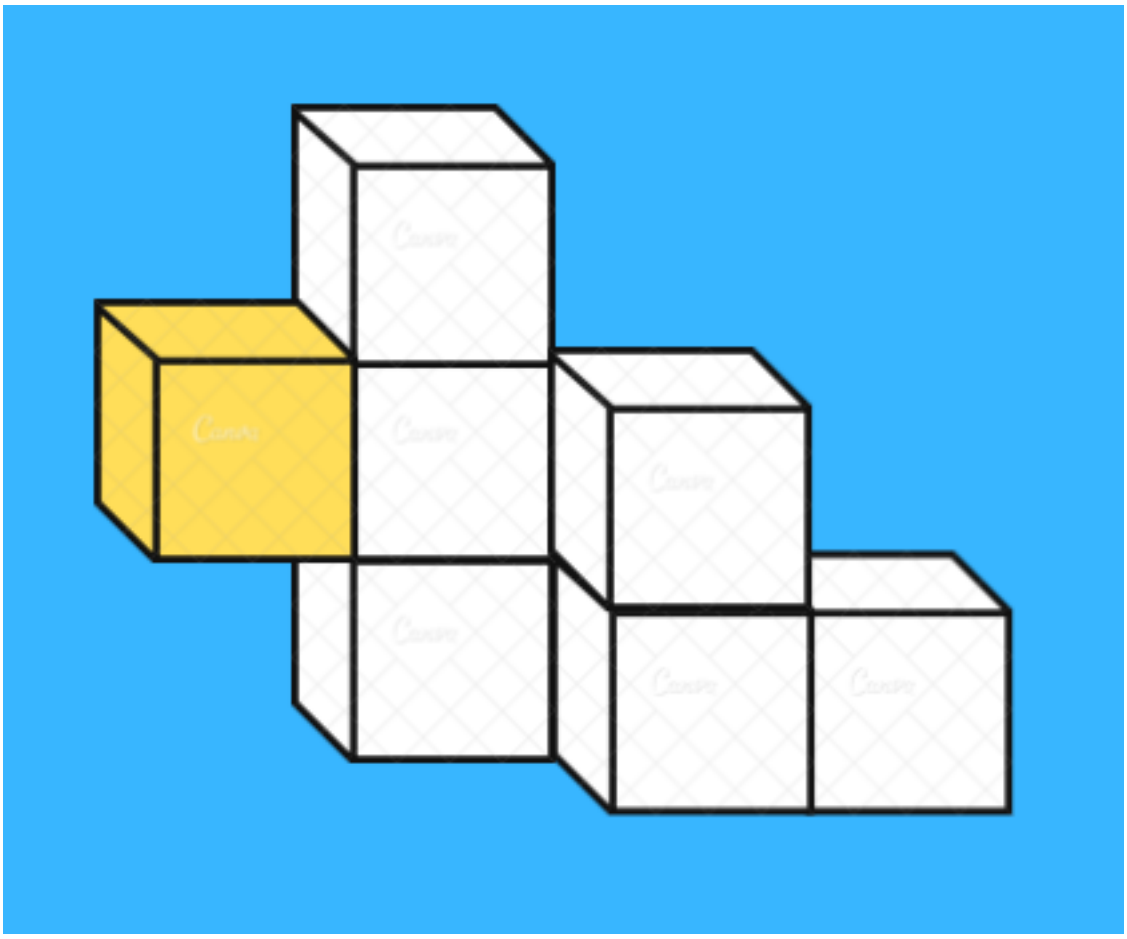
confusing, especially in the context of the *necessary* hidden cubes we just discussed. What's the difference?

***Necessary* hidden cubes** are not directly visible, but they are needed to support another cube that would otherwise only be attached by its edges.



A figure with a necessary hidden cube. The hidden cube is not directly visible, but it must exist. Otherwise, the top cube (colored yellow) would only be attached by its edges.

"Floating" cubes *are* visible. They are attached to the figure by at least one of the cube's faces and don't have a cube directly beneath them supporting the bottom.



A “floating” cube (colored yellow). There is no cube directly beneath it, but it is attached by one of its faces.

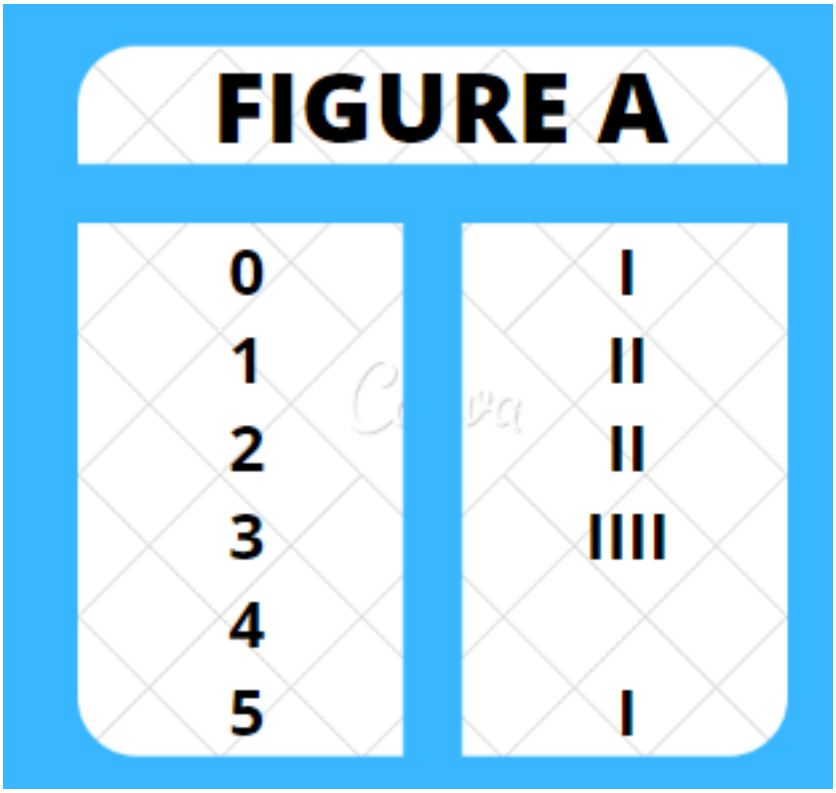
If you encounter a figure with “floating” cubes on the DAT, don’t overthink it! Count it like any other cube. In the example above, the bottom of the cube is exposed, so it would be painted if the exterior of the figure were painted. Therefore, the yellow “floating” cube would have 5 of its sides painted.

The strategies

- **Practice, practice, practice!** This is the number one way to improve at cube counting. Do cube counting practice sets. Use a cube counting generator. Gain as much exposure as possible to this question type. Over time, you will be able to much more quickly identify how many sides a cube has painted without needing to actually count it out every time, which will improve your timing.
- **Create models if you need help visualizing the figures at first.** It can be helpful to create a physical model to help with visualization. Using blocks, dice, boxes, folded-up paper cubes — whatever you have on hand — you can create simple constructions and figure out how many sides each cube would

have painted. This is especially useful if you're just getting started with cube counting or if you're finding it particularly challenging to visualize the figures.

- **Create a tally table.** This approach to cube counting works very well because it is methodical and organized. For each figure, draw a quick table: in the left column, write out the possible number of sides painted (0–5); in the right column, leave space for tally marks. Then, methodically scan the figure, keeping track of how many sides each cube has painted using your tally table. If it helps you, you can skip forward and see which cubes the questions ask about (ie., cubes with 5 sides painted; cubes with 2 sides painted) and be extra sure that you are counting these correctly. Or, just dive in, begin tallying, and worry about the questions later, knowing you'll have tallied everything up anyways. To double-check that you didn't accidentally skip any cubes, you can count the total number of cubes in the figure and compare that to the number of tally marks in your table.



- **Scan each figure in the same way.** It's up to you whether you prefer to count cubes from left to right, from front to back, and from top to bottom. Whichever direction you prefer, pick one and stick with it as you scan each figure and tally up its cubes. Consistency is key for cube counting!
- **If you make a mistake, don't panic.** Imagine that the question asks how many cubes have 3 sides painted. The answer choices are 1 cube, 2 cubes, 3 cubes, 4 cubes, and 5 cubes. You counted 6 cubes. Now what? If you're really pressed for time, you can hope that you simply missed a cube and select the next-closest option (5 cubes, in this case). However, mistakes in cube counting

often tend to carry over. You might have thought that a cube that actually had 4 sides painted only had 3 sides painted, which would affect both your tallies for “4 sides painted” (one too few) and “3 sides painted” (one extra). Therefore, if you have a moment to spare, take a deep breath and re-tally your cubes, being mindful of where you might have made a mistake the first time. Counting cubes is a relatively quick process, and cube counting is a great opportunity to get nearly every question correct and boost your PAT score.

- **Manage your time.** Be mindful of how much time you spend on cube counting. This question type tends to be one of the quicker ones in the PAT section, so budget your time to allow more time for trickier questions.

The more you practice, the easier and more natural cube counting will become. Have confidence that you have the skills and resources necessary to tackle this PAT question type. Good luck!