# EPro8 Challenge

**Engineer    Problem Solve    Innovate**

# Up, Up and Away

In the movie "Up" construction work threatens the home of 78-year-old Carl Fredricksen.

Instead of being forced into a retirement home he fulfils a lifelong dream:  Tying thousands of balloons to his house and flies away to the South American wilderness.

How many balloons will it actually take to lift a house?
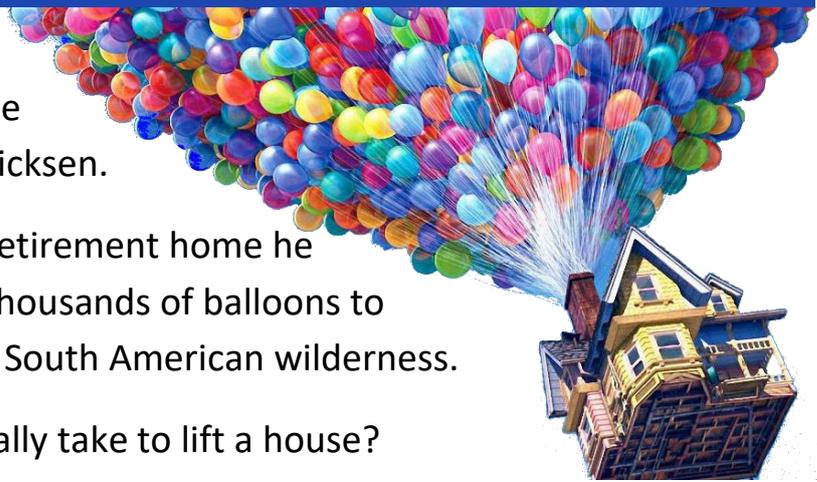
| Balloon Lift | |
|---|---|
| Criteria | Using the blue joiners as weights, determine the maximum number of blue joiners that a bunch of balloons can lift.<br><br>Calculate how many blue joiners one balloon can lift (including decimal places). |
| Hint | Use a light weight bag in to hold the joiners. |

| Weight of Blue Joiner | |
|---|---|
| Criteria | Determine how many blue joiners are as heavy as the 200g weight.<br><br>Calculate the weight of one blue joiner. |
| Hint | Build a basic set of balance scales with the 200g weight on one end and the bag of blue joiners on the other side.<br><br>Ensure the distance from the pivot point to the 200g weight and the distance to the blue joiners are exactly the same. |

200g                    Joiners
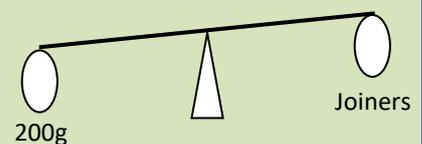
## One Balloon Lift

| Criteria | Using the answers from the previous two steps, calculate the weight that one balloon can lift. |
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## Movie Lift

| Criteria | In the movie the animators used 10,297 balloons. Calculate what weight could actually be lifted by 10,297 balloons. |
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## Lift a Small Child

| Criteria | Calculate the minimum number of helium balloons required to lift a 32kg child. |
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## Lift a Car

| Criteria | A typical car weighs approximately 1 tonne (1000kg). Calculate the minimum number of helium balloons required to lift a car. |
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## Lift a House

| Criteria | House movers have large trucks for moving houses. They say an average house weighs approximately 40 tonnes. Calculate the minimum number of helium balloons required to lift an average house. |
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After you have attempted this challenge watch the tutorial to see our solution at
www.EPro8Challenge.co.nz/Tutorial  and enter the Challenge Code **UPUP**.