

Digital & Print resource

Key Information Sheet

TEACH
to
DREAM

Teacher Information

Design, Engineer and Build resources have been created to help middle school students engage with STEM/STEAM. Students use their scientific/engineering), technological, mathematical skills to help problem solve and create an end product. They are then able to use their artistic skills to help create a design/ look that will appeal to their targeted audience.

Items needed to successfully run each challenge:

The resources used are readily available in most classrooms or can be purchased at a local shop. You can negotiate with your students about additional materials or take one out if you don't have access to it (tell the students the company is currently out of supply ☺)

Tape	Glue	Paper
Cardboard	Popsticks/craft sticks	Straws
Cups	Scissors	String

Time frame required:

These projects can run for as little or as long as you like depending on your lesson requirements. It generally would take a minimum of 30minutes to complete. You can extend the students thinking and ask them to re evaluate and improve if you have significantly longer time. On the students sheet they are asked to circle the time frame they have been given to complete the task.

On this student sheet it also has a space for the maximum model size. You can set this depending on the size or paper/ cardboard and space you have to display the end products.

Restrictions:

To make it more realist the students are required to work within boundaries. They have a set budget of either \$100 or \$1,000 (allowing you to cater for all learning levels). The students can then either keep a tally of their expenses using the table or coupons provided. You may also decide to 'fine' your students for unsafe practices (ie going into another construction zone - another group's work area, not using equipment properly etc).

Links to other curriculum areas:

- Geography
- Health (group work/ social skills)
- English

PDF
and
Google
Slides

Help the Easter Bunny to Deliver all of the Eggs

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Design Engineer & Build!

EASTER - SAFE DELIVERY

Working with numbers up to 100

The Scenario: The Easter Bunny is sick and needs some time off. They need to employ you to deliver the rest of the Easter Eggs safely for the children to enjoy.



The challenge: To design and create a method to deliver Easter eggs safely and securely. What device or contraption could you make to help deliver at least 2 eggs without them breaking? They will need to be able to be dropped from a minimum height of 30cms and survive without cracking.



Your Budget: \$100

Material costs:

Material	Cost
Straws	\$1 each
Tape	\$1 per 5cm (2 inches)
Glue	\$1 per 10 mins
Cardboard	\$15 per sheet
Paper	\$10 per sheet
Pop sticks/ craft sticks	\$1 each
Cups	\$2 each
Other	

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4 Levels of Differentiation

Cater for all students with \$100 & \$1,000 budgets and construction

**Design
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EASTER - SAFE DELIVERY

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Working with numbers up to 1,000

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EASTER - SAFE DELIVERY

Working with numbers up to 100

The Scenario: The Easter Bunny is sick and needs some time off. They need to employ you to deliver the rest of the Easter Eggs safely for the children to enjoy.

Design and create a method to deliver Easter eggs safely and securely. What device or contraption could you make to help deliver at least 2 eggs without them breaking? They will need to be able to be dropped from a minimum height of 30cms and survive without cracking.

Your Budget: \$100

Material costs:

**Design
Engineer & Build!**

EASTER - SAFE DELIVERY

Working with numbers up to 1,000
*** Construction Worker Costs included**

The Scenario: The Easter Bunny is sick and needs some time off. They need to employ you to deliver the rest of the Easter Eggs safely for the children to enjoy.



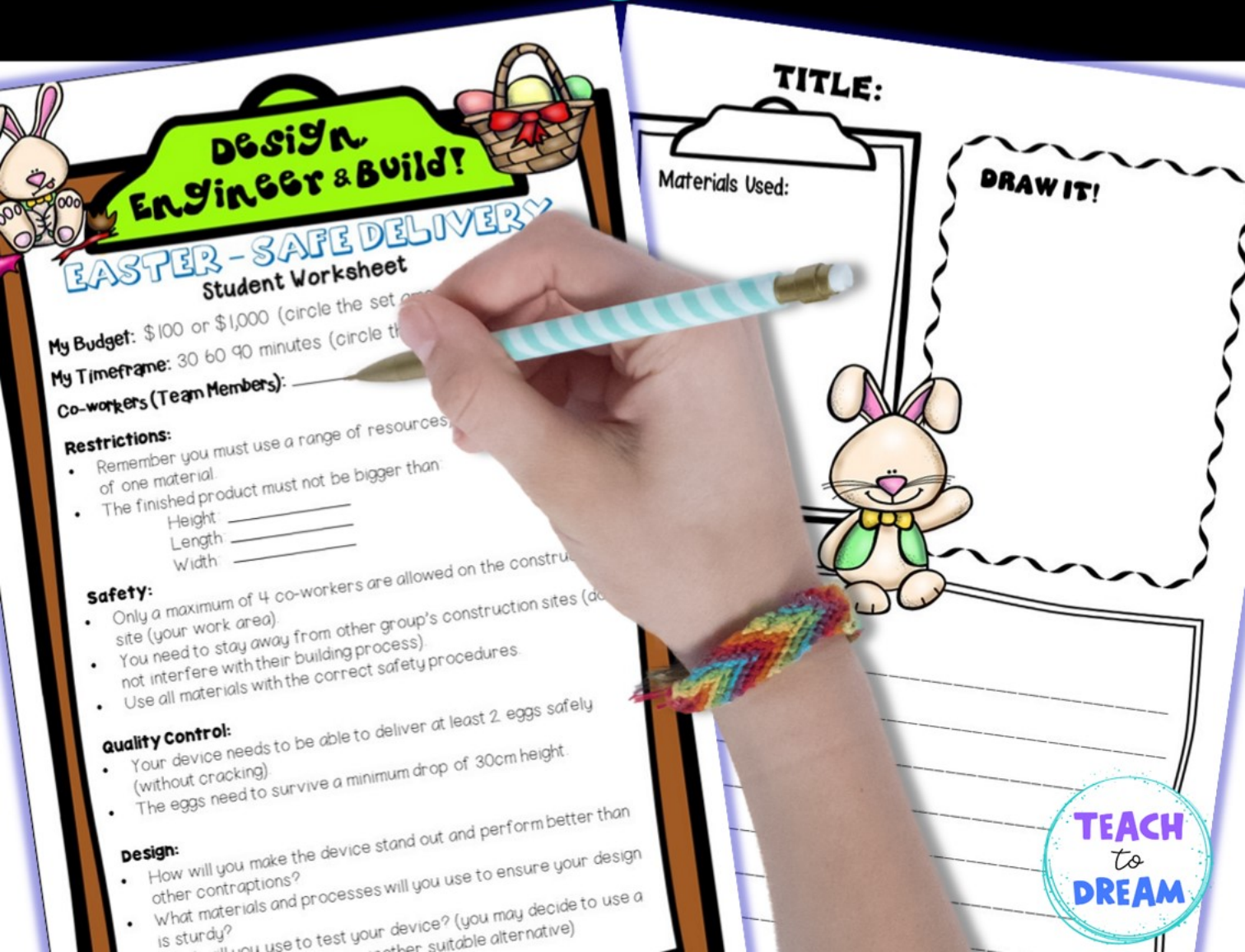
The challenge: To design and create a method to deliver Easter eggs safely and securely. What device or contraption could you make to help deliver at least 2 eggs without them breaking? They will need to be able to be dropped from a minimum height of 30cms and survive without cracking.



Your Budget:
Material / construction costs:



Group Planning Sheets



Design Engineer & Build!

EASTER - SAFE DELIVERY Student Worksheet

My Budget: \$100 or \$1,000 (circle the set amount)
My Timeframe: 30 60 90 minutes (circle the time)
Co-workers (Team Members): _____

- Restrictions:**
- Remember you must use a range of resources of one material.
 - The finished product must not be bigger than:
Height: _____
Length: _____
Width: _____

- Safety:**
- Only a maximum of 4 co-workers are allowed on the construction site (your work area)
 - You need to stay away from other group's construction sites (do not interfere with their building process)
 - Use all materials with the correct safety procedures.

- Quality Control:**
- Your device needs to be able to deliver at least 2 eggs safely (without cracking)
 - The eggs need to survive a minimum drop of 30cm height

- Design:**
- How will you make the device stand out and perform better than other contraptions?
 - What materials and processes will you use to ensure your design is sturdy?
 - What will you use to test your device? (you may decide to use a different material or a suitable alternative)

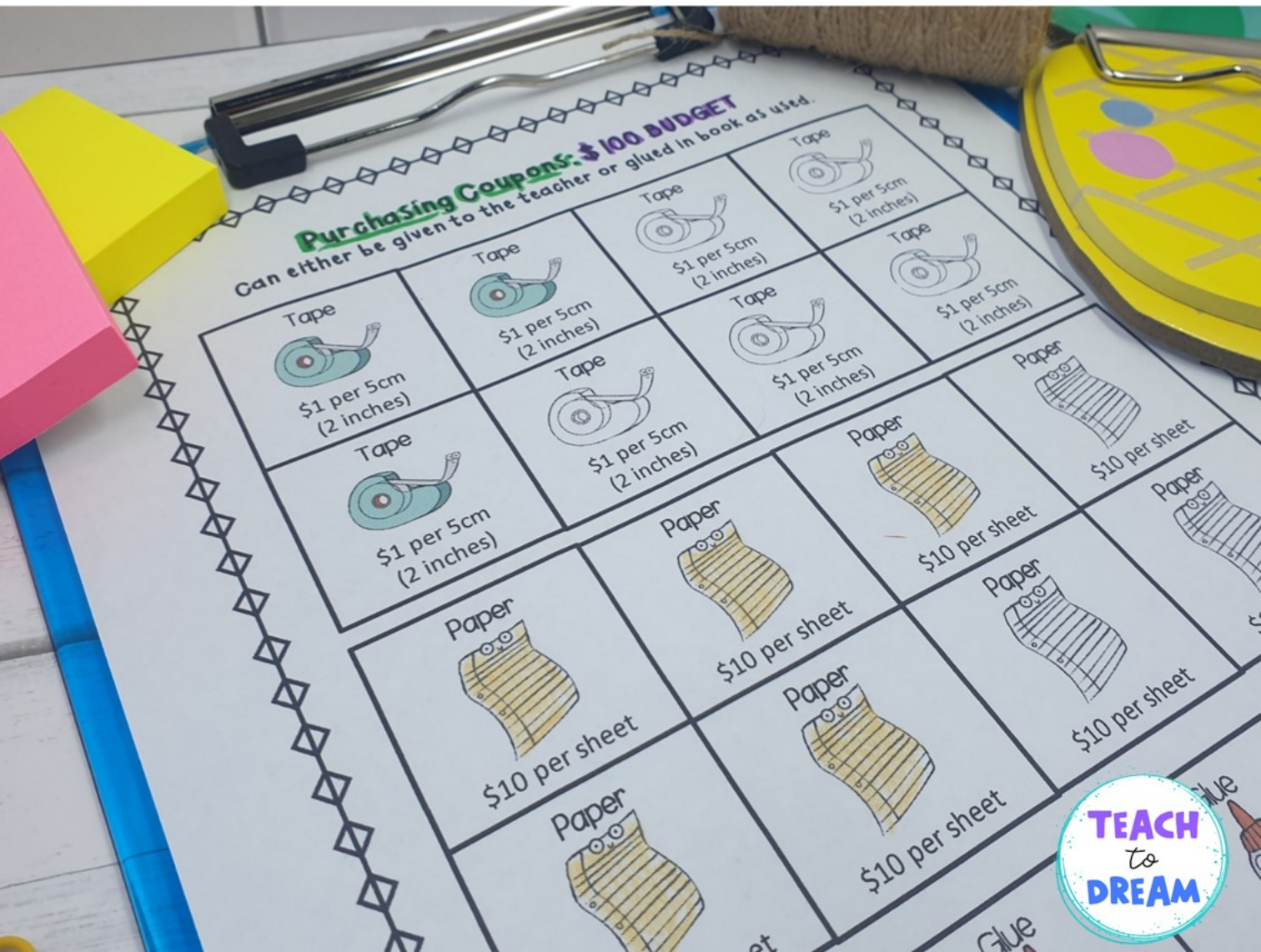
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Materials Used:

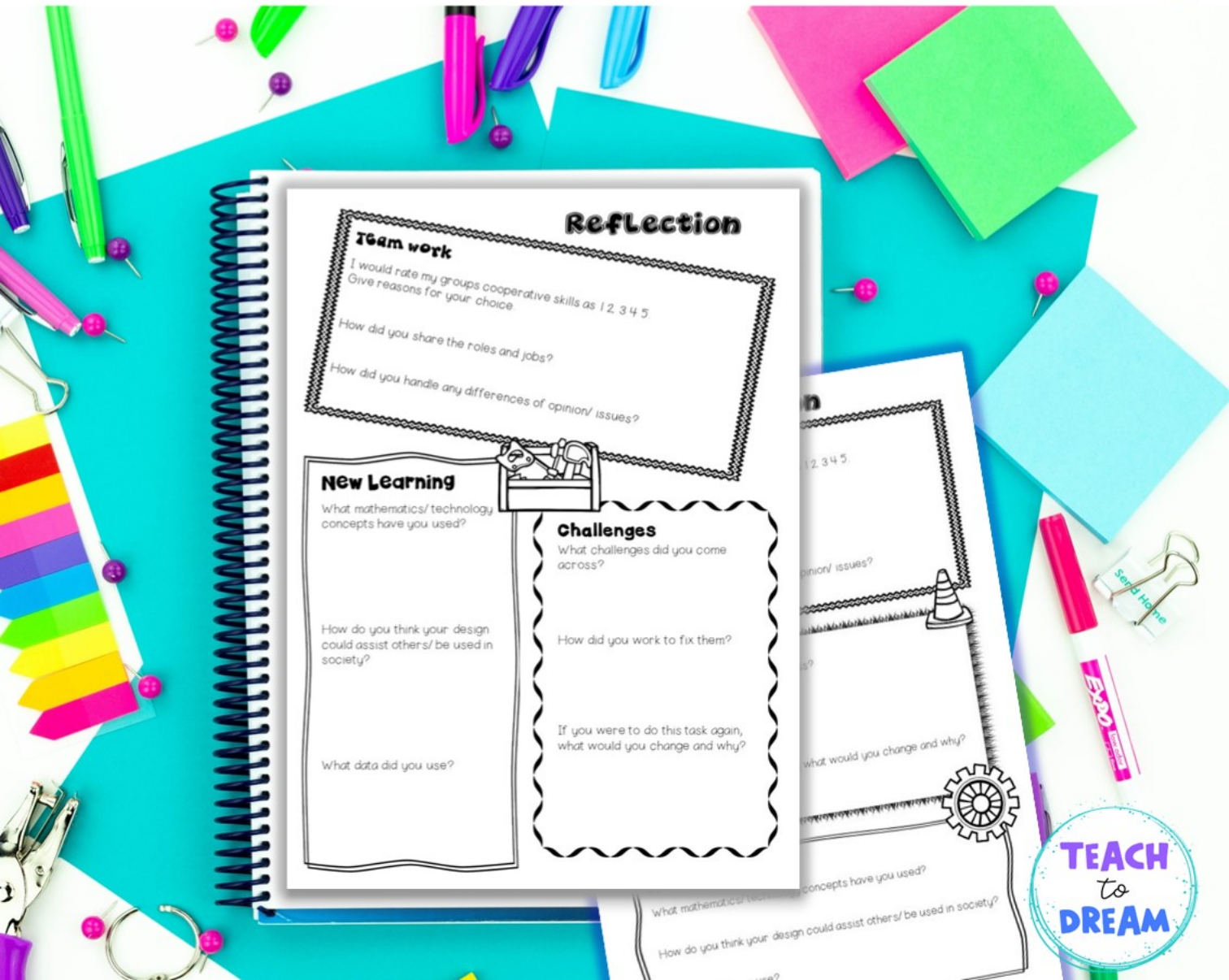
DRAW IT!



Have students work within a set budget



Encourage groups to Reflect on their learning



Reflection

Team work

I would rate my groups cooperative skills as 1 2 3 4 5
Give reasons for your choice

How did you share the roles and jobs?

How did you handle any differences of opinion/ issues?

New Learning

What mathematics/ technology concepts have you used?

How do you think your design could assist others/ be used in society?

What data did you use?

Challenges

What challenges did you come across?

How did you work to fix them?

If you were to do this task again, what would you change and why?

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Interested in STEM
for ALL the Holidays?

MIDDLE SCHOOL STEM YEAR OF HOLIDAYS



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