Which is the best angle for a firework rocket launch?

The children can make an elastic launcher and investigate the best angle to use it. They might use a protractor to measure the launching angle. They could try a number of angles and use a **spreadsheet** to record how far their projectil

	A	B	C
1	Plane testing	Wing position	Fly time
2	Mine		
3	Hers		
4	Theirs		

flies. The program will help them to draw a bar graph. Is there a best angle? Is the best angle, the biggest angle? If they wanted to throw a ball a long way, what should they remember?

Alternatively they can investigate 'the human cannon ball'. Does the angle of the cannon matter? Does the length of the cannon barrel affect how far the ball travels? Does the weight of the human cannon ball matter?

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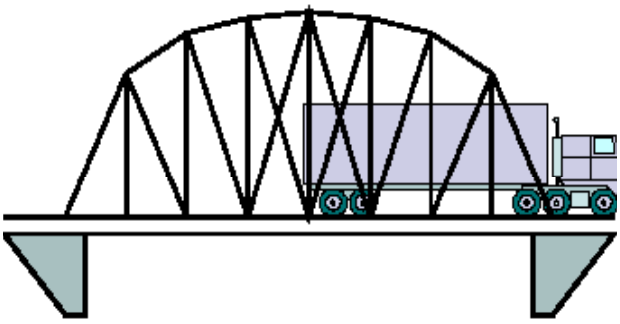

Which is the strongest type of bridge?

Making and testing bridges is an opportunity for 'fair tests' and learning about structures. The children can test bridge shapes which are flat, round, box and fluted. They can take one design and test it with different spans. Or take a flat design and try it with different size arches.. They can load their bridges with weights and record their results. A **spreadsheet** provides a ready-made table for this and it can sort their bridges in order and draw a bar graph to compare the various designs. You can ask the children which bridge is the strongest. Is it the best by far or by just a bit? Can they divide the bridges into strong and weak types? How does the graph help them to do this?

When the children have chosen the best bridge design, they could make it stronger still - they might make a bridge with one, two, three or more pieces of card. It's a real engineer's problem, but when should they stop trying to make the bridge stronger? They can test their bridges as before, and graph their results in a **spreadsheet**. Does more card make the bridge stronger? Does more card make a lot of difference? Can they use the graph to guess how much weight a bridge with even more card would take?

See the spreadsheet topic

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Which boat will carry the most?

The children can test boats made from aluminium trays or margarine tubs to see which will carry the most. They can use a **spreadsheet** to record and graph their results. Do larger boats carry more? Do shallow boats carry less? Do light boats carry less? The children may think that the weight of a boat's load is not important, so maybe they can investigate further: would a full boat sail as fast as an empty boat?

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