

AIMING FOR
AWESOME

2018

1918

Disaster relief

Teacher's Guide



ROYAL
ACADEMY OF
ENGINEERING



The aim of this resource is to give students the opportunity to investigate the impact of science, technology, engineering and mathematics (STEM) on delivering humanitarian aid.



Curriculum links

England

Activity	Key Stage	Subject	National Curriculum
Time to make	KS2	Science	Forces: explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
Time to make	KS2	Design and technology	Design Make
Time to make	KS3	Design and technology	Design Make

Scotland

Activity	Subject	Topic	Experiences and outcomes
Time to make	Science	Forces	SCN 2-07a
Time to make	Technologies	Craft, design, engineering and graphics	TCH 2-09a, TCH 3-09a,

Wales

Activity	Key Stage	Subject	National Curriculum
Time to make	KS2	Science	How things work: forces of different kinds How things work: the ways in which forces can affect movement.
Time to make	KS2	Design and technology	Designing Making
Time to make	KS3	Design and technology	Designing Making

Northern Ireland

Activity	Key Stage	Subject	National Curriculum
Time to think	KS2	<i>The world around us</i>	Strand 2: Movement and energy: how movement can be accelerated by time and natural events such as wars, earthquakes, famine and floods.
Time to make	KS2	<i>The world around us</i>	Strand 2: Movement and energy: the causes and effect of energy, forces and movement.

Preparation

- » Ensure all materials and equipment needed are available well in advance of the session. See the resource list below for essential materials and components.
- » A full risk assessment should be conducted prior to the session.
- » This session is expected to last 60 minutes.
- » Ensure technology is available to project the relevant video materials.

This resource has been linked to the Engineering Habits of Mind (EHoM). For more information about the EHoM please see the information sheet provided or www.raeng.org.uk/ltbae.

Resource list

For this activity, you will need the following per group:

- » One copy of disaster relief support sheet one
- » One egg
- » Various materials for building an egg land, for example: plastic bags, string, fabric.





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RAF disaster relief

The RAF has a long history of delivering disaster relief within the UK and across the world.

The 1983 to 1985 famine in Ethiopia was the worst famine to hit the country in a century. In response to the famine, Operation Bushel became one of the largest airdrops of its kind with more than 32,000 tonnes of supplies being delivered to the starving people of Ethiopia.

In 2009, the RAF played a key role in supporting the residents of Cumbria after around 500 homes in Cockermouth were flooded as water levels rose to more than 2.5 metres. RAF helicopters were used to airlift at least 50 people to safety; some of those rescued by the RAF had to break through the roofs of their houses to be airlifted.

In 2015, RAF Chinook helicopters were used to deliver sandbags to Lancashire in efforts to avert flood damage to the area.



TIME TO THINK

The RAF has been asked to support after an earthquake in Nepal. The earthquake happened in November, the middle of dry season when temperatures fall to 15°C in the day and as low as 7°C at night.

In groups, identify some of the things people need but do not have access to during and after an earthquake

Use the cards to order them by which are needed first. Use the blank cards to add any other ideas your group has.

Guidance provided to STEM activity leader

Photocopy and cut out the cards on Disaster relief support sheet one. Once students have discussed what is needed after a natural disaster, discuss as a class the order each group has decided on.

Not all groups will agree on an order. Use this as an opportunity for the groups to argue for their point of view.

TIME TO MAKE

Sometimes it is not possible for aircraft to land to deliver aid, so aid must be dropped from the craft while it is still in flight.

Design a lander for an egg to ensure it does not get broken when it hits the floor.

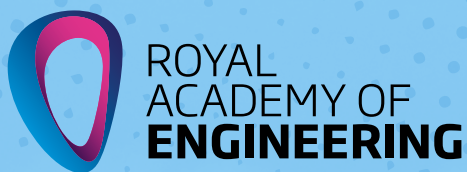
When designing your lander, think about how you can reduce the impact force when the egg lands.

Guidance provided to STEM activity leader

Students should work in teams to design a lander for an egg. There are two ways to reduce the impact on the egg: slowing it down with a parachute and protecting the egg.

The eggs should be launched from a height, either down stairs or out of a window. A full risk assessment should be completed before conducting this experiment.





Royal Academy of Engineering

As the UK's national academy for engineering, we bring together the most successful and talented engineers for a shared purpose: to advance and promote excellence in engineering.

We have four strategic challenges:

Make the UK the leading nation for engineering innovation

Supporting the development of successful engineering innovation and businesses in the UK in order to create wealth, employment and benefit for the nation.

Address the engineering skills crisis

Meeting the UK's needs by inspiring a generation of young people from all backgrounds and equipping them with the high quality skills they need for a rewarding career in engineering.

Position engineering at the heart of society

Improving public awareness and recognition of the crucial role of engineers everywhere.

Lead the profession

Harnessing the expertise, energy and capacity of the profession to provide strategic direction for engineering and collaborate on solutions to engineering grand challenges.



The RAF 100 Youth & STEM programme has been designed to engage and inspire young people by building their interest in engineering and technical career pathways.

From cyber specialists to aerospace, aviation, electronics and mechanical disciplines, the RAF is committed to using our centenary celebrations to extend opportunity to all and to encourage greater diversity in this critical area of national skills shortages.



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