

Curriculum topics:

- Design
- Engineering
- Creativity
- Drawing

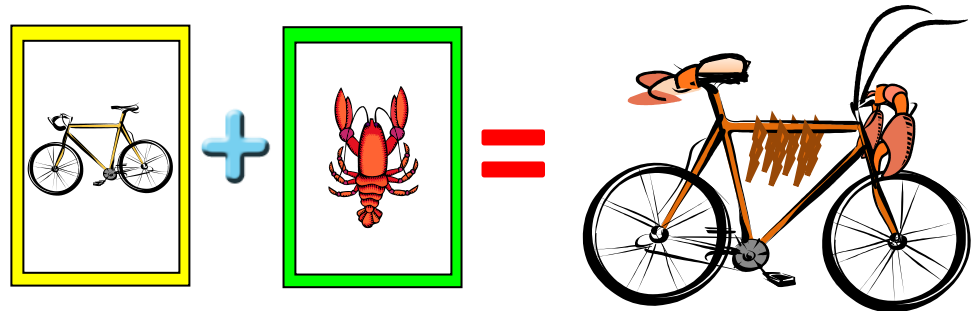
Subject:

**Art, Math,
Physical Science**

Grade range: 4-12

DESIGN INSPIRATIONS

Jump start creative thinking!



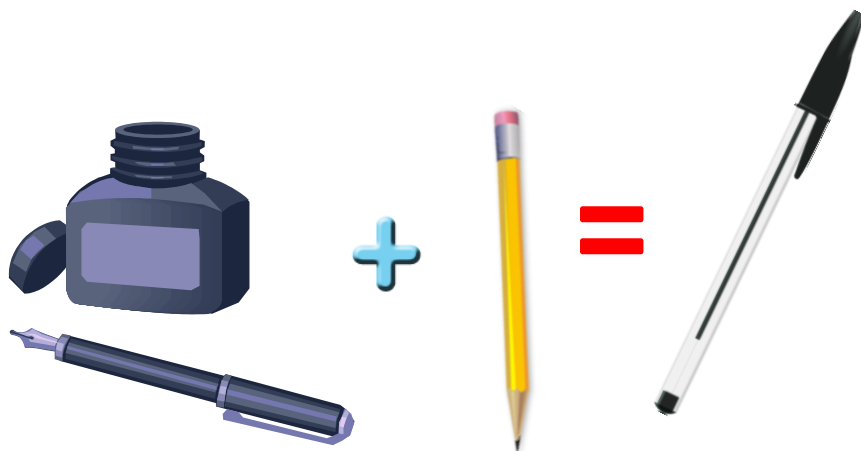
Combine two unrelated ideas to inspire a creative new design! Engineers often use everyday objects to stimulate creative ideas. For example, an early ballpoint pen designer might have had a flash of inspiration while looking at a pencil!

Who we are:

Resource Area for Teaching (RAFT) helps educators transform the learning experience through affordable “hands-on” activities that engage students and inspire the joy and discovery of learning.

For more ideas and to see RAFT Locations

www.raft.net/visit-raft-locations



Materials required

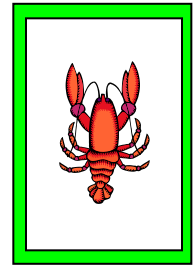
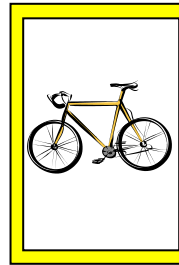
- Set of “Design...” prompts (copy Blackline Master onto colored paper and cut apart, or print on labels and apply to blank cards)
- Set of “Inspired by...” prompts (copy Blackline Master onto a different color of paper and cut apart, or print on labels and apply to blank cards)
- Large sheets of scratch paper
- Large washable markers and/or crayons

[The blackline masters can be downloaded at <http://www.raft.net/raft-idea?isid=731>.]

Introducing the Challenge

- 1** Model this activity for the students by selecting one prompt of each type and showing both prompts to the group.

If the prompts are “BIKE” and “LOBSTER” then the challenge is to design a bike inspired by a lobster.



- 2** Brainstorm this challenge with the entire group.

- What do lobsters and bikes have in common? (hard, spiny, shiny, color...)
- How are they different? (lobsters are alive..., bikes are big...)
- What features of a lobster are interesting or unusual? (Big claws, big antennas...)
- How could they be designed into a bike? (bike with big antenna, eight kickstands)

- 3** **Optional: Sketch a few ideas on the board.** Go from literal comparisons (the bike could be bright red) to more far-fetched ideas (the bike could have eight kickstands).

Alternately: Have each team of 2 to 4 students discuss a solution to the challenge, make a quick sketch, and share with the class.

Completing the Challenge

- 1** Each team of (2 to 4 students) draws two of each type of card from the face down stack. The team then discusses the cards and picks one of each type to use as a challenge.

- 2** Invite the teams to share their challenges with the rest of the group (“We’re going to design a hat inspired by a flower”).

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Give the teams seven minutes to brainstorming as modeled in **Introducing to the Challenge**

Teacher tip: The most interesting idea may not be the “most obvious” or “most practical” solution. Hopefully it is the most thought-provoking idea, or an idea that they never would have thought of without this provocation. Encourage wild ideas!

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Give the teams another seven minutes to come up with a large sketch of the most interesting idea.

Teacher tip: Encourage the students to make their drawings larger and bold. Simple, quick sketches that fill the sheet are best!

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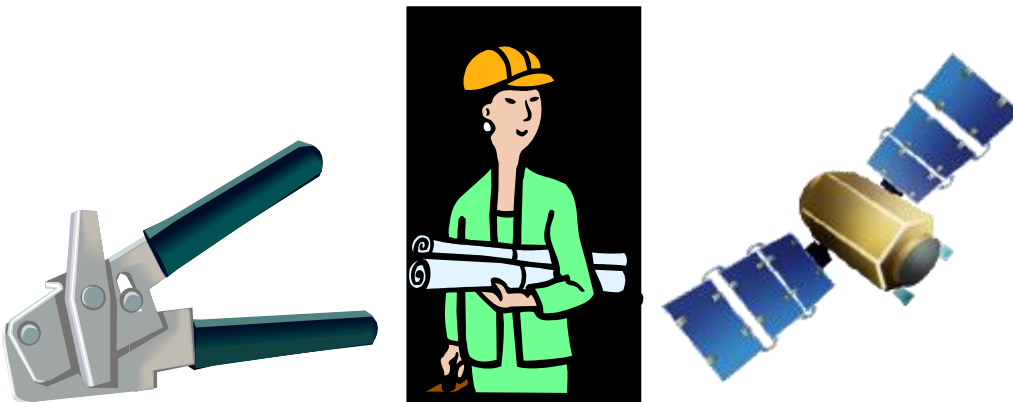
Create an impromptu gallery by posting the team’s pictures on the board. Have each team repeat their challenge and answer these questions:

- How did the “provocation” inspire your design?
- What is the most interesting or unusual aspect of your new product?

The content behind the activity

The process modeled in this activity is called “**morphological forced connections.**”

There are many stories about engineers and designers who got their best ideas from unexpected sources. A designer working on a space satellite might be inspired by looking at the can opener!



Clothing designers and architects routinely integrate patterns from nature into their designs. Copying nature (**bio-mimickry**) is also used by engineers (Velcro was inspired by the burrs on a weed seed).



Curriculum Standards:

Science & Engineering Practices
(Next Generation Science Standards: Grades 4 – 12)

Problem Solving and Reasoning
(Common Core Math Standards: Mathematical Practices, Grades 4 – 12)

Creative Expression
strand of the CA Visual Arts Standards

Learn more

- Have teams keep the “Inspired by” part of their challenges secret before they display their work and see if the other students can figure out that their bike design was inspired by a lobster.
- Create a physical prototype of the product.
- Do a “gallery walk” to stimulate more ideas – teams move from drawing to drawing on a quick time schedule. They sketch up and post an idea they have that was inspired by what the first team did.
- Create a written description for the item which discusses the attributes and feature of the item.
- Use this same process to create a challenge in a different subject. For example “Write an essay about winter that is inspired by a wedding cake.”

Related activities: See RAFT Idea Sheets:

Coming Full Circle –

<http://www.raft.net/ideas/Coming Full Circle.pdf>

Designing Design Challenges –

<http://www.raft.net/ideas/Designing Design Challenges.pdf>

Dinosaur Name Game –

<http://www.raft.net/ideas/Dinosaur Name Game.pdf>

Thinking Like a Real Survivor –

<http://www.raft.net/ideas/Thinking Like a Real Survivor.pdf>

This Reminds Me of the Fair –

<http://www.raft.net/ideas/This Reminds Me of the Fair.pdf>

Resources

Visit www.raft.net/raft-idea?isid=731 for “how-to” video demos & more ideas!

See these websites for more information on the following topics:

- **Forced Connections Brainstorming Technique**
<http://brainboltz.com/2010/09/15/brainstorm-technique-5-forced-connections/>
- **Combine RAFT Kits to Create New Challenges - Tip Sheet -**
<http://www.raft.net/public/pdfs/tip-sheets/combine-raft-kits-to-create-new-challenges-tip-sheet.pdf>