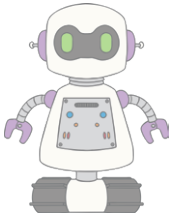
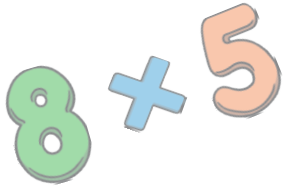
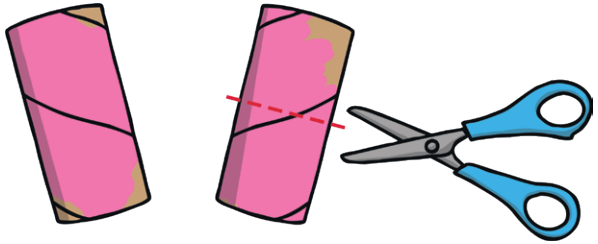


STEM
Challenge Cards



Make the tallest tower you can which is capable of standing freely and not attached to anything.

Competition – Which is the tallest tower?



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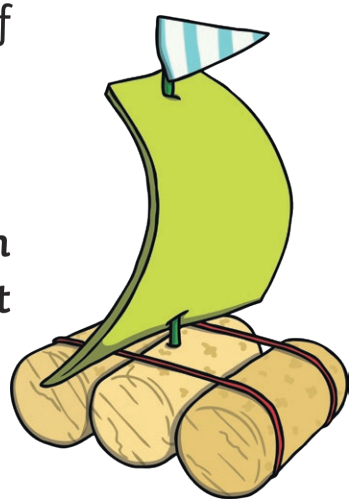
Make a boat which floats successfully in a tank of water and can carry a cargo of at least one penny.

Competition – Which boat can carry the most pennies before it sinks?



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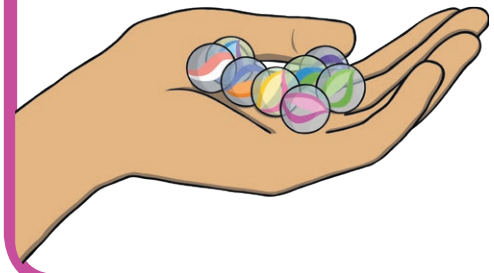
Make a marble roller coaster which brings a marble down from a start height of 1 metre without any drops of longer than 5 cm.

Competition - Which marble takes the longest to successfully descend 1 metre?



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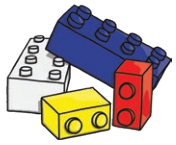
STEM Challenge Cards

Use the materials you have been given to make a creative sculpture. It can be abstract or a 'thing' – you decide!

Competition – Which sculpture would other learners pay most for? Hold a ballot.



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STEM Challenge Cards

Design and make an umbrella or any device to keep the user dry during a rain shower.

Competition – Which device would keep the user the driest? You can judge this by inspecting the quality of the materials and the seams (does any daylight show through?) or wait for it to rain and try them out for real!

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STEM Challenge Cards

Construct a zip wire or a similar thrill seeking experience for a chosen type of mini figure.

Competition – Which experience would have been the most thrilling for the mini-figure (i.e. the best compromise of excitement and safety)?

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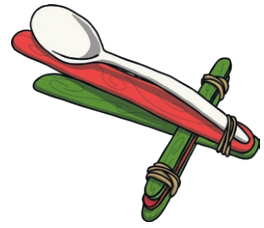
STEM Challenge Cards

Create a catapult which can be used to fire a chosen projectile without the operator either touching the object or propelling it forward with their own power.

Competitions – Which catapult can launch the projectile the furthest? Which catapult is the most accurate when firing at a given target?



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STEM Challenge Cards

Construct a pair of glasses designed to fit the wearer safely and securely.

Competition – Which glasses stay on for the longest when worn by a test pilot performing a sequence of standing long jumps?

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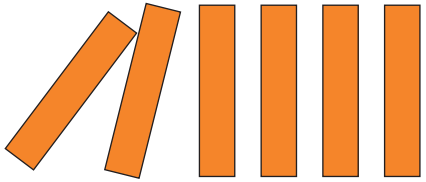
STEM Challenge Cards

Set up a sequence of linked events so that an initial movement in your creation leads to another and then another.

Competition – Which sequence contains the most linked events?



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STEM Challenge Cards

Design and make a desktop organiser.

Competition – Which would consumers buy if all of the desktop organisers were the same price?

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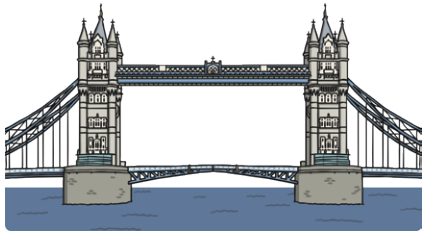
STEM Challenge Cards

Design and make a bridge spanning a gap of 30cm which can hold as much weight as possible.

Competition – Which bridge can hold the most weight before it fails? (Use actual weights, books, blocks etc.)



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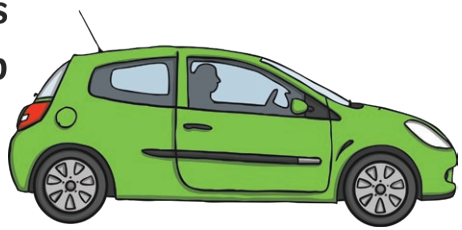
STEM Challenge Cards

Design and make a wheeled vehicle which will travel independently from the top to the bottom of a slope angled at 30 degrees.

Competitions – Which vehicle travels the furthest? Which vehicle reaches the bottom of the ramp in the quickest time?



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STEM Challenge Cards

Make a structure which you can fit completely inside and are then hidden from the outside world.

Competitions – Which structure covers most of a body? Who can get into their structure in the fastest time?

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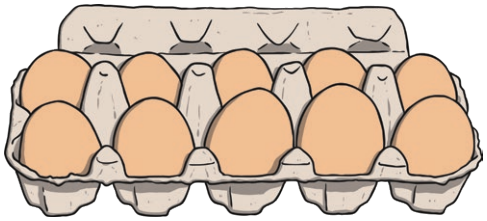
STEM Challenge Cards

Make a safety container for a fresh egg to be dropped from 2 metres high in without breaking.

Competition – Which container can be dropped from the highest height without the egg breaking?



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STEM Challenge Cards

Make and design a device which can be used to tell whether or not an intruder has entered a room in an empty house.

Competition – When the designers of each device set up their equipment by a door, can they tell whether someone has entered or not?

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STEM Challenge Cards

Design and make a trophy which could be awarded to the winner of a STEM challenge.

Competition – Which trophy would other contestants be most delighted to win?

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