The Pop Ups. Stay seated. Three, two, one, ignition. Get ready for an adventure of magnificent proportion.

The Pop Ups. (Singing.) I don't know what you've been told, but we're in a golden age - so many discoveries that are jumping off the page. Wow in the world. Wow in the world. Wow in the world. Wow in the world. Wow in the world. Wow in the world. Wow in the world. Wow in the world. Wow in the world.

The Pop Ups. With Guy and Mindy. We're on our way, Houston.

Mindy. Thank you. (On megaphone.) Attention friends and family!

Dennis. Ahem!

Mindy. And Dennis.

Dennis. Thank you!

Mindy. I, Mindy, would like to cordially invite you all to attend the grand unveiling of my newly remodeled gingerbread mansion!

(Soundbite of door opening.)

Guy. Mindy?

Mindy. Bolder! Brighter! More mansion-y!

Guy. Wow! Well, I've gotta see this.

(Soundbite of door closing and locking.)

Mindy. An artistic, engineering and design marvel…made for a Mindy. Hee hee!

Guy. Hey, Mindy!

Mindy. Oh hey, Guy Razzy!
(Soundbite of tape recorder winding down.)

Guy. I–I–I'm here for the grand unveiling.

Mindy. Good! You’re just in time.

Guy. Whoa. Why does it look like there’s a big top circus tent covering your gingerbread mansion?

Mindy. Oh that's because there’s a big top circus tent covering my gingerbread mansion. I thought it would add a little spectacle and drama to the unveiling today!

Dennis. (Gasp.) Wow! Look at all this spectacle and drama!

Mindy. / Guy. Hi Dennis.

Dennis. Hi Mindy! Hi Guy! Ooh! Is there an open house? Can I come into the open house? And will there be a huge plate of tiny cheeses I can eat? I promise I won't snoop, but I will judge all of your decisions.

Reggie. Coo!

Mindy. Dennis!

Gramma G-Force. Did somebody call my name?

Thomas Fingerling. G-Force, nobody called yer’ name! They were talking to that dentist feller!

Mindy. Gramma G-Force! Hugs!

Gramma G-Force. Say, what?

Mindy. Nevermind.

Guy. So Mindy, looks like we’re all here! Ready to unveil the masterpiece that you’ve been building in the middle of the night for the last two months keeping me awake with jackhammers and drills and

Mindy. (Groans. On megaphone.) Ah-hem! Without further adieu, please stand back, hold your breath, close your eyes, and behold, the gingerbread palace!

Thomas Fingerling. Now what.

Mindy. Reggie!

Reggie. Coo!

Mindy. Pull the tent!

(Soundbite of tent and roof coming off.)

Everyone. (Gasps.)

Dennis. Lookout!

Thomas Fingerling. Holy smokes!

Reggie. Coooo!

Guy. Was that the roof?

Dennis. Did you see that?

Reggie. Coo!

Dennis. They pulled the circus tent veil so hard the gingerbread roof came off and now it’s in the dirt!

Thomas Fingerling. Can we eat it?

Mindy. Now, if everyone would like to join me, it would be my pleasure to give you a tour of the inside.

Dennis. Oh a private tour!

Reggie. Coo!

Mindy. Follow me as we enter through the new and improved chocolate front door.

(Soundbite of knocking.)

Everyone. Ooh!

Thomas Fingerling. Wow

Mindy. Opening the door like a civilized human–

(Soundbite of door opening.)

Gramma G-Force. That's some nice door openin' right there.

(Soundbite of door hitting wall.)

Reggie. Coo!

Guy. Uh, Mindy?

Mindy. Yes, Guy Raz?

Guy. Your front door opens up to a wall.

Reggie. Coo!

Mindy. Oh, yes. I did that on purpose to keep intruders out. Pretty creative, huh?

Dennis. I'll say!

Guy. Well it might be creative, but it's also ineffective as you're keeping yourself out too!

Mindy. Oh, right. Well then, we'll just have to enter through the second story garage there! See? Right up there!

Reggie. Coo!

Guy. Whaa–

Gramma G-Force. Hi-yah!

Guy. What in the?

Gramma G-Force. Boo-ya! Look! I found an opening!

Reggie. Coo!

Guy. Did she just kick a hole in your house, Mindy?

Mindy. House? Guy Raz, this is a palace! Come on, everyone! Through the hole!

(Soundbite of struggle.)

Guy. (Crawling through.) Are you sure this home is structurally sound, Mindy?

Mindy. Yes! Of course I'm not sure it’s structurally sound, Guy Raz!

(Soundbite of crash.)

Reggie. Coo!

Guy. What was that?

Thomas Fingerling. If I had to guess, sounded like a second floor gumball bowling alley collapsing into a candy cane kitchen!

Mindy. Whew! I was worried it was something serious for a sec!

Guy. (Groans.)

Mindy. Now, if you’ll all follow me up the stairs here, we can begin the tour on the top floor.

Dennis. Okay, ah.

(Soundbite of sticking.)

Gramma G-Force. Why are these stairs so sticky?

Mindy. Oh, that’s because we designed them to be non-slip. Every step on the spiralized staircase is coated in a layer of already-been-chewed bubble gum.

Reggie. Coo!

Guy. What? Ew!

Mindy. Come along now! Let's pick up the pace! Only forty-three thousand more steps to go!

Guy. (Panting.) Uh, Mindy?

Mindy. Yes, Guy Razzy?

Guy. (Out of breath.) Well, we've made it to the top, but there's just. One. Big. Problem.

Mindy. I know, I know. The stairs go up, but they don't go down.

Guy. No, no, Mindy, look behind you! At the end of this staircase!

Reggie. Coo!

Mindy. Guy Raz, there's nothing there but this gingerbread wall.

(Soundbite of knocking.)

Guy. Exactly, Mindy! What kind of stairway leads to a wall? I've never seen a home with so many dead ends before! Come to think of it, I've never seen a home with *any* dead ends before!

Gramma G-Force. Mindy, how long we gonna be trapped on this stairway to the wall. I gotta visit the comfort station and talk to a man about a horse.

Guy. Huh?

Mindy. Oh, you mean a bathroom! Well, as a matter of fact, there's a half bath on the other side of this wall!

Reggie. Coo!

Guy. Uh…

Mindy. Yeah, I got a little creative with the half bath design. It's got half a toilet. Half a sink and half a bathtub. Very fun.

Reggie. Coo! Coo!

Gramma G-Force. Stand back everyone, I'm gonna make a run for it.

Guy. What?

(Soundbite of Gramma G-force running and busting through the wall.)

Reggie. Coo!

Everyone. Ooh!

Dennis. Oh my!

Guy. Mindy, I’m worried that your remodel breaks every building code violation in the book.

Mindy. What? I don't know what you’re talking about, Guy Raz!

Guy. Your front door opens to a wall. Your staircase leads to a wall. Your garage is on the second story with no way of getting into it. The bowling alley fell through the kitchen ceiling, and what I'm getting at Mindy, is that you are going to need a complete renovation of your renovation! This place is an accident waiting to happen!

(Soundbite of flushing and water leaking.)

Gramma G-Force. Ah, hush puppies.

Dennis. Uh, doesn’t sound like we’re waiting anymore.

Gramma G-Force. Sorry, Mindy, had a little accident on your half bathroom floor.

Mindy. Oh, that's okay, Gramma G-Force! We’re going to remodel that half bathroom anyway.

Guy. I'm sorry. We?

Mindy. Yeah! You know, you’re right Guy Raz. This place needs a lot of work and the gang’s all here. It’s time for us to roll up our sleeves, roll out the fruity roll ups, and get creative!

Guy. (Groans.)

Mindy. Thomas Fingerling, you’re good at building stuff.

Thomas Fingerling. Well, that's true.

Mindy. We’re going to need your architectural engineering skills!

Thomas Fingerling. Well, I'm afraid I don't know how to build with baked goods. Too artsy! But I can work with wood and nails and drywall.

Dennis. Oh, count me out. I'm more of an artiste! Hammers and nails and wood, it’s just so heavy and loud.

Reggie. Coo!

Guy. You know, Mindy. This reminds me of a scientific study I just read!

Dennis. You read a scientific study on hammers?

Guy. No no, hear me out on this. So this is a study that was led by an international expert on creativity!

Mindy. Ah, creativity! The use of imagination!

Thomas Fingerling. Oh, like turning new, original ideas into reality!

Dennis. Or coming up with new ways of solving problems!

Guy. Uh, exactly!

Mindy. Wait, there are experts on this stuff?

Guy. Yes! And in this case, the expert is a researcher named David Cropley, from the University of South Australia. David and fellow researchers named Kim van Broekhoven and Philipp Seegers from Maastricht University in the Netherlands, grouped up and set out to explore the differences between creativity in the sciences versus creativity in the arts.

Mindy. So in other words, what would we find in the creativity toolkit of a person working in STEM, you know, science, technology, engineering and math–

Guy. And what would we find in the creativity toolkit of someone working in the fine arts. You know, like literature or painting or performing or music.

Mindy. Actually, as it turns out, math and music have much more in common than you might think!

Dennis. No way!

Thomas Fingerling. Phooey!

Guy. Mindy's right! For example, both math and music use patterns! Music has repeating choruses and rhythms.

Mindy. And math uses patterns to explain and predict the unknown!

Thomas Fingerling. Huh. I suppose that's true.

Dennis. Well, how do you like that! Art and science and Dennis and Tommy, two birds of a feather!

Mindy. So back to these creativity toolkits.

Thomas Fingerling. Ok, what about 'em?

Mindy. I feel like we're going to need one to fix my gingerbread mansion.

Dennis. Well, probably, but which one? Art or science? Did the study say which one was better?

Guy. Well, to explore the difference in "creativity toolkits" between the arts and the sciences, these researchers had more than two thousand German college students take a survey on creativity. And most of these students were taking STEM type classes.

Mindy. Oh, so science, technology, engineering, and math.

Guy. Exactly! And the rest were taking fine arts classes.

Mindy. So things like theater, music, poetry, painting, things like that.

Guy. Exactly.

Mindy. And what kinds of questions were these students asked in the survey?

Guy. Well, the survey was broken into three parts. For the first part, they wanted to understand the personalities of the students. And with that, they asked questions to help them better understand if the students thought of themselves as creative people.

Mindy. Okay. And for the second part?

Guy. The next part focused on creative process. So, how did these students come up with new ideas when tasked with solving a problem?

Mindy. The generation of new ideas! And the third part?

Guy. Well, the third part had the students rate some solutions to a problem. Asking them how effective, original, or realistic they believed certain solutions to be.

Mindy. And when the researchers studied the results of the survey, what did they discover?

Guy. Well, they learned that when it comes to creativity, it doesn't matter if you're a painter or an engineer or a poet or a scientist. The creativity toolkits are essentially the same!

Mindy. Woah! So what is in these toolkits? And where can I find one to help me remodel my remodeled gingerbread mansion?

Guy. Well the first thing that you'll find in any creativity toolkit is a sense of being open to new ideas!

Thomas Fingerling. Ok, Mr. Candy Artiste. If you make us some liquorice rope and pretzel boards, I'll build a suspension bridge to the second story garage you keep yammering about.

Dennis. Can do!

Guy. The second thing you'll find in any creativity toolkit, is lots of divergent thinking!

Mindy. Oh yeah! Divergent thinking is where you come up with lots of ideas and explore lots of possible solutions to a problem!

Guy. Yes!

Mindy. And some of those ideas might be bad.

Guy. Which is good!

Dennis. (Gasps.) I got it! Let's put a large sculpture of a wombat poop made of dark chocolate at the top of the staircase to nowhere.

Reggie. Coo. Coo coo coo?

Dennis. Because then it won't be a staircase to nowhere, Reggie! It'll be a staircase to the huge wombat poo!

Reggie. Coo. Coo.

Thomas Fingerling. And then let's pad all the walls with marshmallows so Mindy and G-Force don't stub their toes when kickin' em' down!

Reggie. Coo. Coo!

Dennis. Reggie! It might work, it might not! It's worth a try!

Thomas Fingerling. Yeah, pigeon, where's your divergent thinking?

Reggie. Coo!

Guy. And the third thing you'll find in any of these creative toolkits, is a sense of flexibility! If your solution to a problem doesn't work, you might have to make small changes or even completely start over again using what you learned from your failed attempt!

Mindy. Guy Raz! This means that there's hope for my gingerbread mansion after all!

Dennis. It's a palace!

Mindy. We can learn from what didn't work, come up with lots of new ideas that could work, and combine both engineering *and* art to create the

gingerbread mansion of my dreams! So now that we have research that suggests that both the arts and the sciences require the same kind of creative thinking, especially when it comes to problem solving, what do these researchers hope to do with this information?

Guy. Well, the hope is that this will help teachers think more holistically when teaching creativity in schools. Making creativity part of every part of learning!

Mindy. Even math?

Guy. Especially math! For example, Professor Cropley, one of the researchers in this study, gave the example of the math problem, two plus two. And by applying creativity to math, instead of a teacher simply asking for the answer, they might ask the students how many different ways they can come up with the answer!

Reggie. Coo!

Mindy. Well, let’s see here. Two plus two could mean the same as three plus one.

Dennis. That checks out.

Mindy. Or it could mean seven minus three.

Guy. Exactly! See! Instead of a simple right or wrong, you’re coming up with lots of different ways on how to say the same math equation!

Mindy. Fun!

Reggie. Coo coo!

Mindy. So, looking at my gingerbread mansion, and all of the different problems we’ll need to solve, I think we’re going to need fine arts and design and engineering and math. I mean we want this place to look aesthetically pleasing to the eye but also have it functional and safe as well.

Guy. That's right! I mean, who knew that all of those opportunities for creativity could be hiding in one collapsing house of cake and candy!

Mindy. Yeah. It’s a real sweet death trap.

Thomas Fingerling. / Dennis. Palace!