



CALIFORNIA
iNVENTION
CONVENTION



HOW TO GUIDE

GETTING STARTED

The California Invention Convention provides students in grades K-12 an interactive and interdisciplinary opportunity to use the invention process to create and pitch an original product at a statewide convention. Students will build their critical-thinking and entrepreneurial skills and, for those who qualify, may compete in the National Invention Convention at The Henry Ford in Dearborn, MI.

The Henry Ford hopes that the California Invention Convention will bring together problem-solvers, inventors and entrepreneurs of all ages, backgrounds and disciplines.

Get Your Students Involved!

Educators of California schools, cooperatives and after-school programs serving student populations in grades K-12 are welcome to participate.

Contact the Lead Teacher Coordinator in your school district for more information. If your school or district does not currently participate in the California Invention Convention, contact us at www.californiainventionconvention.org.

Important Dates (specific dates on Web Site)

- **Educator Info Session:** Schedule a session on how to participate in the invention convention program in your school. This session can be held at your school or via Zoom.
- **School Invention Fair:** Organized by the educator ambassador before March.
- **California Invention Convention:** Usually held mid-April
- **National Invention Convention:** Usually held late May, early June, at The Henry Ford.

Student Eligibility

Participating students must:

- Be in grades K-12.
- Compete at their local invention convention organized by local ambassador.
- Be nominated by an educator or school to compete at the California Invention Convention.
- Compete as an individual or on a team (no more than two members). Teams may compete against individuals and vice versa.

How to Compete

Students who compete and qualify at the California Invention Convention will be invited to compete in the National Invention Convention.

Students will need to develop an invention that tries to solve a problem in their life, the life of a loved one or their world. Students will develop, test and then pitch their project at the convention. There is a nominal fee to participate in the CA Invention Convention.



Display Board

Prototype

Logbook

All projects must have:

- Invention Log (logbook or journal)
- Display Board
- Prototype
- Pitch Video (at state level)

Invention Log:

- Students use Invention Logs to document their journey. It should not be just a report completed after the fact.
- Invention Logs need to document all aspects of the invention process: identifying, understanding, ideating, designing, building, testing, refining.

Display Board:

- Students will need to create a visual display (trifold poster board) to compete.
- The display should communicate significant aspects of the invention process.

Prototype/Model:

- Students should create a model that demonstrates the key characteristics that make the invention valuable, usable and unique.
- Prototype can be a working or non-working model.

Pitch Video:

- The California and National Invention Conventions require students to record and submit a 4-minute unedited and continuous video of student(s) pitching their invention.

Contact Us

For more information on how to get involved, please contact www.cainventionconvention.org with your name, school, and questions.

We look forward to supporting you and your students as you explore the benefits of innovation and project-based learning.

PLANNING

Thank you for your interest in the California Invention Convention. Here are some tips for organizing your local invention convention program. Remember that the California invention Convention is always here to support you.

1. Contact the California Invention Convention team at www.cainventionconvention.org and help us get to know you. What subject do you teach? How many students are you hoping to have participate at your school? How can the California Invention Convention support you?

2. Organize your team. Decide which teachers and how many students will participate (a rough estimate will do at this early stage).

3. Schedule an educator session. This session on how to participate in the invention convention program in your school can be held via Zoom.

4. Introduce invention learning to your students and integrate free invention curriculum into participating classrooms.

Typically, teachers spend roughly 6-10 weeks, one hour per week, on invention learning, beginning as early as October. We recommend doing this during normal school hours although it can also be done in after-school clubs. The California Invention Convention has compiled a list of resources that you may use, including National Invention Convention Curriculum. Access at www.cainventionconvention.org.

5. Set a budget. Depending on how big you wish your convention to be, you may not need a budget at all. Remember that some of the best inventions have been built with little to no money. Some possible expenses are:

- Invention curriculum professional development.
- Cost of display boards and some materials for prototype building.
- Awards and incidentals for local school convention (if needed).
- Cost to transport students to the California Invention Convention at Maxim Integrated in San Jose CA.

FREE

K-12 INVENTION CONVENTION CURRICULUM

Presented by **StanleyBlack&Decker**

- Interdisciplinary and standards-based with dynamic activities to fit any subject.
- Flexible: Delivered in 6-12 weeks in class, after school, at home or independent study.
- Framework guides students through seven steps of the invention process.
- Invention log documents every step in making their invention, recording what they did, why they did it and how they did it.

Developed by educators and tested for 30 years.



Quick List

- ❑ Contact California Invention Convention team.
- ❑ Organize your team.
- ❑ Schedule an educator session.
- ❑ Introduce invention learning to your students and integrate free invention curriculum.
- ❑ Set a budget.
- ❑ Support students while they create their inventions.
- ❑ Hold a kickoff event (optional).
- ❑ Schedule your local invention convention.
- ❑ Recruit volunteer judges.
- ❑ Hold your local invention convention.
- ❑ Determine which projects should apply to California Invention Convention.
- ❑ Attend California Invention Convention.
- ❑ Attend National Invention Convention.

6. Support students while they create their inventions. We recommend that you use the convention rules and judging rubrics set by the California Invention Convention and National Invention Convention when creating lesson plans and teaching the invention process. To qualify for California Invention Convention, each project must include the following:

- Invention Log
- Display board
- Prototype
- Video pitch

7. Hold a kickoff event (optional). Your local invention convention kickoff can include a formal event, a letter to parents and/or putting up posters around your school.

8. Schedule your local invention convention.

To participate in the California Invention Convention, your local convention should be held before March 1, so that you can meet the California Invention Convention registration deadlines (check website for specific dates)

9. Recruit volunteer judges (ongoing). Judges can be anyone from parents and teachers to professionals and local officials. Judges must judge and score each student project according to a preset rubric. The judging results will help you determine which projects should apply to California Invention Convention. Judging form and rubric included in this packet.

10. Hold your local invention convention. Hold your local convention BEFORE March. Invite parents, teachers, administrators, local businesses and local organizations to attend and view student projects. Judges should score and comment on all projects.

11. Teachers determine which projects should apply to the California Invention Convention (percentage of projects will be determined by CAIC staff). Teachers will help all students competing in the California Invention Convention to register via the online application (link to be sent out in February). Students, families, teachers, judges and other guests will need to register.

12. Students attend California Invention Convention held on a Saturday mid-April. Teachers are encouraged to accompany their students.

13. National Invention Convention: Qualifying projects at California Invention Convention may be invited to apply to National Invention Convention which is held at The Henry Ford late May, early June.

Remember that:

- Projects should be student-driven. Teachers and parents can support students with curriculum, lesson plans and prototype-building help, but projects should ultimately be the original work of students.
- All new teachers MUST participate in a professional development session.
- The California Invention Convention team is here to help! The staff will check in with all teacher leads on a regular basis through the California Invention Convention program. You can ask questions at any time by emailing bpayne@cainventionconvention.org.

CALIFORNIA INVENTION CONVENTION

COMPETITION RULES

These are the official rules of the California Invention Convention.

Selection

This is an invitation-only event. Inventors are carefully selected based upon criteria set by the California Invention Convention.

Eligibility

Inventors and entrepreneurs who have entered affiliate member competitions and won an invitation from your affiliate member are eligible to take part in this competition.

In order to be eligible to apply to the California Invention Convention, students must be in grades K-12 and be nominated by their local school, district or regional hub. All projects must have an Invention Log (logbook or journal), a poster board, a prototype (which may be nonworking) and a 4-minute unedited and continuous pitch video. Projects must also be of sufficient accomplishment and design to be at a state competition level, as determined solely by the judges. All accepted inventors will be deemed finalists upon acceptance to the California Invention Convention.

This competition is open to both individual and team competitors. Teams may compete against individuals, and vice versa, for select award categories. There is a limit of two (2) team members who may be on a team. All

team members in attendance must take part in the team “pitch” for the video and on competition day.

Invention Logs or journals must be brought to the competition when invention displays are setup, either at early check in the day before the event or on the day of the event. They will be judged that day. Teams only need to submit one Invention Log for their project. Invention Logs do not need to be uploaded to the registration site.

Each student can enter only one entry into the California Invention Convention and National Invention Convention. No student can participate in both team and individual competition.

Project Restrictions

This is a large venue and proper expectations about behavior and projects should be considered. The following items are not allowed on your person or in your project:

- Electric stun guns, martial arts weapons or devices
- Guns, replica guns, ammunition, and fireworks
- Knives of any size
- Mace and pepper spray
- Razors and box cutters

Also, no balloons, glitter or confetti are allowed in any form.

Award Categories

Place Awards : First-, second- and third-place awards will be given for the following grade groupings:

- Grades K-2
- Grades 3-5
- Grades 6-8
- Grades 9-12

Industry Awards: One in each category:

- Agriculture (Food, Machinery, Tools), Pets, and Animal Care
- Consumer Goods and Fashion – If the invention doesn't fit into any of the other categories and it something people would buy, then it is a consumer good.
- Earth, Environment and Geosciences
- Education (Technology, Systems, Tools, Hardware) – anything that helps students or teachers in the classroom or students and their homework.
- Energy (Efficiency, Clean Technology, Generation)
- Health and Medical Technology
- Home Organization

- Home Technology, Smart Homes, Appliances
- Household Tools
- Public Safety – Your invention can be for the improving the safety of the public, rather than an individual
- Sports, Games, Entertainment, and Toys
- Technology/Wearables – technology with a purpose that can be worn
- Transportation – improving the means of transporting or travel from one place to another.

One award will be given for **Most Marketable**.

One award will be given for **Best of Show**.

Special awards may be added.

Teams will take part in the same judging processes as individuals.

Awards provided to students, including any plaques and monetary awards, are the property of the awarded students and not the school or organization they are representing

RUBRIC

Grade Award Rubric: Points

Category	Dimension	Points
Identifying and Understanding (30)	Problem Clearly Understood	10
	Solution to Problem.....	10
	Research	10
Engineering Cycle (20)	Design & Build	10
	Test & Refine	10
Invention Effectiveness (30)	Practicality.....	10
	Originality / Innovation	10
	Benefits	10
Communication (20)	The Live Pitch and Q&A	10
	Invention Log	10
	TOTAL	100*

* This is the rubric for the California Invention Convention state finals. Note that while the online video is required to participate in the state finals, it is currently not part of the total score. For those students continuing onto the National Invention Convention, the online video is required and is part of the total scoring. For details on the rubric used by the National Invention Convention, go to our website - <https://cainventionconvention.org/educators/> The National Invention Convention rubric – along with some simpler rubrics used by local schools – are available there for downloading.

Identifying/Understanding (30)	Goal	Example
<p>Problem Clearly Understood (10)</p>	<p>Is the problem clearly understood and defined?</p> <p>The identifying stage is where inventors seek or find a problem that they want to solve. It is often important to ask an inventor how they uncovered this problem and who else might experience the same problem and to what end</p>	<p>An example of a well-defined problem: 17,000 kids ages 18 and under experience an infection from their IV when hospitalized; this costs insurance companies over \$X dollars and kids are hospitalized for X days longer than anticipated.</p>
<p>Solution to Problem (10)</p>	<p>Does the solution answer the problem as the problem is defined?</p>	<p>Student can explain how this solution answers the defined problem Student may also describe other solutions tried that did not answer the problem.</p>
<p>Research (10)</p>	<p>Was the research underlying the invention complete and appropriate for this age group.</p> <p>Understanding a problem refers to the research that an inventor has done to understand what else exists to solve the problem as well as the full impact their problem may have on others</p>	<p>An inventor has researched multiple (4+) sources to understand the problem, including but not limited to:</p> <ul style="list-style-type: none"> • Google • USPTO.com • Subject matter experts (interviews) • Visiting stores • Looking at industry news

Engineering Cycle (20)	Goal	Example
Design & Build (10)	<p>How did the student design the solution and why chose the materials used to build the design?</p> <p>Designing an invention or a prototype requires critical-thinking skills; students should be able to articulate how they wanted the invention to work and why they chose the materials they did for executing their invention</p>	<p>Invention Log Includes a written diagram with labeled materials that takes the judge through the journey of the design process.</p>
Test & Refine (10)	<p>How did the student refine the design though testing? What did the student learn through testing?</p> <p>The key to this step is iterations, improvements and perseverance. The best inventors know that the first build is often not the best and seek feedback through testing and refine their design accordingly.</p>	<p>The best inventors include a written diagram with labeled materials that takes the judge through the journey of the design process. Example: One young inventor, who was creating a battery from bananas, discovered in her first batch of banana mush that she did not get much electrical output. She modified the design numerous times, based on the detailed graphs and charts that she kept of her electrical output from various iterations. Eventually, her redesigned battery produced more electrical output.</p>

Invention Effectiveness (30)	Goal	Example
Practicality (10)	<p>How practical is the invention?</p> <p>Students should be focused on solving the problem with practical, creativity.</p>	<p>The student can clearly show how the invention would be used.</p>
Originality (10)	<p>Is the invention original? Or if not original, did the inventor come up with creative ways to improve on the origiinal design?</p> <p>The innovations should help to create a new solution.</p>	<p>The invention is beyond incremental and is something the judge has not considered or seen before</p>
Solution Benefits (10)	<p>Does the student clearly understand the benefits of the solution and how others might use it?</p> <p>The student should be able to describe the benefits</p>	

Communication (20)	Goal	Example
Live Pitch and Q&A (10)	<p>How clearly did the student state the problem and solution – through presentation to the judges, display board and showing the prototype?</p> <ol style="list-style-type: none"> 1. Does the display have strong visual appeal? 2. Is the display eye-catching with color, pictures, graphs and variety? 3. Is grammar, spelling and punctuation correct and, if hand-printed, neatly done? 4. Does the display communicate significant aspects of the Invention Process? 5. Does the prototype clearly communicate the key characteristics that make the invention valuable, usable and unique? <p>Note: Outside assistance and collaboration is acceptable as long as the student is driving the process and documents outside help. The student should only do what he/she can safely do. Credit should be given where help is given</p>	<p>The best pitches include the following:</p> <ul style="list-style-type: none"> ▪ Introduction: inventor’s name, state, grade, etc. ▪ An overview of all invention process elements outlined in the invention scoring criteria (above). ▪ Use and/or reference of all physical communication elements (including the Invention Log, display board and prototype). ▪ Explanation of origination of the idea (helping to assess the originality). ▪ Other recommendations include: <ul style="list-style-type: none"> ◆ Courteous and professional to peers in judging circle. ◆ Concise appropriate pace, clearly heard and understood. ◆ Professional eye contact and posture. ◆ Enthusiasm, passion, inflection, appropriate body language. ◆ No reading from cue cards; explanation in own words. ◆ No longer than 5 minutes.
Invention Log (10)	<p>How well does the Invention Log document a journey? It is not a report done after the act, but an ongoing journal. Does it look complete?</p> <p>If the Invention Log is not complete, the score cannot be higher than 4.</p>	<p>Invention Log contains topic research, indicating that the young inventor is exceptionally knowledgeable about his/her problem and understands the issue thoroughly, including statistics about the significance of the problem. It also contains research about the existence of similar inventions and how their invention is different or better. Invention Log documents research from at least four sources, including interviews with experts in the field. Invention Log contains documentation to show progression of prototype iterations and improvements.</p>

The Online Video

The online pitch is a single recording that clearly and succinctly communicates the invention process and impact. It will be recorded and uploaded well in advance of the California Invention Convention event.

The best pitches include the following:

- Introduction: inventor's name, state, grade, etc.
- An overview of all invention process elements outlined in the invention scoring criteria (above).
- Use and/or reference of all physical communication elements (including the Invention Log, displayboard, and prototype).
- Explanation of origination of the idea (helping to assess the originality).
- Other recommendations include:
 - ◆ Clear, concise, minimal stammering or superfluous words, correct grammar.
 - ◆ Enthusiasm, passion, inflection, appropriate body language.
 - ◆ No reading from cue cards; explanation in own words.
 - ◆ Not answering questions from someone off/on camera (Grade 4 and up. Younger inventors can be prompted with questions).
 - ◆ No longer than 4 minutes.
 - ◆ Equal participation of all team members.

RESOURCES

California Invention Convention Resources for Teachers. The California Invention Convention is a programmatic affiliate of The Henry Ford National Invention Convention.

California Invention Convention

www.cainventionconvention.org

National Invention Convention

inventionconvention.org

National Invention Curriculum

nationalinventioncurriculum.org

Innovate Curriculum

thf.org/innovate

STEMIE Coalition Website

stemie.org

Educational Resources

thf.org/education

Model I Learning Framework

thf.org/education/teaching-innovation/modeli

The Henry Ford's *Innovation Nation*

Season 1

youtube.com/playlist?list=PL15GihUisSLQIgUpHW6bK9Csr0CFjeGlp

Season 2

youtube.com/playlist?list=PL15GihUisSLRIm4i_dJKgz5kn-YzF9iNK

Season 3

youtube.com/playlist?list=PL15GihUisSLQWV9qKLapErcmJMsogQuiT

Season 4

youtube.com/playlist?list=PL15GihUisSLREIHb5ZVQbC0Dkb3IEmRUUp

Hollow Flashlight Girl

Season 1: Episode 5

Learn about the steps, risks, and failures this young innovator experienced in creating a battery-free flashlight.

youtube.com/watch?v=RCWVIDwnpIA&feature=youtu.be&list=PL15GihUisSLTqur5bibKgLFNbNuPI-mqs



DEAR PARENTS AND GUARDIANS,

Your child's teacher has elected to participate in the California Invention Convention program. The California Invention Convention program provides students in grades K-12 an interactive and interdisciplinary opportunity to use the invention process to create and pitch an original product at a statewide convention. Students will build their critical-thinking and entrepreneurial skills. Qualifying projects may even compete in the National Invention Convention.

It is our hope that the California Invention Convention will bring together problem-solvers, inventors and entrepreneurs of all ages, backgrounds and disciplines.

This letter outlines the important things to know about the process and convention as you support your child this year.

If you have any questions, please contact your child's teacher. Thank you for your support!

California Invention Convention

Important Events

- **Local Invention Convention:** Your child's teacher will incorporate invention learning into the classroom, culminating in a local invention convention at your school or local hub.
- **California Invention Convention:** Qualifying projects from California schools will be invited to present their projects to their peers and a panel of judges at California Invention Convention usually mid-April.
- **National Invention Convention:** Students who do well at California Invention Convention may be invited to participate at the National Invention Convention, held late May, early June at The Henry Ford.

Student Eligibility

Participating students must:

- Be in grades K-12.
- Compete at their local invention convention organized by local ambassador.
- Be nominated by educator or school to compete at California Invention Convention.
- Compete as an individual or on a team (no more than two members). Teams may compete against individuals and vice versa.

How to Compete

Students will develop an invention that tries to solve a problem in their life, the life of a loved one or their world. Students will develop, test and then pitch their project at the convention.

All projects must have:

Invention Log

- Students use the Invention Log/journal to document their journey. It should not be just a report done after the fact.
- Invention Logs need to document all aspects of the invention process: identifying, understanding, ideating, designing, building, testing and refining.

Display Board

- Students will need to create a visual display (trifold poster board) to compete.
- The display should communicate significant aspects of the invention process.

Prototype/Model

- Students should create a model that demonstrates the key characteristics that make the invention valuable, usable and unique.
- Prototype does not have to be fully functioning.

Pitch Video

- California and National Invention Convention require students to record and submit a 4-minute unedited and continuous video of student(s) pitching their invention.

Your role

As a parent, your role is to support your child as he or she learns the invention process and develops his or her own invention. It is important to note that outside assistance and collaboration is acceptable as long as the student is driving the process and documents outside help.

JUDGING FORM

Team

Grade:

Judge:

Evaluation Criteria

Start at the average/middle score (5 out of 10), then add and deduct points.

30% - 01 – Identifying and understanding	01 Score:
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<p>a. Is the problem clearly understood and defined? Scoring range 1-10 Notes & Comments:</p>	
<p>b. Does the solution answer the problem? Scoring range 1-10 Notes & Comments:</p>	
<p>c. Was the research underling the invention complete and appropriate for this age group? Scoring range 1-10 Notes & Comments:</p>	

20% - 02 - Engineering Cycle	02 Score:
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<p>a. Designing and Building: How did the student design the solution and why did the student choose the materials used to build the design? Scoring range 1-10 Notes & Comments:</p>	
<p>b. Testing & Refining: How did the student refine the design through testing? What did the student learn through testing? Scoring range 1-10 Notes & Comments:</p>	

30% - 03 - Invention Effectiveness	03 Score:
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<p>a. How practical is the invention? Scoring range 1-10</p> <p>Notes & Comments:</p>	
<p>b. Is the invention original? Or if not original, did the inventor come up with creative ways to improve / change it to make it unique – i.e.. How did the student innovate? Scoring range 1-10</p> <p>Notes & Comments:</p>	
<p>c. Does the student clearly understand the benefits of the solution and how others might use it? Scoring range 1-10</p> <p>Notes & Comments:</p>	

20% - 04 – Communication	04 Score:
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<p>a. How clearly did the student state the problem and solution – through presentation to the judges, Invention Log, display board and showing the invention? Scoring range 1-10</p> <p>Notes & Comments:</p>	
<p>b. How well does the Invention Log document a journey? It is not a report done after the fact, but an ongoing journal. Does it look complete? Scoring range 1-10</p> <p>Notes & Comments:</p>	

FINAL SCORE _____

Summary Comments:
