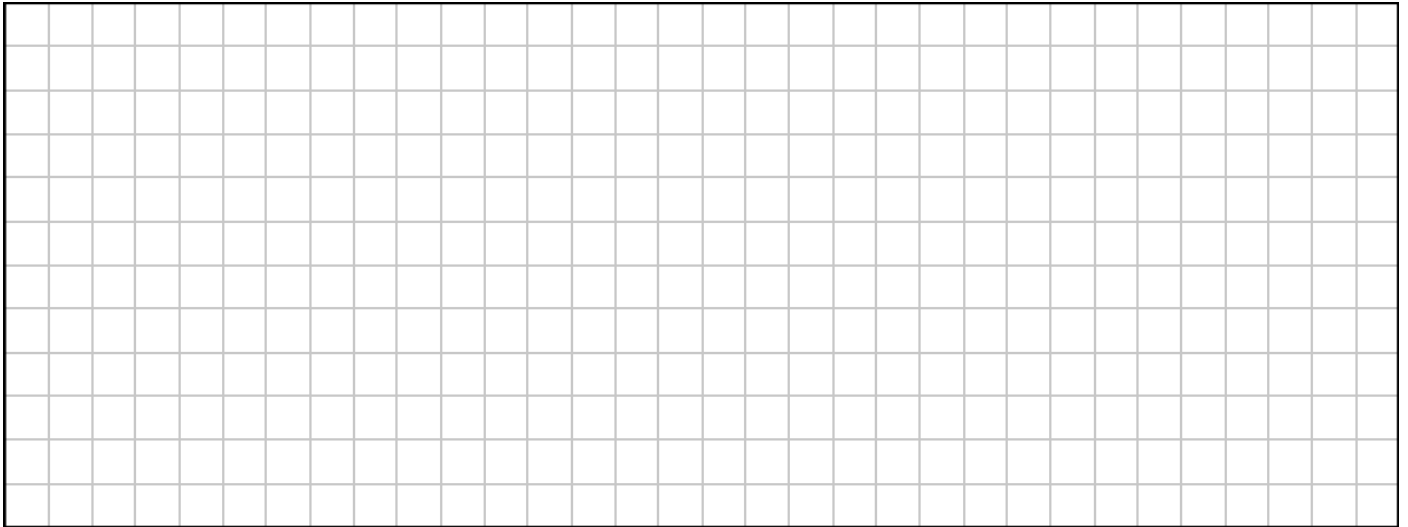


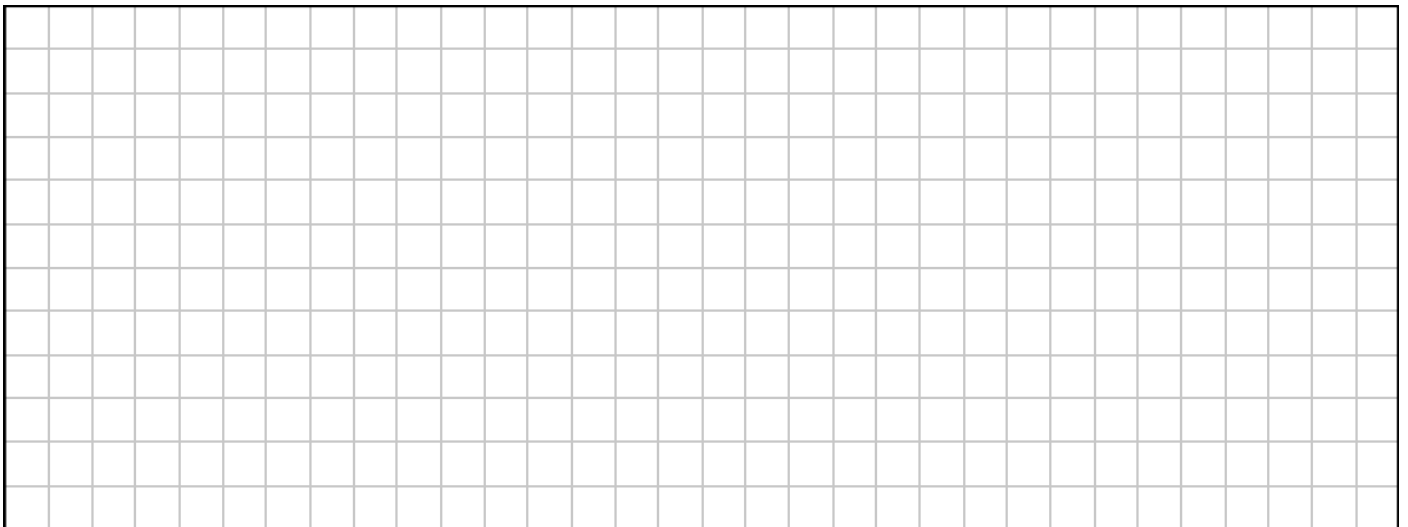
# 2024 LCHL PAPER 2 Q7

This section is to be completed having corrected the question. Enter your score in the box above ↑.

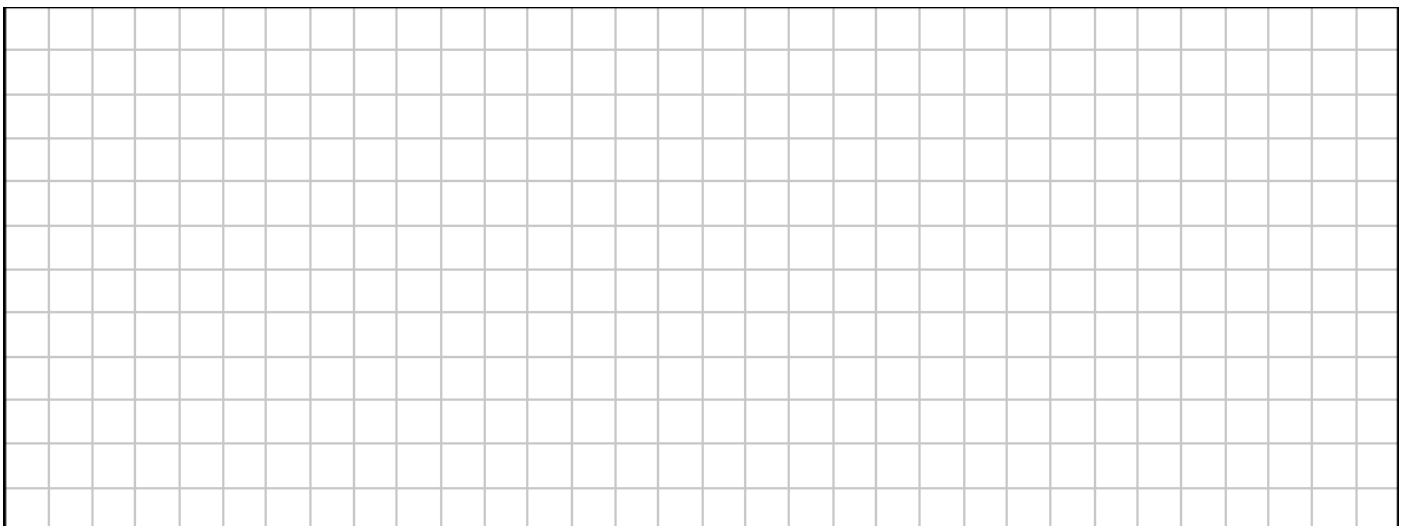
Thoughts (Easy/ Hard, State the Topic, Links to other Topics, Similar Questions?)

A large rectangular area filled with a light gray grid, intended for students to write their thoughts on the question.

What formulae or rules did I need? Is there anything I should learn off?

A large rectangular area filled with a light gray grid, intended for students to write down any formulae or rules they needed to solve the question.

Is there anything I still don't understand? What do I need to revise? Should I return to this question?

A large rectangular area filled with a light gray grid, intended for students to reflect on their understanding and whether they need to return to the question.

► 2024 LCHL Paper 1 – Question 7 (a)

PK Hotels is a hotel chain in Europe.

The ages of the people who stayed in a PK Hotel in 2023 are roughly normally distributed, with a mean age of 48.2 years and a standard deviation of 10.6 years.

- (i) One person is picked at random from the people who stayed in a PK Hotel in 2023.  
Find the probability that this person is less than 50 years old.

- (ii) Exactly 10% of people who stayed in a PK Hotel in 2023 are at least  $A$  years old.  
Find the value of  $A$ , correct to the nearest whole number.

► 2024 LCHL Paper 1 – Question 7 (b)

During their most recent stay,  $\frac{1}{5}$  of PK Hotel customers used the pool.

Use this to answer parts (b)(i) and (b)(ii).

(i) 6 of the PK Hotel customers are picked at random.

Find the probability that exactly 2 of them used the pool.

(ii)  $n$  of the PK Hotel customers are picked at random, where  $n \in \mathbb{N}$ .

The probability that **none** of them used the pool, correct to 4 decimal places, is 0.0047. Work out the value of  $n$ .

► 2024 LCHL Paper 1 – Question 7 (c)

PK Hotels are testing a new booking system.

45% of people who log on to the PK Hotels website are shown the old booking system; the other 55% are shown the new booking system.

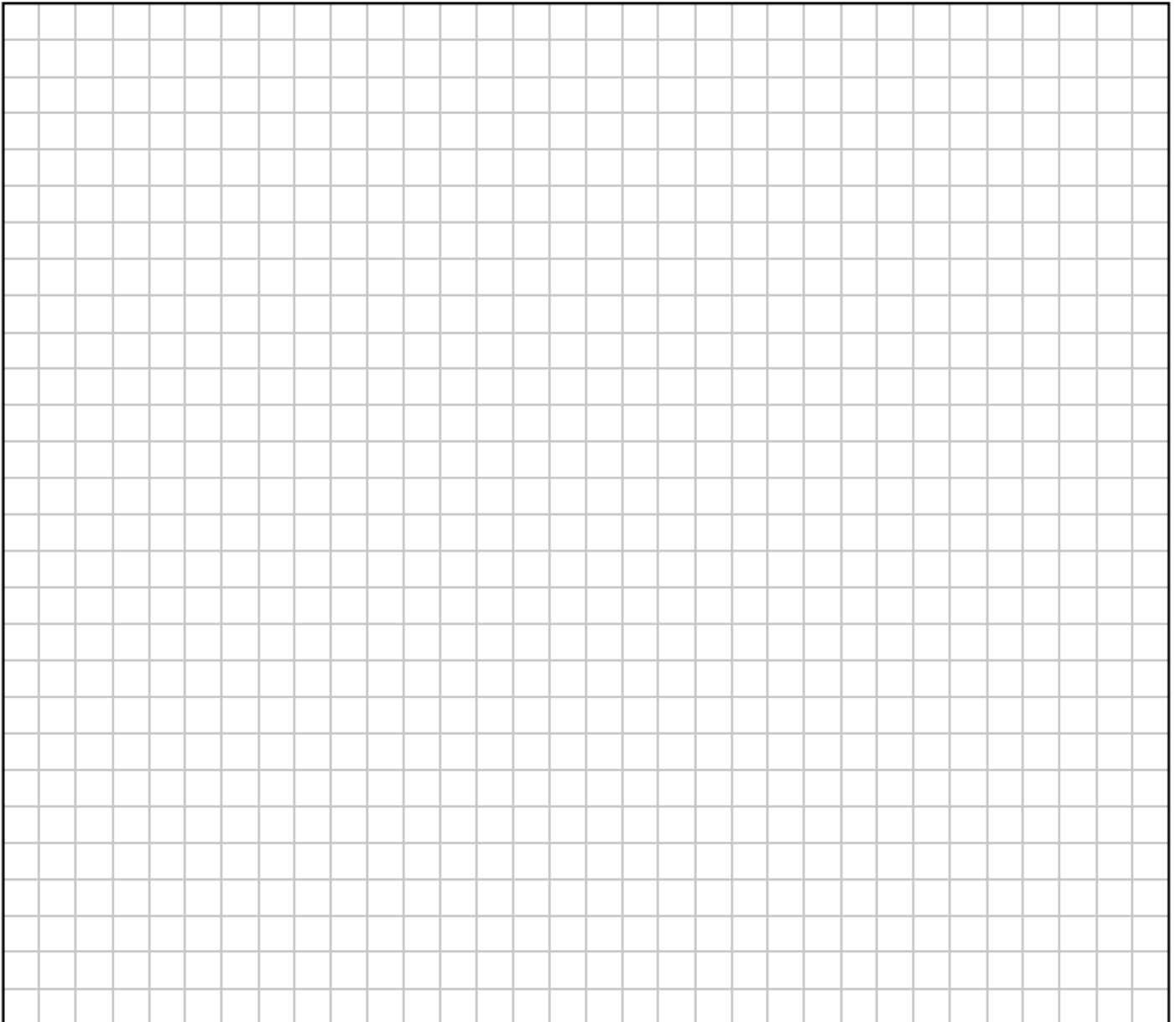
People are assigned the booking system (old or new) at random.

One third of people who see the old booking system end up booking a room.

Two fifths of people who see the new booking system end up booking a room.

One person is selected at random from those who booked a room through the PK Hotels website. Find the probability that this person used the **new** booking system.

Give your answer as a percentage, correct to the nearest percent.

A large grid for writing the answer, consisting of 20 columns and 25 rows of small squares.

► 2024 LCHL Paper 1 – Question 7 (d)

In 2020, PK Hotels were rated the best hotel chain in Europe by 75% of their customers.

In 2024, PK Hotels carried out a survey of a random sample of 1000 of their customers to see if this percentage had changed. Of these, 765 rated PK Hotels the best hotel chain in Europe.

Carry out a hypothesis test at the 5% level of significance to see if this shows a change in the percentage of their customers who rate PK Hotels the best chain in Europe.

State your null hypothesis and your alternative hypothesis, state your conclusion, and give a reason for your conclusion.

Null Hypothesis:

Alternative Hypothesis:

Calculations:

Conclusion:

Reason for your conclusion: