At WonderMarket we are planning to sell refrigerators and want to know how many of each type of refrigerator to put on display. The table below lists the types of refrigerators and the profit we make per unit sold for each type.

Refrigerator type	Alaska	Elsa	Lumi
Profit per unit	$152	$166	$169

We can display a maximum of 8 refrigerators. The table below gives the expected sales for each type of refrigerator given the number placed on display.

Displayed	**0**	**1**	**2**	**3**	**4**
Alaska	0.0	1.4	2.4	3.1	3.2
Elsa	0.0	0.8	2.7	3.1	3.6
Lumi	0.0	0.4	2.9	3.8	4.1

What is the most profit we can make?

$1561.60

Communication 2

After some trials in our target market, we have realised that quick delivery will be our main selling point.

We do not actually sell our display stock. Instead we sell refrigerators we order from the supplier. To speed up this process we are planning to rent space in a nearby warehouse to store refrigerators. Each week we will order refrigerators to replenish our stock at the warehouse. For the purposes of your planning you can assume they will be delivered instantaneously and that we pay for a full week of rental space for the newly arrived refrigerators, plus those previously in stock.

Based on our trial we now have a distribution for the underlying weekly demand for each type of refrigerator. The table below shows the probability of each demand for each type of refrigerator. If the demand exceeds what we have in stock, we miss out on sales.

Demand	0	1	2	3	4	5
Alaska	0.00	0.15	0.20	0.36	0.21	0.08
Elsa	0.13	0.21	0.31	0.20	0.15	0.00
Lumi	0.00	0.13	0.19	0.35	0.22	0.11

Warehouse space rental costs $30 per refrigerator per week. We still are not sure if we are going to keep selling refrigerators, so we will do a 4 week trial. At the end of the trial we can dispose of excess refrigerators for what they cost us. We want to know our optimal strategy for ordering refrigerators during the 4 week trial. We think this can be calculated separately for each type of refrigerator.

What is our profit from the optimum strategy?

$3571.52

Communication 3

Thank you for your answer. After further investigation we realise we need to account for the cost of moving the refrigerators from the supplier to our warehouse. In particular, we can fit a total of 7 refrigerators in a truck and each truckload (or part truckload) of refrigerators costs $150 to deliver. We want to order at most two truckloads per week. Additionally, we are prepared to have a maximum of 8 refrigerators of each type in the warehouse at any time. Because the space on the truck can be made up of a mixed load of refrigerators, we think we now need a combined strategy. Please re-evaluate our optimal strategy.

We look forward to reading your final report.