Discussion Problems
Step 4: Estimate Capacity

National Curriculum Objectives:

Mathematics Year 5: (5M8) Estimate volume [for example, using 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water]
Mathematics Year 5: (5M9a) Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling

About this resource:

This resource has been designed for pupils who understand the concepts within this step. It provides pupils with more opportunities to enhance their reasoning and problem solving skills through more challenging problems. Pupils can work in pairs or small groups to discuss with each other about how best to tackle the problem, as there is often more than one answer or more than one way to work through the problem.

There may be various answers for each problem. Where this is the case, we have provided one example answer to guide discussion.

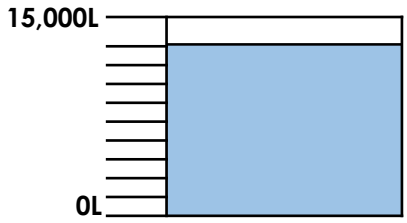
We recommend self or peer marking using the answer page provided to promote discussion and self-correction.

More Year 5 Volume resources.

Did you like this resource? Don't forget to review it on our website.

Estimate Capacity

1. Gordon is filling up his swimming pool with fresh water after cleaning it out. His pool has a maximum capacity of 15,000L. The current water level is shown below.



He says,

My hosepipe has been stolen! I have had to use a combination of buckets to fill my swimming pool to maximum capacity. I've managed to use less than 80 buckets of water.

Bucket A

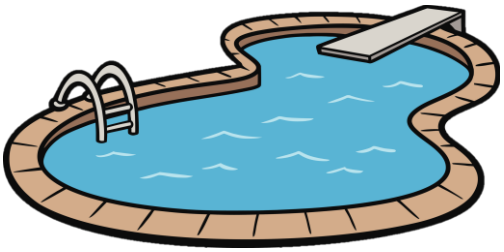
30L

Bucket B

25L

Bucket C

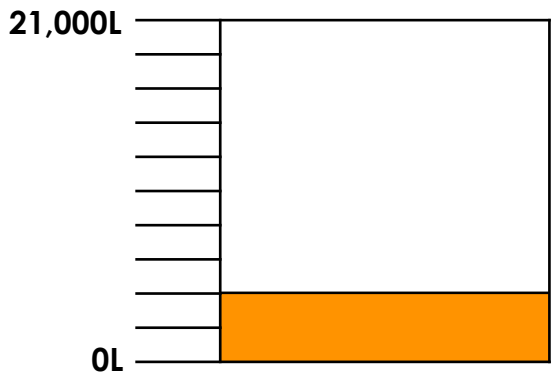
15L



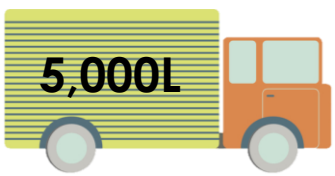
Explore the different combinations of buckets Gordon could have used to fill his pool to maximum capacity. He must use at least one of each bucket.

DP

2. A petrol station is organising a delivery of fuel. The petrol station has a maximum capacity of 21,000L but has some fuel leftover which is shown below.



Each fuel truck has a capacity of 5,000L, but for safety reasons, they cannot transport more than 4,500L per journey.



Investigate how many fuel trucks will be needed in order for the petrol station to reach its maximum capacity. Explain your answer.

DP

Estimate Capacity

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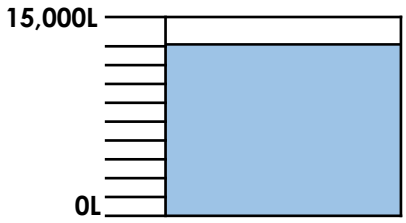

He says,

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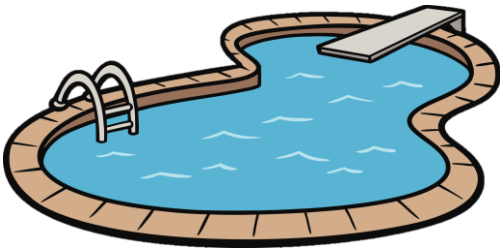


Explore the different combinations of buckets Gordon could have used to fill his pool to maximum capacity. He must use at least one of each bucket.

Various answers, for example:

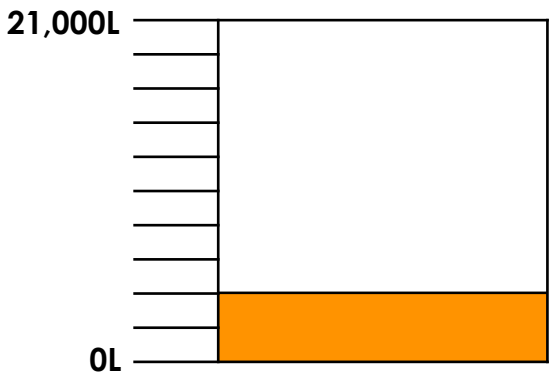
The pool already has an estimated capacity of 13,500L of water in it so Gordon would need another estimated 1,500L of water to fill it to maximum capacity.

Bucket A x 40 = 1,200L; Bucket B x 10 = 150L; Bucket C x 6 = 150L.

1,200 + 150 + 150 = 1,500L of water. Gordon may have used 56 buckets of water.

DP

2. A petrol station is organising a delivery of fuel. The petrol station has a maximum capacity of 21,000L but has some fuel leftover which is shown below.



Each fuel truck has a capacity of 5,000L, but for safety reasons, they cannot transport more than 4,500L per journey.

Investigate how many fuel trucks will be needed in order for the petrol station to reach its maximum capacity. Explain your answer.

Various answers, for example:

The petrol station has an estimated 4,200L of fuel left. 3 trucks carrying 4,500L (3 x 4,500 = 13,500L) and 1 truck carrying 3,300L of fuel totals 16,800L of fuel.

16,800L + 4,200L = 21,000L.

DP