

Sales Forecast Report

Prepared For:

Thomas Manufacturing LLC



Prepared By:

Thema Group Inc.

*This report is the property of
Thomas Manufacturing LLC*

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Summary and Recommendations

This Sales Forecast Report has been developed for Thomas Manufacturing LLC. by Thema Group Inc. Thomas Manufacturing is a well-established company operating in the Chicago area and selling into the State of Illinois. The main product lines are home air conditioners, humidifiers, and dehumidifiers. The company sell to households through a network of distributors that place their products in retail establishments.

After discussions with a product research company, the company is proposing to add free standing electronic air cleaners to their product line.

The company submitted its data through the themagroup.ca web portal. The data submitted is given in Appendix A-1.

The company has requested sales forecasts for each year of a five-year period and breakeven analysis for each of the forecast years.

Thema Group makes the following recommendation to Thomas Manufacturing:

1. Based on the data input provided, and the sales forecasts and the breakeven analysis developed from this data input, the company **should add electronic air cleaners to its product line.**
2. Because of the seasonality in sales, the company should monitor its cash flows in the latter months of each year in the forecast period to ensure that there will be sufficient funds to meet its operating expenses.

1.0 Introduction

Thomas Manufacturing is a company operating in the Heating, Ventilation, and Air Conditioning (HVAC) industry. The market in which Thomas Manufacturing operates has limited growth prospects for its existing product lines.

Consequently, the company is investigating opportunities for revenue growth by expanding into another industry – the Air Purification Equipment Manufacturing Industry. This expansion would involve the manufacture and sale of free standing electronic air conditioners.

This Sales Forecast Report has been prepared by Thema Group for Thomas Manufacturing using data submitted by the company through the *themagroup.ca portal*.

The company has requested that Thema Group develop:

- A sales forecast for five years, starting in 2022, and
- A breakeven analysis for the each of the forecast years of operation.

2.0 Market Data

2.1 Industry Description and Outlook

Product Description: Electronic air cleaners are electronic devices that filter out large particles and contaminants from a home's indoor air and electronically charges and traps the tiny particles (such as viruses and bacteria) in a collector plate to prevent them from being released back into the air. Electronic air cleaners offer many benefits, including easy maintenance. Since the filters are reusable, they can simply be removed and washed every few months.

Industry Description: Based on technology, the air purifier market is segmented into HEPA, activated carbon, ionic filters, and others.

HEPA technology segment held the largest market share in 2019 and it is projected to grow substantially over the forecast period. HEPA filters are extremely efficient in trapping airborne particles such as dust, pollen, smoke, and bio-contaminants.

Activated carbon filters have exceptional trapping capacity on account of the larger surface area of the carbon granules that makes them very effective in trapping gases, fumes, and odors. Though HEPA filters are highly effective in trapping airborne particles, they are ineffective against gases, odors, and chemicals. Hence, activated carbon filters are generally used in conjunction with HEPA filters to improve the efficiency of the air purifiers.

The ionic filters technology segment accounted for 26.5% of the total revenue share in 2019, and it is expected to expand at a substantial compound annual growth rate

(CAGR) from 2020 to 2027. Air ionizers generate negative ions attack harmful airborne particles and help locking them in. This factor is anticipated to fuel the application of the technology and in turn fuel the segment growth.

The other technology segment includes UV light technology, electrostatic precipitators, and ozone generators. Ultraviolet light technology uses UV lamps to destroy viruses, mold, germs, and bacteria that pass through the lamp. On the other hand, ozone gas emitted from ozone generators destroys chemical agents and bacteria. It is highly efficient against strong odors.

The market is diversified in nature with the presence of both multinational and regional players. Key players such as Honeywell International Inc.; IQAir; Daikin Industries, Ltd; Koninklijke Philips N.V.; Dyson, Hoover, BlueAir, and Panasonic Corporation have a wide-ranging product portfolio, extensive distribution network, and high degree of operational integration.

Target Market: After discussions with a product research company, the company is proposing to add free standing electronic air cleaners to their product line. The target market for this product will be households in the State of Illinois. In 2018, Illinois had a population of 12.7M people with a median age of 38.3 and a median household income of \$65,030. Between 2017 and 2018 the population of Illinois declined from 12.8M to 12.7M, a -0.476% decrease and its median household income grew from \$62,992 to \$65,030, a 3.24% increase.

2.2 Size of the Target Market

There are 4.6 million households in Illinois. The company estimates that one-half of one percent of this market; i.e., 23,000 households, is a reasonable estimate of the size of the target market.

2.3 Competitors

Given its description of the target market, the company has effectively defined a competitor as someone who sells a product with the same function as its proposed electronic air cleaner, and is aimed at the same market.

With this understanding of the market, the company has identified 7 competitors. Within this group of competitors, one has 35 percent of the current market.

2.4 The Growth Cycle

It is clear that competitors have been operating in the market in the market for several years. Yet, the industry as a whole is still showing some modest growth. Based on these industry statistics, the company has indicated that it will take 8 years from the time its product is introduced into the marketplace until demand levels off.

During the eight-year period, the company estimates initial sales growth will be slow, with strong growth occurring in the second and subsequent years, followed by a slowing trend in the latter years of the eight-year cycle. This is a logistics, or s-shaped, pattern of growth.

2.5 Pricing and Promotion

The company has opted to price its electronic air conditioner below the average of the prices charged by its prospective competitors.

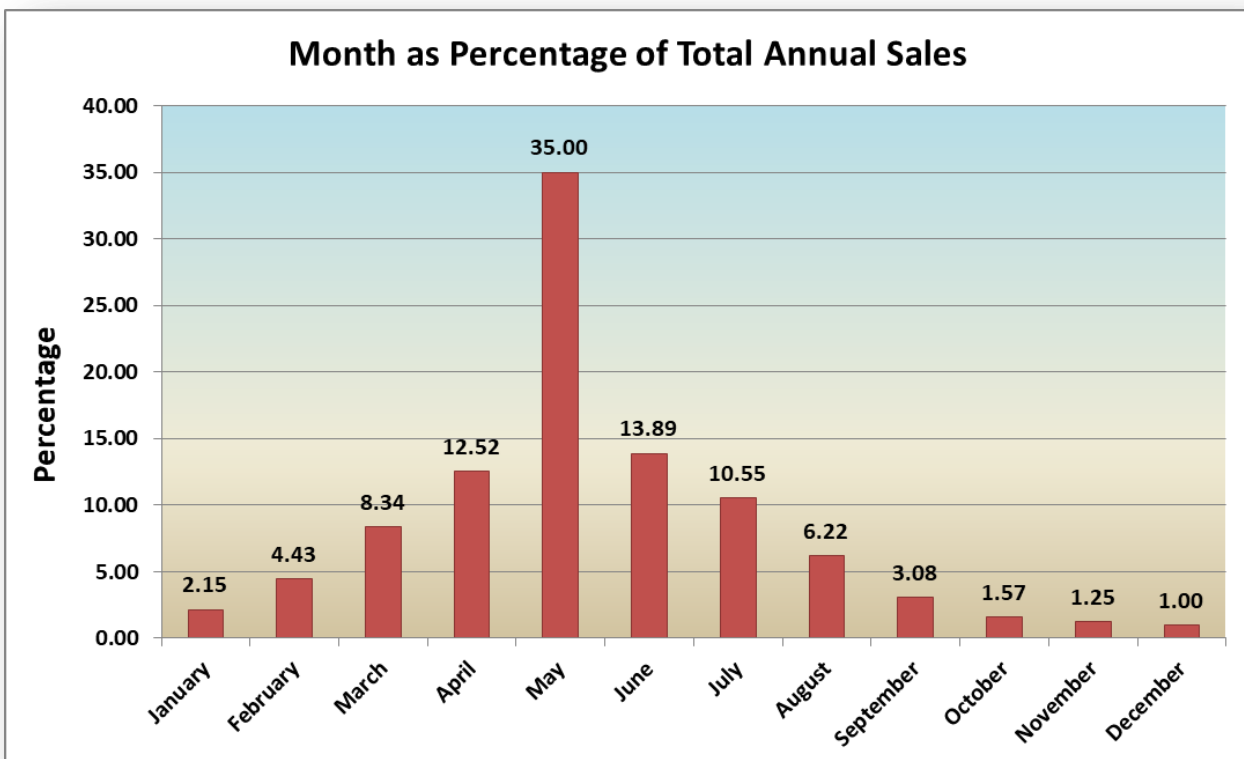
The company intends to match the promotion efforts of competitors and has, therefore, described its promotion strategy as equivalent to the average of its competitors.

2.6 Seasonal Variation in Demand

The company expects that a significant percentage of sales will occur in May of each year. The initial estimate is that the company will be able to sell 35 percent of total annual sales in this month due to demand associated with the spring allergy season. December is expected to be the slowest month of the year, with only 1 percent of sales.

Using the peak and valley percentages provided by the company, Thema Group used its **NewCast** program to develop the expected seasonal variation in sales for all months. This variation is illustrated in Figure 1.

Figure 1: Seasonal Variation by Month



3.0 Five-Year Sales Forecast

The forecast of demand for 2022 through to 2026 is given in Table 1. These forecasts show that demand, in units, is projected to grow by 148.75% from 2022 to 2023, by 58.79% from 2023 to 2024, by 37.18% from 2024 to 2025, and by 27.10% from 2024 to 2025.

Table 1: Five-Year Sales Forecast

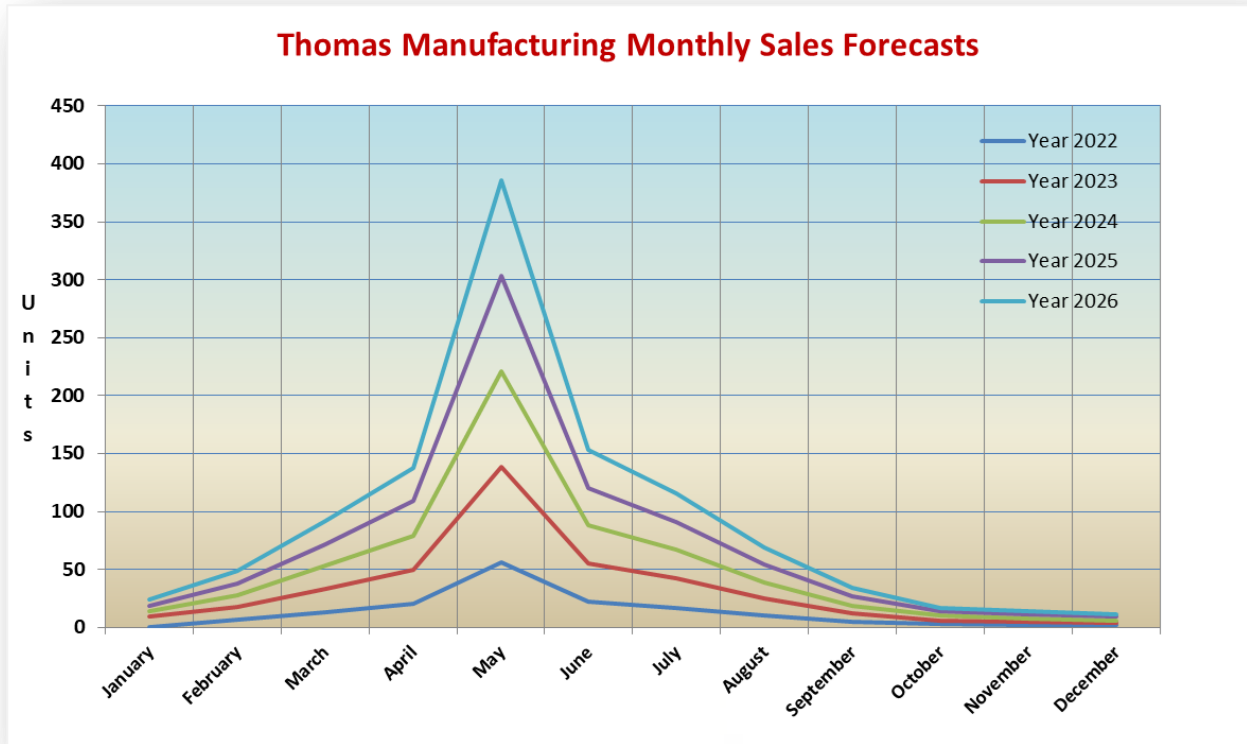
Thomas Manufacturing										
Sales Forecast										
Period	Year 2022		Year 2023		Year 2024		Year 2025		Year 2026	
	Units	Dollars*	Units	Dollars*	Units	Dollars*	Units	Dollars*	Units	Dollars*
January	3	\$675	9	\$2,025	14	\$3,150	19	\$4,275	24	\$5,400
February	7	1,575	18	4,050	28	6,300	38	8,550	49	\$11,025
March	13	2,925	33	7,425	53	11,925	72	16,200	92	\$20,700
April	20	4,500	50	11,250	79	17,775	109	24,525	138	\$31,050
May	56	12,600	139	31,275	221	49,725	303	68,175	386	\$86,850
June	22	4,950	55	12,375	88	19,800	120	27,000	153	\$34,425
July	17	3,825	42	9,450	67	15,075	91	20,475	116	\$26,100
August	10	2,250	25	5,625	39	8,775	54	12,150	69	\$15,525
September	5	1,125	12	2,700	19	4,275	27	6,075	34	\$7,650
October	3	675	6	1,350	10	2,250	14	3,150	17	\$3,825
November	2	450	5	1,125	8	1,800	11	2,475	14	\$3,150
December	2	450	4	900	6	1,350	9	2,025	11	\$2,475
Total	160	\$36,000	398	\$89,550	632	\$142,200	867	\$195,075	1103	\$248,175

* Selling Price = \$225 per unit

It should be noted that most of the growth is attributable to growth in demand during the peak month of May, since sales in May is forecast to grow by 589% over the four years from 2022 to 2026.

Figure 2 illustrates the highly seasonal nature of the sales forecast. The implications of this seasonal demand pattern are discussed in the section on breakeven analysis.

Figure 2: Five-Year Monthly Sales Forecasts



4.0 Breakeven Analysis

Breakeven analysis is used to examine the relationship between the company's fixed cost, variable cost, and profit. The breakeven point will represent the volume of sales at which total costs equal total revenues (that is, profits equal zero).

The breakeven analysis is normally done on an annual basis. However, it is useful to calculate a monthly breakeven in order to assess the difference between a forecast of monthly demand and the level of demand necessary to cover all monthly fixed and variable costs.

4.1 Cost-Volume-Profit

Table 2 provides details on the cost-volume-profit analysis that was done as part of the sales forecast. The selling price, fixed costs, and variable cost per unit were part of the data input provided by the company.

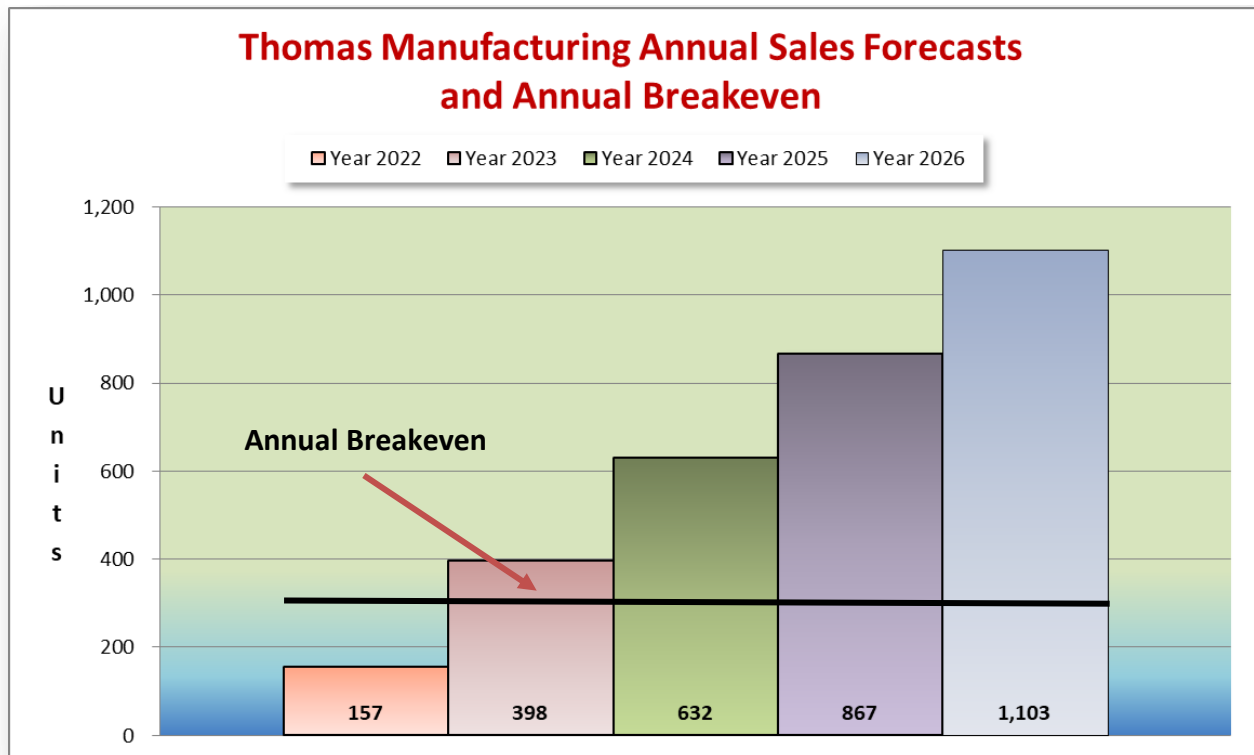
Table 2: CVP Analysis

	Year				
	2022	2023	2024	2025	2026
SALES FORECAST	157	398	632	867	1,103
SELLING PRICE PER UNIT	\$225	\$225	\$225	\$225	\$225
VARIABLE COST PER UNIT	\$100	\$100	\$100	\$100	\$100
ANNUAL FXED COSTS	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000
BREAKEVEN POINT (Sales Dollars)	\$72,000	\$72,000	\$72,000	\$72,000	\$72,000
BREAKEVEN POINT PER YEAR (units)	320	320	320	320	320
BREAKEVEN POINT PER MONTH (units)	27	27	27	27	27

The breakeven point is constant between 2022 and 2026 because the fixed costs remain constant, and the contribution margin – the difference between selling price and variable costs – is also constant.

The result is that it takes only two years – until 2023 – before the forecast annual sales volume exceeds the annual breakeven point. This point is illustrated in Figure 3.

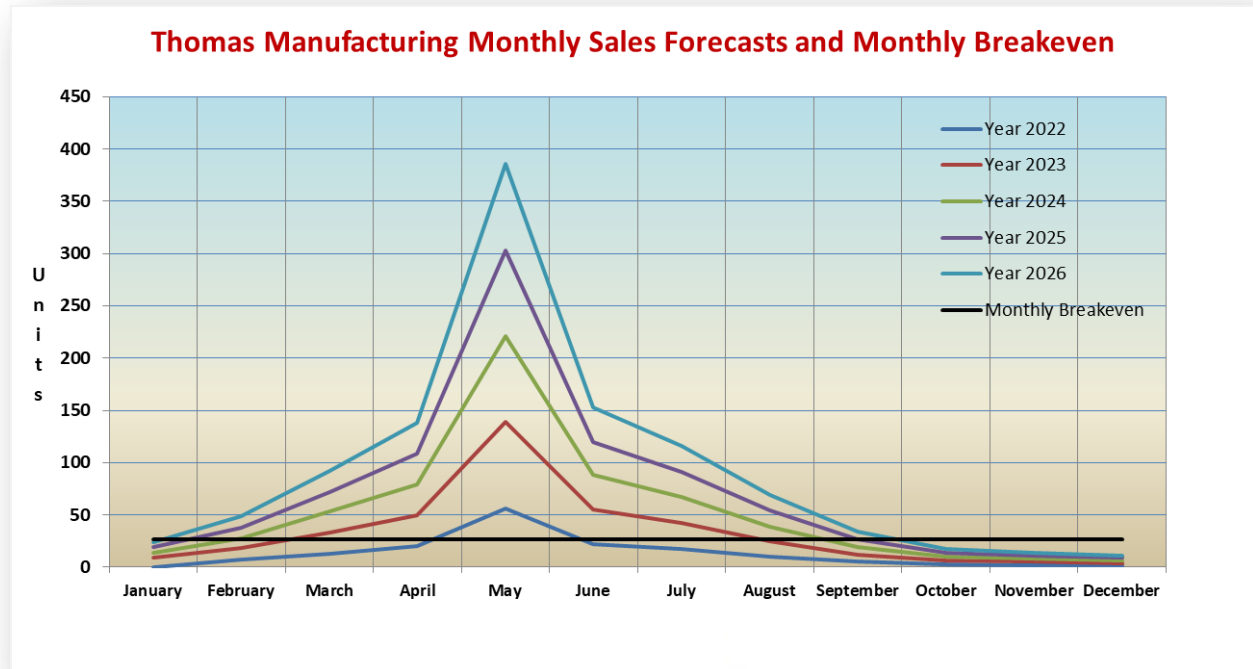
Figure 3: Annual Forecasts and Annual Breakeven



4.2 Breakeven and Seasonal Variation in Sales

The impact of seasonal variation on the monthly breakeven is illustrated in Figure 4. For the months of October through December and for the month of January for all five forecast years, monthly sales forecasts will be below the monthly breakeven point. For these months, *cash inflows from sales will likely be below cash outflow for expenses*.

Figure 4: Impact of Seasonal Sales on Monthly Breakeven



5.0 Recommendations

Thema Group makes the following recommendations to Thomas Manufacturing:

3. Based on the data input provided, and the sales forecasts and the breakeven analysis developed from this data input, the company **should add electronic air cleaners to its product line**.
4. Because of the seasonality in sales, the company should monitor its cash flows in the latter months of each year in the forecast period to ensure that there will be sufficient funds to meet its operating expenses.

Appendix A.1

Data Input Summary

Sales Forecast with Breakeven Analysis

Request By/For

- Name: Ben Rogers
- Email Address: br@thmanu.com
- Project Name: Electronic Air Cleaner
- Company Name: Thomas Manufacturing

Product and Market

- **Product Description:** Electronic air cleaners are electronic devices that filter out large particles and contaminants from a home's indoor air and electronically charges and traps the tiny particles (such as viruses and bacteria) in a collector plate to prevent them from being released back into the air. Electronic air cleaners offer many benefits, including easy maintenance. Since the filters are reusable, they can simply be removed and washed every few months.
- **Industry Description:** Based on technology, the air purifier market is segmented into HEPA, activated carbon, ionic filters, and others.

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The other technology segment includes UV light technology, electrostatic precipitators, and ozone generators. Ultraviolet light technology uses UV lamps to destroy viruses,

mold, germs, and bacteria that pass through the lamp. On the other hand, ozone gas emitted from ozone generators destroys chemical agents and bacteria. It is highly efficient against strong odors.

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- **Target Market:** Our company is a well-established company operating in the Chicago area and selling into the State of Illinois. Our main product lines are home air conditioners, humidifiers, and dehumidifiers. We sell to households through a network of distributors that place our products in retail establishments.

After discussions with a product research company, we are proposing to add free standing electronic air cleaners to our product line. Our target market for this product will be households in the State of Illinois. There are 4.6 million households in Illinois. In 2018, Illinois had a population of 12.7M people with a median age of 38.3 and a median household income of \$65,030. Between 2017 and 2018 the population of Illinois declined from 12.8M to 12.7M, a -0.476% decrease and its median household income grew from \$62,992 to \$65,030, a 3.24% increase.

Forecast Setup

- Number of Years of Forecast Requested: 5
- Forecast Starting From Month: January
- Forecast Starting From Year: 2022

Market Conditions

- Number of Customers in Trading Area: 4,600,000
- Percentage of Customers That Are Good Prospects: .005
- Number of Purchases Per Year: 1
- Number of Units Per Purchase: 1
- Annual Growth Rate for the Target Market: 1.0%
- Number Of Competitors: 7
- Dominant Competitor: Yes
- Dominant Competitor's Market Share: 25%

Product/Service Life Cycle

- Length of the Growth Cycle: 7
- Growth Cycle Pattern: Logistics

Pricing and Promotion Policies

- Pricing Policy: Below Average
- Promotion Policy: Average

Seasonal Variation

- Yes
- Peak Month: May
- Peak Percentage: 35
- Valley Month: December
- Valley Percentage: 1

Breakeven Analysis

	Year 1	Year 2	Year 3	Year 4	Year 5
Annual fixed cost (\$):	40000	40000	40000	40000	40000
Variable cost per unit (\$):	100	100	100	100	100
Selling price per unit (\$):	225	225	225	225	225