Hypertufa Tiles

You need: a classmate

ACTIVITY ONE

Hypertufa is a soft concrete. Sophie and Ranea's class is going to make hypertufa tiles with shell inlays in their technology class. The teacher asks Sophie and Ranea to make up the hypertufa mixture.

The mixture is made in the following proportions:

- **2 parts cement**
- **1 part sand**
- **1 part aggregate**
- **water to mix.**

1. **a.** What proportion of the mixture is the sand?
   b. How would you write this as a ratio?

2. If Sophie and Ranea use two and a half spade loads of sand, how much cement and aggregate will they put in the mix?

3. **a.** To make enough hypertufa mixture for the whole class, they mix up a total of 28 spade loads.
   How many spade loads of each material do they use?
   b. This doesn't look enough, so they decide that they need 42 spade loads altogether.
   How many extra spade loads of each material do they use?

ACTIVITY TWO

A month later, the class is making hypertufa for plant pots.
For this, the one part of aggregate is split into $\frac{1}{4}$ shell, $\frac{1}{4}$ pumice, and $\frac{1}{2}$ peat for drainage.

1. **a.** Rewrite the mixture recipe used in **Activity One** so that it applies to the plant-pot hypertufa, with all material as whole number parts (for example, one part shell).
   b. If they used one and a half spade loads of peat, how much of the other materials (cement, sand, and so on) would they need to use in the mixture?

2. **a.** To make all the plant pots, they need 30 spade loads of hypertufa mixture.
   How many spade loads of each material will they need?
   b. Discuss your answers with a classmate.