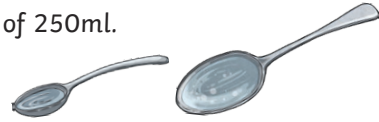The troll is using teaspoons and tablespoons to fill a cup with a capacity of 250ml.

1) Work out the volume of water in each cup.

teaspoon	teaspoon	4 tablespoons
teaspoon	tablespoon	3 teaspoons
teaspoon	teaspoon	2 tablespoons
tablespoon	tablespoon	4 teaspoons
tablespoon	tablespoon	2 teaspoons
tablespoon	tablespoon	1 tablespoon
Volume of water = _____ ml	Volume of water = _____ ml	Volume of water = _____ ml

2) How much more water would need adding to fill each cup?

_____ ml of water would be needed.	_____ ml of water would be needed.	_____ ml of water would be needed.

Tyler Troll and Tia Troll have been using teaspoons (5ml), tablespoons (15ml) and teacups (250ml) to fill a tank. They have recorded their work in a tally chart.

	Tyler	Tia
Teaspoon	ⵉⵂⵉ ////	ⵉⵂⵉ
Tablespoon	ⵉⵂⵉ ⵉⵂⵉ	ⵉⵂⵉ ⵉⵂⵉ ⵉⵂⵉ ⵉⵂⵉ
Teacup	////	///

1) Who put more water into the tank? Explain your answer.

_____

_____

2) Tyler says that it would be possible to fill a 1 litre tank using 3 teacups and some tablespoons. Is he correct? Prove your answer.

_____

_____

_____

_____

Tabitha Troll and Tobias Troll are using teaspoons (5ml), tablespoons (15ml) and teacups (250ml) to fill a tin. The tin has a capacity of 1 litre 200ml.

1) Would it be possible to fill the tin using only teaspoons? What about tablespoons? What about teacups? Prove your answers.

2) Tobias says that they should add one teacup of water to the tin each and then take turns to add the remaining water using the two spoons. How many ways could this be done so that Tobias and Tabitha both have an equal number of turns? What would be the minimum number of steps? Show your working out.

1) 60ml, 70ml, 150ml

2) 190ml, 180ml, 100ml

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1) Tyler added 1195ml and Tia added 1075ml so Tyler added more water to the tank.

2) 3 teacups would total 750ml, leaving 250ml to add. A tablespoon is 15ml. 250 is not a multiple of 15 so it would not be possible.

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1) It would not be possible to use teacups only as 1200 is not a multiple of 250. It would be possible to use only tablespoons as 80 × 15ml = 1200ml. It would be possible to use only teaspoons as 240 × 5ml = 1200ml.

2) If the trolls add a teacup each, they will have added 500ml water in total. Therefore, 700ml of water would still need to be added to the tin. Split between the two trolls, this is 350ml each. Accept any spoon combinations that total 350ml each.

    To use the minimum number of spoons, the trolls would each need to add 23 tablespoons of water and then one teaspoon.