

# How Can a Bridge Carry a Whole Train?

ENGINEERING & TECHNOLOGY

## Get ready

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To be gathered together before the lesson.

Prepare materials for building the model bridges. Each group should receive the following: several pieces of wood (e.g. boards, sticks, panelling), cardboards, boxes, e.g., shoeboxes, polystyrene foam, pieces of plastic (e.g. plastic from plastic bottles), possibly wooden building blocks.



You can put all the materials in one place and the groups themselves can select those materials they think would be most suitable for their idea.

## GET CURIOUS

Observing: The students look at some photos of bridges

We provide:

☒ We provide: photos of bridges.

## GET GOING

Constructing: Paper models of bridges

☒ We provide: 2 x support - printed on A4 constructing paper and cut in half (Beam (slab) bridge);

☒ We provide: instruction.

☒ We provide: 1 x component of the arch bridge - printed on A4 constructing paper (Arch bridge);

☒ We provide: instruction.

☒ We provide: set for corrugated beam bridge - printed on A4 constructing paper (Corrugated bridge);

☒ We provide: instruction.

☒ We provide: set for the truss bridge - printed on A4 constructing paper (Truss bridge).

☒ We provide: instruction.

Group I will receive the following:

☐ one sheet of A4 constructing paper,

Group II will receive the following:

☐ one sheet of A4 constructing paper,

Group III will receive the following:

Group IV will receive the following:

For each group:

☐ a ruler, scissors (a sharp knife - group IV), glue.

Analyzing: Strength testing of paper constructions

☒ We provide: a build the bridges worksheet.

- ☐ a model of the bridge the group built earlier,
- ☐ model railcars or (wooden) blocks,
- ☐ Plasticine and/or coins and/or grains,

Constructing: Students build model bridges using the materials gathered beforehand

- ☒ **We provide:** a worksheet for each group.
- ☐ a few pieces of wood (e.g. boards, sticks, panelling),
- ☐ cardboard,
- ☐ boxes, e.g., shoeboxes,
- ☐ polystyrene foam,
- ☐ pieces of plastic (e.g. plastic from plastic bottles),
- ☐ possibly wooden building blocks,
- ☐ model railcars or blocks filled with the coins, plasticine and/or grains (from previous exercise),