

### 3. Sinking in sand

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An investigation into the effect of the size of feet on the stability of the platform.

#### OBJECTIVES

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- To show that the size (area) of the platform's feet affects how far into sand it will sink.
- Performing simple tests.

#### RESOURCES

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- Model platform
- Sand & tray or sand pit
- Card
- Scissors
- Pop bottle lids
- Film canister lids
- Card wheel discs
- 2 or 4-litre milk carton lids
- Coffee jar lids
- Plasticine or play dough
- Shoe box
- Weights (e.g. books)
- Activity sheets 5 & 6

#### DISCUSSION

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This provides an extension to activity 2. Prepare a model platform similar to that shown on Activity sheet 5. Place the model in the sand tray (shake the tray first, to provide as even a surface as possible) and add weights to the shoe box on top of the model. Tell the children to watch what happens to the model as you do this. They will see that the legs of the model quickly sink into the sand.

Ask the children:

- What could you do to stop a platform from sinking?

Some children may be able to refer back to ideas used in their own models, especially those who used feet in their design and building. Creative ideas suggested by the children can be tried. Children's ideas may lead to trying to add 'feet' to the platform.

## TASK

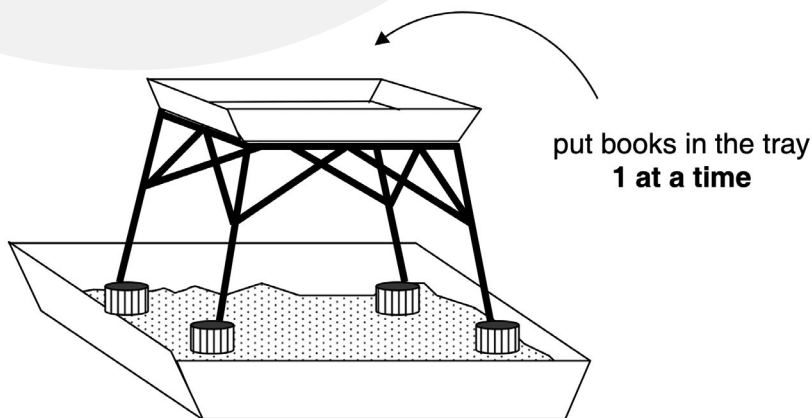
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Give children the resources listed above and ask them to add a set of feet of the same size (e.g. film canister lids). The feet are held in place using plasticine or play dough.

Children test their model in a sand tray by adding weights to the shoe box until the feet begin to sink into the sand. Heavy books, such as dictionaries, can be used as weights.

"Children were quick to point out that all the models should be tested with the same books or 'it wouldn't be fair'"

Children repeat this test using another 1 or 2 sets of feet, each set being a different size (e.g. card wheel discs, milk carton lids and coffee jar lids).



Children should observe that the larger the feet, the more support the platform is given.

## RECORDING & MEASURING

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Activity sheet 6 provides children with a pictorial guide and record sheet for the activity. Some children should simply record the number of weights added before the feet begin to sink, whereas others can describe what happened in words or pictures.

Some children may be able to use standard kilogram weights for testing the platform, rather than non-standard measures.

## VARYING THE TASK

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Some groups can use wet sand instead of dry sand.

More able children can be given the task as an open-ended challenge; to find out what happens when different types of feet are added to the platform. They are then allowed to devise, carry out and record their own test. They can be given card and scissors to cut out feet of various sizes and shapes, rather than the more restricting set of lids. The feet can again be held in place with plasticine - though children may want to use their own ideas for fixing the feet in place.