Pupil sheet Water prediction

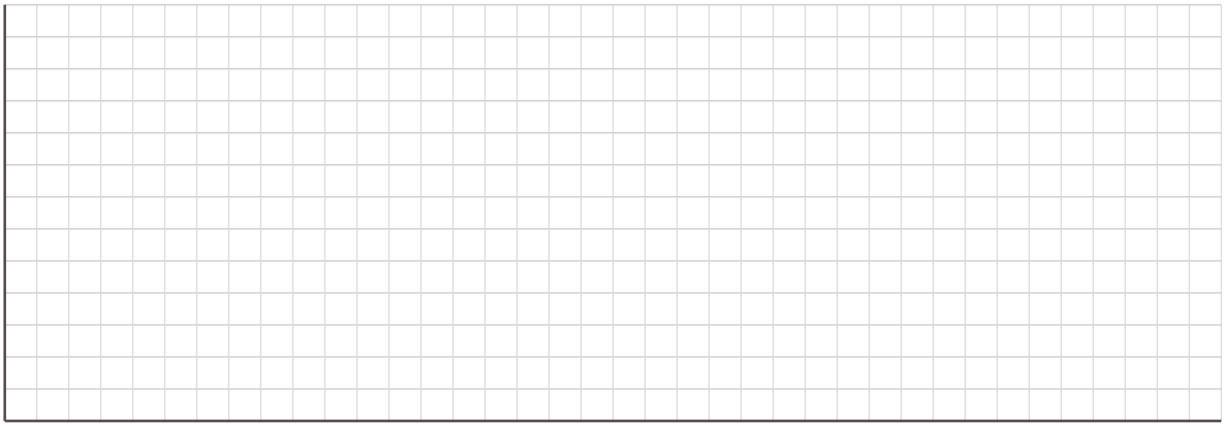
Record, plot, predict and check

Collect your data

Volume (mL)	Depth (cm)
0	
100	
200	

Plot and predict

Depth (cm)



Volume (mL)

Test your prediction

Target depth (cm)

Predicted volume (mL)

Measured depth after pouring the predicted volume (cm)

Percentage error, with your calculation

One reason your result differed from your prediction

From story page 11

1. Use your jug and ruler. Record the depth at 0, 100 and 200 mL. 2. Plot volume (mL) across and depth (cm) up. Pick a depth between your two water readings. Use your graph to predict the volume. 3. Empty and reuse the water. Pour your predicted volume. Measure the depth again. 4. Divide the difference between your target and actual depths by the target depth, then multiply by 100. What?s your percentage error?

Pupil sheet Flood clock

Use the recent readings to make a decision

The readings

Clock	Elapsed minutes	Depth (cm)
9:12	0	8
9:14	2	12
9:16	4	18

Work out Sam’s deadline

Rate between 9:12 and 9:14 (cm/min)

Rate between 9:14 and 9:16 (cm/min)

Forecast cut-off if the faster rate continues

Journey time plus allowance

Latest departure time

What assumption did you make about the rate after 9:16?

From story page 15
At 9:12 the depth was 8 cm. At 9:14 it was 12 cm. At 9:16 it was 18 cm. Find the rate for each interval. If the faster rate holds, when will the water reach 24 cm? What?s the latest time Sam can set off?

Pupil sheet Routes and floor model

Use a ruler and show which scale you are using

Draw the routes from the same start

At 1:200, draw the prize route 4 cm east then 2 cm north. Draw the service route 3 cm north then 1 cm west. Add a straight line to the prize exit.

Prize route (m) Service route (m) Diagonal (m)

Distance the diagonal would save (m)

Model the floor

At 1:20, mark six repeats of a 48 cm tile and a 2 cm grout gap. Mark the flap, 3 metres from the claw machine. Write the instruction you would give Sam.

Model tile width and grout gap

Distance to flap on the model

The instruction I would give Sam

From story page 27

Draw a model of the floor at 1:20. Use your ruler to mark out the 48 cm tiles and the 2 cm gaps at that scale. The flap is 3 metres from the claw machine. How far along your model is it, and how many tiles should Sam count?

Draw both routes

From story page 19
Use a ruler. From the same starting point, draw the prize route 4 cm east, then 2 cm north. Draw the service route 3 cm north, then 1 cm west. Measure a straight line from the start to the end of the prize route. How many metres would that shortcut save?