Diagnostic TASK

FOCUS

Understanding Units

- Key Understandings 3, 4, 5

Direct Measure

- Key Understandings 2, 3, 5

How Heavy Is this Frog/Tin? Years 5–7

Purpose

To reveal if the student:

- uses balance scales accurately to match the mass of an object
- counts how many whole uniform units match the mass of an object
- knows to use the same size objects to compare two quantities
- lets the number of units override their perceptual judgment
- understands and uses the notion of part units when describing the size of an object.

Materials

A fabric, weighted frog or Tin One (heavier but smaller); a second frog or Tin Two (lighter but bigger)

Balance scales

Set of washers

Assorted marbles, wooden and plastic blocks and other objects

Set of weights (e.g. Invicta blue 20 g, 10 g, 5 g)

Teacher Recording Sheet (use as worksheet for small or whole class assessment or observation sheet for individual interview)

Procedure

1. Say: *Which of these two frogs (tins) is heavier? How do you know?*
   (To check if the notion of heaviness is dominated by visual perception and give students the opportunity to self correct after lifting the tins.)

2. Point to one of the frogs (tins) on the desk. Say: *How heavy do you think this frog (tin) is?* Wait for an answer, then say: *Is there any way we could find out for sure?*
   Prompt students to use balance scales if necessary and provide various objects.
   Say: *Let's use some of these materials to find out how heavy your frog (tin) is.*

3. After the student has weighed the frog (tin) ask, *So how heavy is this frog (tin)?* After the student answers, say: *Is that exactly how much it weighs?* (To see if students will use smaller units to become more accurate.)

4. If the child is able to use units to weigh one frog (tin), then ask them to use a different unit to measure the other frog. Say: *Can you weigh this frog (tin) with* _____ (name of different unit)? Suggest lighter objects to weigh the lighter frog or heavier objects to weigh the heavier frog.

5. After the child has weighed the second frog (tin), say: *How heavy is this frog (tin)? Which frog (tin) is heavier? How do you know?* Then say: *How much heavier is this frog (tin) than the other?*

How Heavy Is this Frog/Tin? Teacher Recording Sheet

Name _____ Class _____ Date _____

Which of these two frogs/tins is heavier?

How do you know?

Choose one frog/tin. How heavy do you think this tin is?

Use the balance scales to weigh this frog/tin.
How heavy is it exactly?

How did you work it out?

Weigh the second frog/tin using _____ How heavy is this one?

So which one is the heavier?

How do you know?

How much heavier is this tin than the other tin?

How did you work it out?