



Spark!Lab Dr. InBae Yoon

2019 Invent It Challenge

STUDENT GUIDE



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inventitchallenge2019.epals.com

ME? AN INVENTOR? YES YOU!

Everyone can invent and the Dr. InBae Yoon Spark!Lab Invention Challenge is a fun way to learn the invention process by actually creating something new, either by yourself or with a group of friends!

Whether this is your first time inventing or your 100th, this Challenge is for you.

To enter the contest, YOU will create a new invention and then submit your idea **before April 5, 2019.**

What is an invention?

It's any useful creation that didn't exist before you thought of it!

What kind of invention should I make?

We're challenging you to use your brain power to **come up with a way to improve the lives of older adults.**

Everyone gets older, and as we get older our bodies and minds change, which creates unique needs. Some things that once were easy (like opening a jar) can become difficult. Some things that once were no problem (like remembering a list of things) become challenging.



Talk to someone older in your life.

Get to know what challenges they face.

Then, choose one issue and see if you can help solve or improve it with an invention!

How do I get started with creating my invention?

It's Just 7 Steps and you start with STEP ONE! Use this guide to learn the 7 steps in the invention process. Follow the steps and you'll end up with an invention of your own! (We've even left space for you to jot down your ideas and notes as you go in this guide!)

Got Questions? Ask! Head over to the [Website](#) to connect with Invention Experts at the Smithsonian, Judges, and other Kids who have won the Challenge in the past! They are all excited help you, if you have run into trouble!



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Why should I try inventing?

It's fun to invent! The creative process of creating something brand new is fun!

You learn to solve problems! There are problems all around you in the world. The Challenge teaches you how to work through a process to solve problems like an inventor. As an inventor, you'll start to see problems as opportunities to invent. You don't have to settle for what already exists—you can think of a better way!

You can improve our world, now! There have been MANY successful kid inventors that have changed our world with their ideas. You don't have to wait until you're an adult to make an invention that can be used by people around the world!

What do I turn in?

To enter the contest, you need to turn in either a video or a PowerPoint showing us how you used ALL SEVEN STEPS to create your invention. Don't forget to document your process—that means to keep records (pictures, video and notes) about each step! If you'd like to start with our PowerPoint template, you can [download it here](#).

How can I win the prizes?

The secret to success is not a secret! The scoring guide (p. 12) tells you what the judges are looking for. Read it!





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Spark!Lab Dr. InBae Yoon 2019 Invent It Challenge

Think about a new invention that **enhances the daily lives** of older adults.

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KEY STEPS OF THE INVENTION PROCESS

Learn about each step of the process, and all the fun and hard work that goes into inventing.

To invent you have to:



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Think-It: Have a great idea for an invention. Developing an idea is sometimes the hardest step in the invention process! Invention is all about solving problems. The best invention ideas often address issues that affect lots of people. This year's Challenge is about addressing the needs of older adults. So, the first step is to identify a way to enhance and improve the daily lives and activities of older adults.

Thinking about this Challenge:

Observe, research, and interact with the world around you and write down any challenge you see presented by being an older adult:

- Look around you—what are older adults doing in your community, region, nation, or across the globe?
- Look at your local newspaper or on the Internet—what are the issues related to being an older adult that people in your community and globally are talking about?
- Ask friends, teachers, and family members or people working in organizations serving older adults (like aging experts, doctors, physical trainers, or entrepreneurs) about aspects of daily life that are important to older adults.

If possible, talk through what you've discovered with partners and groups of other students to spark more ideas.

A large sheet of white graph paper with a light gray grid. At the top edge, there are ten white, teardrop-shaped cutouts, suggesting it's a page from a spiral-bound notebook. The grid is mostly empty, with a single horizontal red line near the bottom.

Every invention starts with an idea.

What's yours?

What problem are you trying to solve?





Explore-It: Investigate inventions and ideas of the past.

Have an idea?

If you've identified an aspect of older adults' daily lives and activities that you want to enhance or improve, you're probably not the first inventor to try to solve it. Don't let this discourage you—instead, do some research to learn how others have addressed the problem!

- What do you like about their solutions?
- What do you think you can improve?
- How can your invention be different?

Many inventions build and improve on ones that have come before. Identify specific features and benefits of your invention that builds on inventions of the past. Think carefully about who your invention helps and make sure your idea clearly solves the identified problem in a way that is uniquely yours!

Many inventions build off of other ideas.

How have other people tried to solve the problem you're working on?

How will your invention be different?



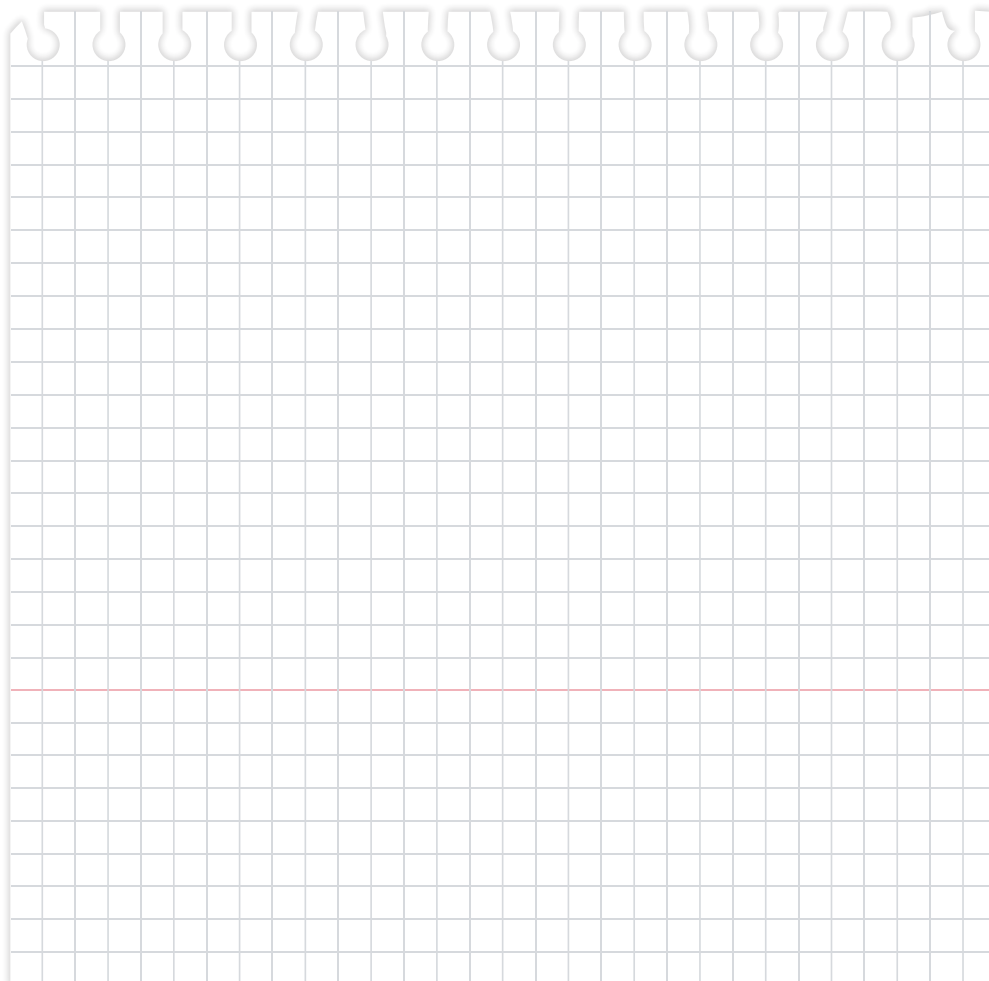


Sketch-It: Draw pictures and diagrams to figure out how your invention might work.

Once you have a basic concept of what your invention will be, make some simple sketches of your idea. Sketches help you take the idea in your head and put it on paper. Your sketches do not have to be perfect or artistic.

Sketches can help you think through not only what your invention will look like, but how it will work. You may want to make several sketches of your invention—from the front, side, looking down from above, or from the inside—to show how it will work.

Be sure to label your sketches to explain how the various parts and pieces function, so that you (and others) will know what you're/they're looking at!



Can you draw your ideas out on paper?

Inventors use pencil and paper to sketch their ideas.



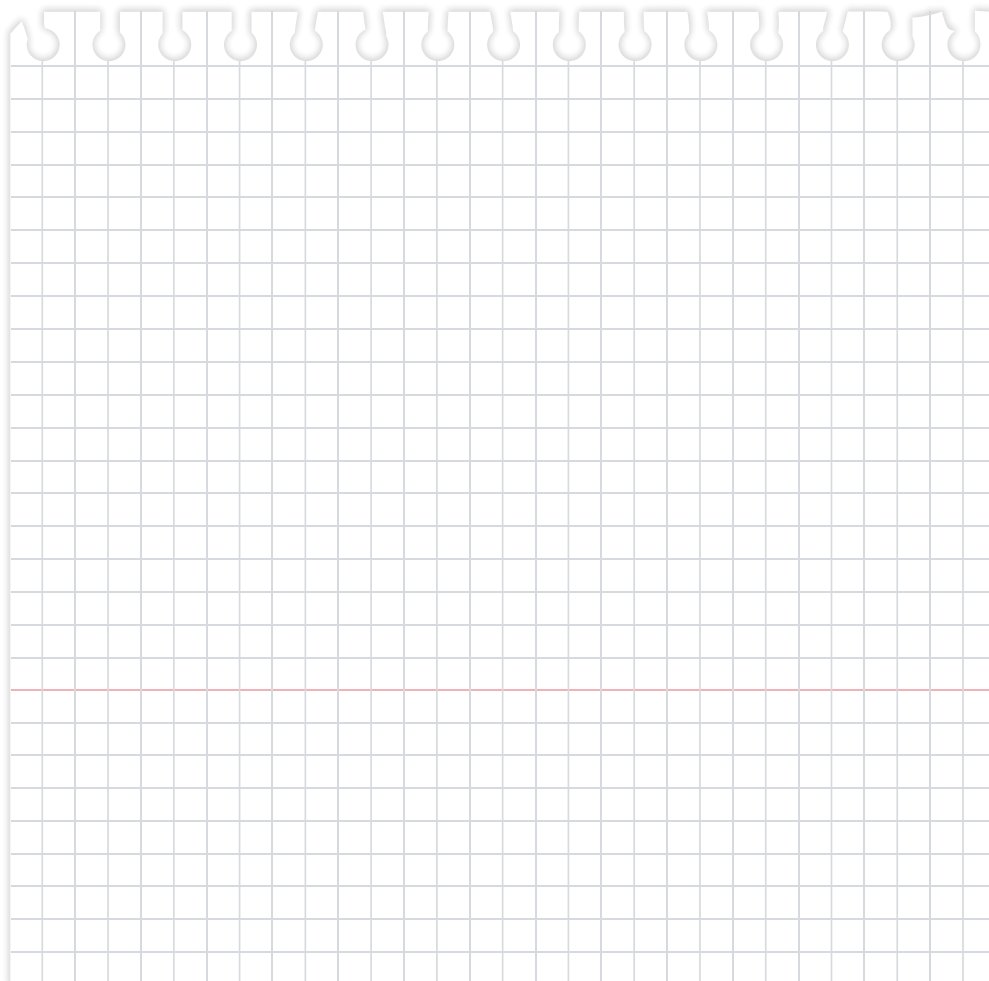


Create-It: Build a prototype or model of your idea.

For many inventors, this is the most fun part of the invention process! This is when you create a prototype, or model, of your invention.

Using your sketches as a guide, build your first prototype. (Don't worry, this doesn't have to be perfect or even work!) Making your prototype/model helps you turn your concept into a three-dimensional form.

When you build your prototype/model, try using materials that you already have. Though the model does not need to actually work, it should show others what the pieces and parts look like. Remember to capture the steps you take building your prototype/model by video or photos.



A prototype is a model or a real-life example of your idea.

Inventors use simple materials to bring their ideas to life.

Create a prototype.





Try-It: Test your invention. Once your prototype/model is finished, ask friends, teachers, parents, and neighbors to try it! (If possible, ask some of the people you interviewed in the Think-it step or an older adult whose daily life and activities your invention is intended for) Have your testers perform some experiments to find out how well you prototype works. Write down the results of each test.

Ask your testers:

- What they like about your invention?
- What suggestions they have for making your invention better?

Be sure to write down what your testers say about your invention, so you have good notes for the next step of the process.

A large sheet of white graph paper with a light gray grid. At the top edge, there are ten white, teardrop-shaped tabs, suggesting it's a page from a spiral-bound notebook. The grid covers most of the page, leaving a margin at the top and bottom.

Test your invention.

What works well?





Tweak-It: Keep improving your idea. Using the feedback you got in the Try-it step, identify ways you can improve your invention.

Consider:

- Do you want to modify the design or change the materials it's made from?
- Do you want to add a new part to your invention, or take something away to make it simpler?
- How could you make your invention more environmentally friendly?

Many inventors go through multiple rounds of trying & tweaking to keep improving their invention, until they get it just the way they want it!

How can you improve your prototype?

Inventors work to make their ideas better.





Sell-It: Market your invention to people who might buy it. Once you have your final invention idea, it's time to introduce your idea to other people and encourage them to start using it!

Create a "fact sheet" and/or a video or written pitch about your invention.

Be sure to include the following information about your invention:

- Who is your "target audience"? Who should use your invention?
- What aspect of the daily lives of older adults does it enhance?
- How is it different from other inventions?
- How does it work?

Inventors think about how to convince other people to try or buy their invention.

How would you talk about your idea to other people?

A large, vertical sheet of graph paper with a spiral binding at the top. The grid consists of small squares. A horizontal red line is drawn across the grid, approximately one-third of the way from the bottom.



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Think about a
new invention that
**enhances the
daily lives**
of older adults.

ENHANCING THE LIVES OF OLDER ADULTS TOPICS & RELATED RESOURCES

Use these ideas and resources to spark your inventions!

Ask yourself: "How can my invention enhance or improve the daily lives and activities of older adults?"

Mobility and Daily Living Activities

Our bodies change throughout our lives bringing new abilities and new challenges. For some older adults, physical tasks and activities become more challenging. New inventions would help improve their mobility and balance, strengthen their muscles, promote better eating and sleeping, and assist with daily tasks. Innovative solutions are needed to help older adults stay physically active and increase their ability to independently take care of themselves.

THINK ABOUT.....

How could an invention help older people increase their mobility?

What new inventions would help older adults with daily activities like shopping, cooking, cleaning or going out?

How might you help older people hear or see more clearly?

Could you invent something to help older people avoid falling?

Could your invention help people remain active and exercise safely?

Resources:

- [CDC: Physical Activity for Older Adults](#)
- [Medline Plus: Exercise for Seniors](#)
- [APA: Health and Age Related Changes](#)
- [Science Engineering Medicine: Physical Activity and Special Considerations for Older Adults](#)
- [Medical Futurist](#)
- [HelpGuide: Senior Exercise and Fitness Tips](#)
- [NIH: Health Tips for Older Adults](#)
- [National Council on Aging: Exercise Programs That Promote Senior Fitness](#)
- [National Council for Aging Care: Guide to Living A Healthy Lifestyle At An Old Age](#)



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Intellectual Engagement and Cognitive Health

Everyone needs to stay mentally active and intellectually challenged. It is especially important for older adults to keep learning and gaining new experiences. Inventions that promote memory and stimulate creative problem ignite intellectual interest and keep them connected to the world around them. What can you invent to keep older minds active and engaged?

THINK ABOUT.....

What can you invent that helps older adults stay intellectually engaged?

What kinds of inventions would provide new learning opportunities for older adults?

What kinds of thinking do some older adults need help with?

What kind of activities increase problem solving and improve memory for older adults?

Resources:

- [APA: Health and Age Related Changes](#)
- [CBS News](#)
- [Senior Living: Adaptive Technology](#)
- [Everyday Health](#)
- [Mental Health](#)
- [Smithsonian: How will AI help the Aging?](#)
- [UOC Intellectual Wellness](#)

Family, Community, and Social Relationships

Social engagement helps everyone to have meaningful connections with other people and their community. Sometimes, as people grow older, physical and mental challenges as well as lifestyle changes can limit their ability to stay socially active. But staying socially engaged with the world around them is as important for older adults as it is for younger people! What can you invent to help older adults be more connected socially? What technologies might help them become better connected to family, friends and their community? How could your inventions help them maintain their socially active lives and relationships?

THINK ABOUT.....

Why do some older adults feel alone?

Why is being social important for older people?

What can you invent to increase social interaction for older adults?

Resources:





- [Senior Living: Creative Living Movement](#)
- [The Conversation](#)
- [Argentum](#)
- [Create the Good](#)
- [Today's Research on Aging](#)






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Invent It Challenge Scoring Guide

| Invent It Steps | | 1- Requires Development | 2- Approaches Standard | 3 - Meets Standard | 4 - Exceeds Standard |
|---|---|---|--|---|---|
|  | Identifies a way to improve or enhance the daily lives and activities of older adults. | Mentions a way to improve or enhance the daily lives and activities of older adults but does not define or explain it. | Presents a way to improve or enhance the daily lives and activities of older adults but provides a minimal explanation. | Presents, defines, and explains a way to improve or enhance the daily lives and activities of older adults. | Clearly presents and defines the scope of a way to improve and enhance the daily lives and activities of older adults, providing detailed background and explanation. |
|  | Demonstrates invention's originality | Presents an invention that copies existing ideas or products rather than building on them. | Presents an invention that shows some originality (relying heavily on existing ideas or products). | Presents an original invention and shows how it builds on similar past ideas. | Presents an innovative invention with attributes that reflect but go well beyond similar past ideas. |
|  | Demonstrates how the invention might work | Sketch is incomplete and doesn't show how the invention improves and enhances the daily lives and activities of older adults. | Sketch is complete and somewhat demonstrates how the invention improves and enhances the daily lives and activities of older adults. | Sketch is detailed and clearly labeled to demonstrate how the invention improves and enhances the daily lives and activities of older adults. | Multiple sketches clearly demonstrate and provide examples of how the invention might improve and enhance the daily lives and activities of older adults. |
|  | Builds a prototype or model | Prototype or model is incomplete and does not reflect the sketch or plan. | Prototype or model minimally reflects the sketch or plan. | Prototype or model is complete and accurately represents the size, shape and function. | Working prototype or detailed model clearly shows how the invention will function and is accompanied by video, audio, or textual explanation. |

Invent It Challenge Scoring Guide

| Invent It Steps | 1- Requires Development* | 2- Approaches Standard | 3 - Meets Standard | 4 - Exceeds Standard |
|---|--|---|---|---|
|  <p>Tests the invention</p> | <p>States that invention has been tested or feedback has been gathered but does not provide evidence.</p> <p>Proposes changes to the invention, but changes do not accurately reflect the testing of the invention or the feedback student received.</p> | <p>Shows evidence of some testing of the invention or that minimal feedback has been gathered.</p> <p>Proposes changes or improvements to the invention that somewhat reflect the testing and feedback.</p> <p>Provides information about how the invention improves and enhances the daily lives and activities of older adults but doesn't include compelling reasons for using it.</p> | <p>Shows evidence of thorough testing of the invention and/or gathering of comprehensive feedback from potential users or experts in the field.</p> <p>Clearly improves the invention based on test results or feedback.</p> <p>Targets an appropriate audience, clearly defines the invention, shows how it is differentiated from similar products, and explains how it improves and enhances the daily lives and activities of older adults.</p> | <p>Shows evidence of extensive and repeated testing of different versions of the invention, and/or gathering of comprehensive feedback from both potential users and experts in the field.</p> <p>Significantly improves the invention based on test results or feedback and adds additional innovations of their own.</p> <p>Includes a convincing and compelling "sales pitch" that clearly explains how the invention improves and enhances the daily lives and activities of older adults and is different from any similar products that came before it.</p> |
|  <p>Tweaks the invention</p> | <p>Provides basic information about the invention, but no reasons for using it.</p> | <p>Provides information about how the invention improves and enhances the daily lives and activities of older adults but doesn't include compelling reasons for using it.</p> | <p>Targets an appropriate audience, clearly defines the invention, shows how it is differentiated from similar products, and explains how it improves and enhances the daily lives and activities of older adults.</p> | <p>Includes a convincing and compelling "sales pitch" that clearly explains how the invention improves and enhances the daily lives and activities of older adults and is different from any similar products that came before it.</p> |
|  <p>Includes a "sales pitch" convincing others of the value of the invention</p> | | | | |

*Entries will be assigned a score of zero if no criterion are met.

Total Points for all categories, (possible 28): _____



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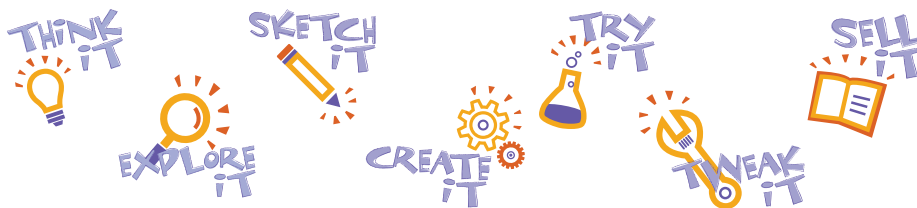
Think about a new invention that **enhances the daily lives** of older adults.

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SUBMISSION CHECKLIST

Use this checklist to ensure your entry meets the submission requirements.

- 1. Use the Student Notebook to follow the 7-step Process of Invention to create an invention that enhances and improves the daily lives and activities of older adults.



- 2. Document each step using either the provided Submission Template, a PowerPoint, or a video. Files should be 2GB or less and must be in one of the allowed formats: .ppt, .pptx, .avi, .mov, .mp3, .mp4, .mpg.
- 3. Use the Scoring Guide to check that your entry has addressed each of the 7 steps of the Invention Process.
- 4. Download and complete the Parental Consent Form.
- 5. Create a photo of the inventor(s) to submit along with your entry.
- 6. Go to the Submit Entry page on the Challenge website and click on the submission link.
- 7. Follow the instructions to submit your entry file, photo, and Parental Consent Form. If submitting a team entry, you must submit consent forms for each participant. (Entries must be received by 11:50 PM EST on April 5, 2019).

Timeline



*U.S. only



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Parental/Legal Guardian Permission & Release

By signing below, I acknowledge that I am the parent/legal guardian of the Spark!Lab Dr. InBae Yoon 2019 Invent It Challenge (“Challenge”) student/minor child entrant indicated below (whose age of between 5 and 18 is indicated below), and hereby give him/her permission to enter, or be entered into the Challenge (an “Entry”), as an individual entrant or as a team entrant through my submission as his/her parent/legal guardian or submission through his/her teacher (hereinafter “Entrant”), as set forth in the Official Rules. I have read and accept the Official Rules of the Challenge located at http://inventit2019.s3.amazonaws.com/wp-content/uploads/2018/12/Invent-It-2019-Official_Rules-1.pdf and acknowledge the privacy policies of the Challenge sponsors’ (Cricket Media, Inc. and the Smithsonian Institution’s Lemelson Center, hereinafter “Sponsors”), located respectively at www.cricketmedia.com and <http://www.si.edu/privacy> apply.

In accordance with the Official Rules, I confirm and agree that as a condition of Entry, the Sponsors, their respective parent[s], affiliate[s], and authorized distributor[s], including prize suppliers, and licensee[s] are granted a perpetual, irrevocable, worldwide, transferable, royalty-free, and non-exclusive right and license to use, reproduce, adapt, modify, publish, distribute, publicly perform, create a derivative work from, and publicly display the Entry, including the inventions depicted therein, the photographs, video, slides, text, images, interview, and/or audio or narrative of Entrant and of other individuals contained in the Entry submitted or related to such Entry, including any likeness, biographical information, text and/or information as contained therein or any statements or remarks made about the Challenge, for any purpose, including but not limited to advertising and promotional purposes, including without limitation for display on the Sponsors’ websites, in any media now or hereafter developed, including social media, without any attribution or compensation to Entrant, except where prohibited by law. I understand and agree that I have no rights to review or approve any uses and/or edits that Sponsor[s] may make or authorize of the Entry or other materials submitted in connection with the Challenge. My grant includes the right and permission for Cricket Media, Inc. to copyright, in its own name or otherwise, my child’s Entry.

To the extent permitted by law, I release and hold harmless Sponsors from any and all claims, injuries, damages, or liability of any kind resulting from any use of or arising out of the use of my Entry. I understand and agree that this Release is binding and shall be interpreted by, and enforced in accordance with the laws of the Commonwealth of Virginia and applicable U.S. federal law, without regard to any conflict of law principles.

I represent and warrant that the Entry is provided in accordance with such Official Rules of the Challenge that the Entry is an original work, not previously published commercially, and to the extent individual[s] appear in any portion of the Entry that a written release for their participation has been secured, and shall, upon request, be provided to Sponsor[s].

I hereby warrant that I, the signatory below, am 18 years of age or over and have the legal right and capacity to execute in connection with my my/child’s Entry in the Challenge. I have read the contents of this Permission and Release form, and understand and agree to its contents. (All information in the fields below must be completed, and this form signed).

Printed name of parent/legal guardian

Signature of Parent/legal guardian

Parent/legal guardian email

Printed name of my student/minor child entrant His/her date of birth

Mailing Address (including city, state, country, zip code):

Telephone Number (including country code)

Name of Entry Grade in School (write in “Home School,” if applicable)

School Name and Mailing Address (including city, state, country, and zip code)