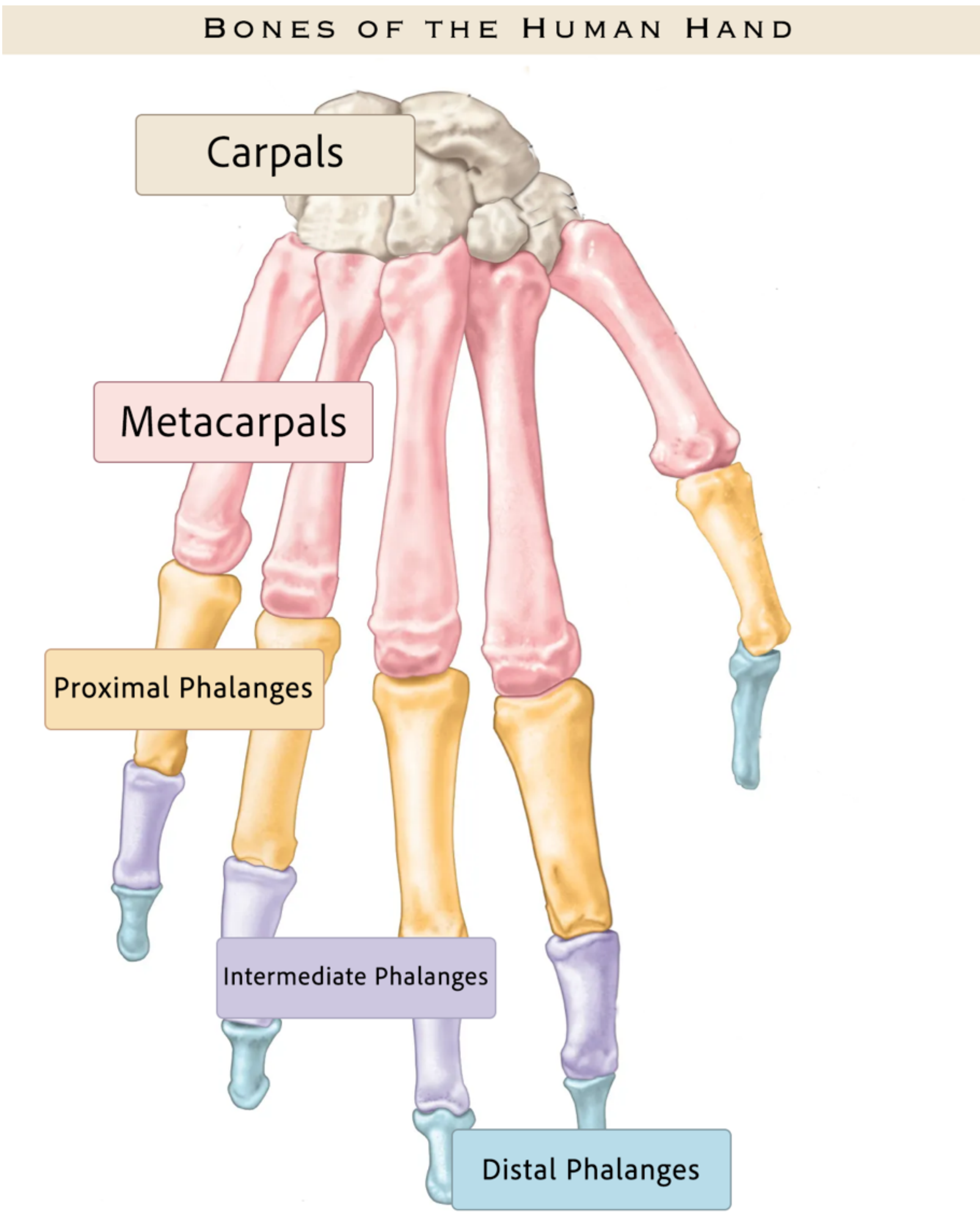
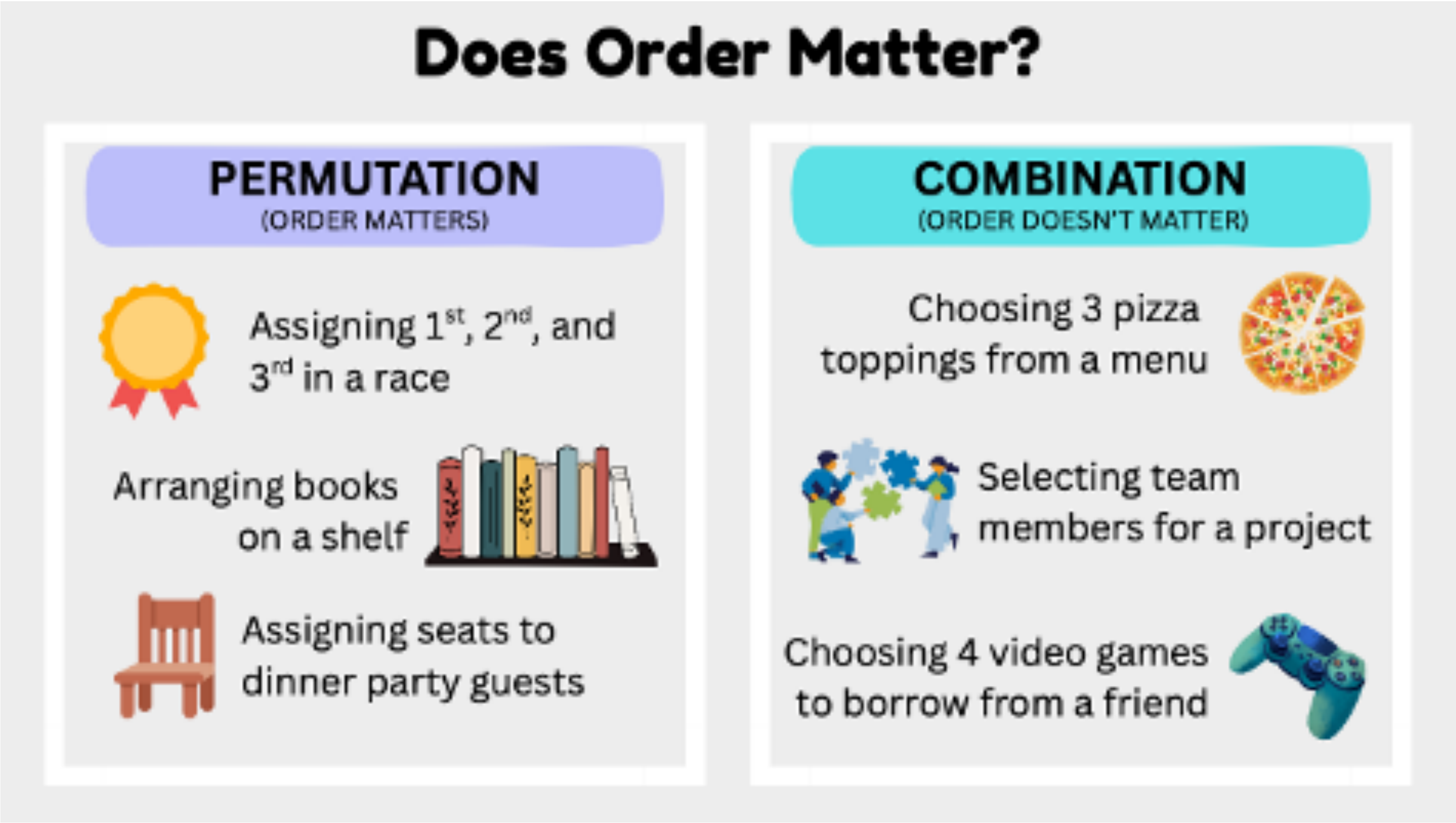
Coherence Principle: In order to incorporate the coherence principle, the visual was made to be simple, without extraneous information. The simple and clear step-by-step visuals, combined with concise and relevant text, makes it easy for learners to follow the process without needing a lengthy explanation. The design avoids unnecessary details and distractions, focusing only on the essential information needed to complete the magic ring.

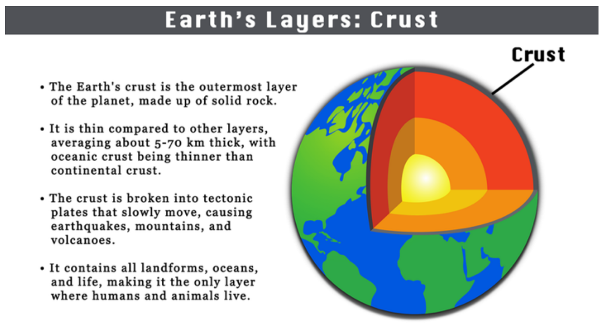
Spatial Contiguity Principle: I designed the diagram following the Spatial Contiguity Principle by placing each label directly next to the corresponding bone section rather than listing them separately in a legend. This ensures that learners can immediately associate names with visual representations without extra cognitive effort. Additionally, I used color coding to distinguish between different groups of bones, reinforcing the structure without overwhelming the viewer. The background behind each label improves readability while keeping the design clean and uncluttered.

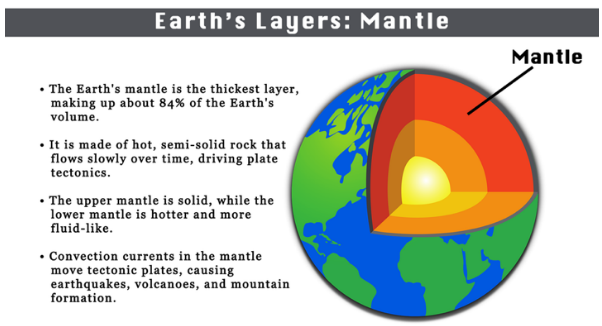


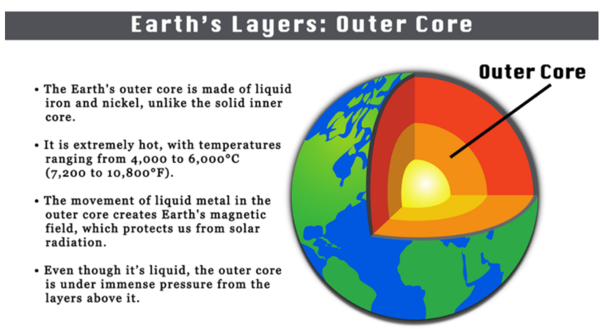
Another example of the **Spatial Contiguity Principle** is the following infographic. I designed it so each example is place directly next to its corresponding image within the permutation or combination section, rather than separating them into a distant list. This allows learners to immediately connect the concept with its visual representation, reducing unnecessary cognitive load. Additionally, grouping related items within bordered sections reinforces the distinction between the two concepts while maintaining a clean and organized layout.

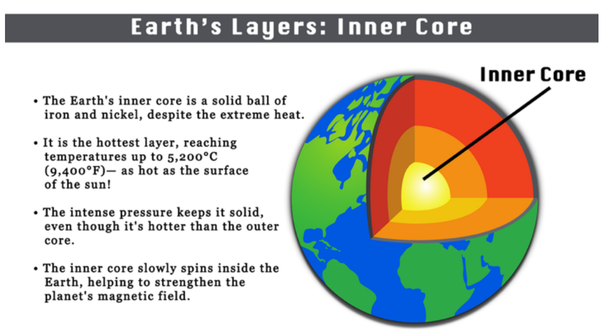


Temporal Contiguity Principle: These slides follow the Temporal Contiguity Principle by presenting corresponding words and visuals together rather than separately. Each slide: (a) labels the specific Earth layer being discussed while showing its location in a cutaway diagram, (b) provides bulleted text descriptions alongside the labeled diagram so students can process verbal and visual information at the same time, and (c) avoids separating explanation and visuals in time, which helps learners integrate the information more effectively in working memory. By aligning images and text in real-time, this design helps reduce cognitive overload and enhances learner comprehension and retention.

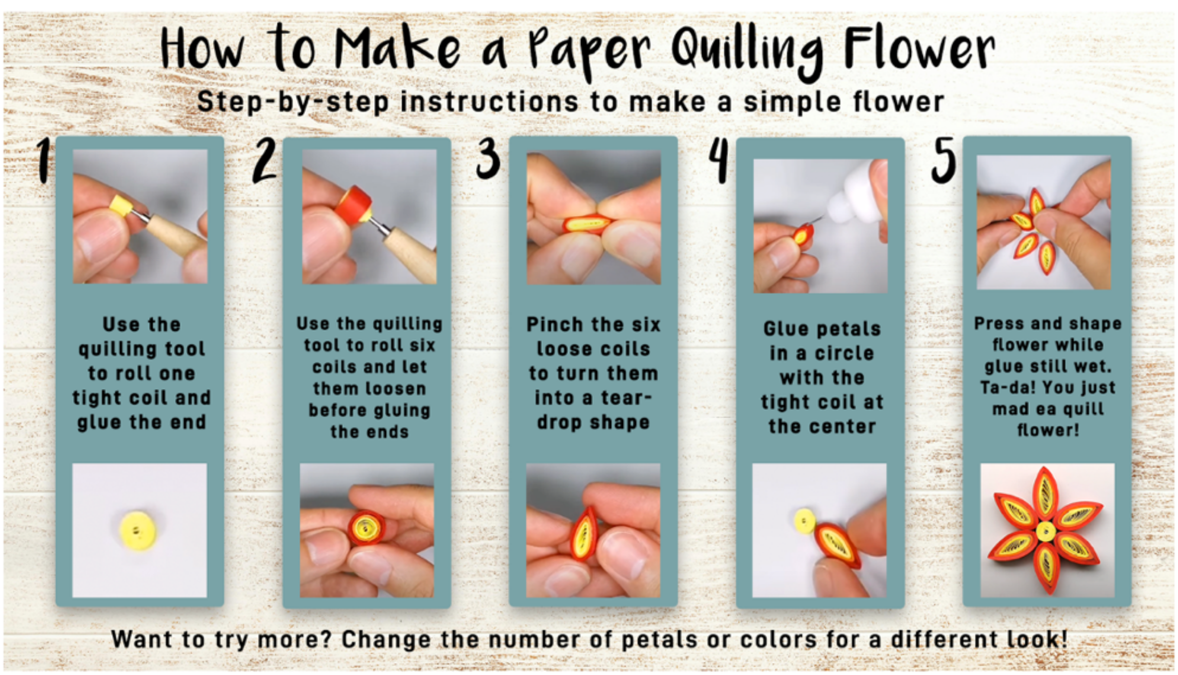






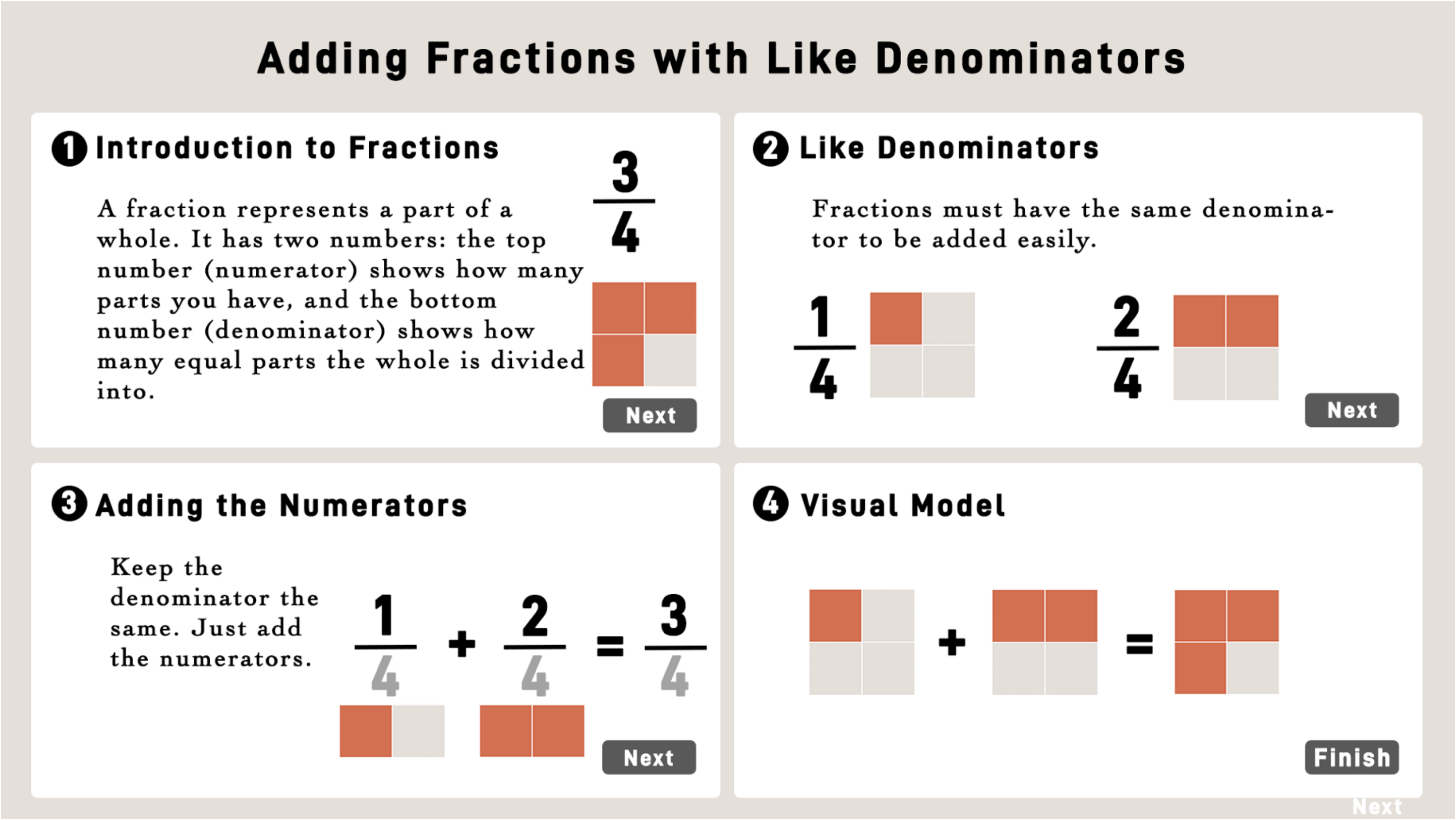


Pre-training Principle: I designed the material according to the Pre-training Principle from the Cognitive Theory of Multimedia Learning, which states that people learn better from multimedia lessons when they already know the names and characteristics of key concepts. The first slide focuses solely on building that key knowledge by presenting the terms visually and verbally. This separates component learning from causal learning, reducing essential processing during the main instructional slide.



Another example of the **Pre-Training Principle** is the following infographic. The first section establishes what each component is before showing how they interact. It begins with clear definitions of key terms related to calculating regression coefficients. In this way, the learners are first introduced to the necessary components. The step-by-step approach builds progressively from simple concepts to more complex calculations. Visual aids and concrete examples are provided that connect abstract formulas to their real-world meaning. Because of the design's focus on building in pre-training, learners are able to focus on understanding the process rather than trying to decode unfamiliar terminology at the same time.

Segmenting Principle: I designed this material based on the Segmenting Principle from the Cognitive Theory of Multimedia Learning. This principle states that people learn better when instructional content is broken into learner-controlled segments rather than presented all at once. Each of the four steps is visually separated and clearly labeled, allowing learners to focus on one key idea at a time. There are also "Next" buttons to allow for learner-paced instruction. This format reduces cognitive overload and supports deeper understanding of each concept before the learner moves on to the next step.



Signaling Principle: I designed the diagram material to highlight the signaling principle of multimedia instruction. Important variables (a, b, c) are color-coded and font-distinguished), guiding learners to key information and quickly showing where they come into play during a subsequent step. Visual separation of the steps (with their own color-coding) help learners mentally organize the process. This also allows leaners to concentrate on one concept at a time (segmenting principle). The bold, colored, solution statement reinforces the final result. Overall, the design was optimized to highlight key elements while maintaining an easy-to-read format.