

聖公會林護紀念中學

2024-25 中一學位申請 第一階段面試 (數學解難) A (總分：9 分)

現有 3 款杯：大杯、中杯及小杯。同一款杯的容量相等。

已知 1 中杯的容量等於 $2\frac{1}{2}$ 小杯的容量；1 大杯的容量等於 $1\frac{1}{4}$ 中杯的容量。

1. (a) 1 大杯的容量等於多少小杯的容量？ (1 分)
(b) 1 小杯的容量等於多少大杯的容量？ (1 分)
2. 如果 p 個大杯的總容量等於 q 個小杯的總容量，而且 p 及 q 均是正整數，求 p 的最小可能值。 (1 分)
3. 小明有 8 個大杯，4 個中杯和 4 個小杯。這些杯的總容量等於 x 小杯。
 - (a) 求 x 的值。 (2 分)
 - (b) 小明需要把體積等於 21 小杯的水，盛在他擁有的杯之中，而且每個杯均只能是盛滿的或是空的。小明需要盛滿多少個大杯、中杯及/或小杯？ (2 分)
 - (c) 小明需要把體積等於 y 小杯的水，盛在他擁有的杯之中。小明說，如果 y 是 1 至 x 之間的任何一個整數，則必定有方法用他擁有的杯盛水，而且每個杯均只能是盛滿的或是空的。你同意小明的說法嗎？為甚麼？ (2 分)

(應考同學在面試作答時，不需重複讀問題。另外，面試老師可能對你的解答作出追問)。

S.K.H. Lam Woo Memorial Secondary School
2024-2025 F.1 Admission Application
First Round Interview (Problem Solving in Mathematics) Set A (Total mark: 9)

Here are 3 types of cups: large cups, medium cups and small cups. The capacities of the same type of cups are equal.

The capacity of 1 medium cup is equal to the capacity of $2\frac{1}{2}$ small cups;

The capacity of 1 large cup is equal to the capacity of $1\frac{1}{4}$ medium cups.

1. (a) How many small cup(s) have equal capacity as 1 large cup?
(1 mark)
(b) How many large cup(s) have equal capacity as 1 small cup?
(1 mark)
2. If the total capacity of p large cups equals to the total capacity of q small cups, where p and q are both positive integers, find the minimum value of p .
(1 mark)
3. Alvin has 8 large cups, 4 medium cups and 4 small cups. The total capacity of all these cups is equal to x small cups.
 - (a) Find the value of x .
(2 marks)
 - (b) Alvin needs to use the cups he has to hold some water with the volume equals to 21 small cups, and each cup must be either full or empty. How many large cup(s), medium cup(s) and/or small cup(s) need to be full?
(2 marks)
 - (c) Alvin needs to use the cups he has to hold some water with the volume equals to y small cups. Alvin said, if y is any integer between 1 to x , then there must be a way to use his cups to hold the water such that each cup must be either full or empty. Do you agree with Alvin's claim? Why?
(2 marks)

(In the interview, candidates need not repeat the questions to the interviewers).

(The interviewers may ask you further questions to elaborate your answer).