A composite material – testing concrete

You are going to test the concrete bars you made last lesson to see how much weight they can bear before they snap. This is a measure of their tensile strength.

You will need

- Set cement samples from the previous lesson
- G-clamp
- Weights
- String
- Sand bucket, sand tray or box of crumpled newspaper
- Eye protection.

Health and safety

When the samples snap bits can fly out so wear eye protection.

To avoid weights falling on your feet, take care where you stand and have a bucket or tray of sand or a box of crumpled newspaper under the weights to catch them.

What to do

- Predict which you think will be the strongest and which the weakest of your samples. Record this at the side of your results table.
- Set up the equipment as shown below. Add weights until the cement bar snaps and record what force was required to break the bar.
Questions

1. Did your results match your predictions? Were any of your results surprising? Comment on what you have found out.

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2. Would you be able to rely on these results to make definite conclusions about what makes the strongest concrete? Explain your answer.

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3. Is this a fair test? If not, what could you do to improve it?

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4. What do your results suggest should be added to concrete to make it stronger? Try to explain why this works.

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