

## Tennant Trucks: AI Solutions to Well-Defined Case

See the Tennant Trucks case on the following page in this file. The assignment was designed to require calculations and interpretation similar to many textbook problems.

### Calculations and Possible Discussion:

One way to think about the incremental benefit is to calculate the expected incremental profit:

$$\text{Per unit: } \$150 - (\$25 + \$45 + \$20 + 55) = \$5$$

$$\text{Total: } 200 \text{ units} \times \$5 = \$1,000$$

Assuming that the estimates used in the calculation are reasonable, the company should launch the product because it is expected to achieve incremental profit per unit.

However, the incremental profit is estimated to be very small. The estimated profit may be smaller than managers believe is acceptable—particularly given the cash outflows needed to invest in the new product and risks associated with a new product launch. The managers may wish to research this product idea further or to consider other ways to improve profits and cash flows.

### AI Answers:

The following pages in this file contain 5 different AI-generated answers:

1. Copilot (Bing version)
2. Copilot (Bing version)
3. Microsoft 365 Copilot
4. Claude
5. Chat GPT

The first two answers (using the Bing version of Copilot) are both incorrect, but in different ways. The last three answers (M365, Claude, and ChatGPT) are all correct.

The best answer was #4, generated by Claude. It includes not only correct calculations and the correct well-defined answer, but it also identifies various risks that should be considered.

Note: This assignment is intended for use as an example in the 2026 revision of critical thinking materials for accounting faculty to be published by the AICPA. This material was provided to users as a handout for the session titled, “Upcoming AICPA Resources: Critical Thinking in an AI World” at the AAA 2026 SPARK online conference in June 2026.

# Tennant Vintage Trucks

Tennant Vintage Trucks produces and sells to retailers a line of 25 collectible metal toy trucks that are vintage truck replicas. Sales have deteriorated during the economic recession resulting in negative cash flows, and the company's managers are seeking ways to increase sales. One proposal is to launch a series of limited-edition trucks to increase sales to collectors.

The first limited edition would consist of 200 Ready Red classic fire trucks for a wholesale price of \$150 each. Manufacturing costs per unit are as follows:

Direct materials	\$25
Direct labor	45
Variable overhead	20
Fixed overhead	65

The per-unit costs include variable overhead licensing fees of \$13 for use of the Ready Red name. Fixed overhead includes \$55 per unit for truck design, manufacturing specifications, and customized die-cast molds. Traditionally, the company has used each die-cast mold set to manufacture only one product.

**Required: (Typical Well-Defined Textbook Problem)**

Should the company launch the limited edition of Ready Red trucks?  
Provide appropriate calculations and explain your answer.



## AI Answer #1: Copilot (Bing version)

Gave Copilot the case assignment with requirements on May 29, 2026.

 Copilot Search

### Tennant Vintage Trucks: Market Context and Strategic Considerations

Tennant Vintage Trucks, which produces and sells 25 collectible metal toy truck replicas, faces declining sales due to the economic recession and resulting negative cash flows. This situation is common in niche collectible markets, where demand can be highly sensitive to economic conditions and consumer spending.

#### Market for Vintage Metal Toy Trucks

Vintage metal toy trucks are a well-established collectible category, with strong online demand on platforms like **eBay** and **Etsy** eBay +1. These trucks, often diecast or pressed steel, are valued by collectors for their craftsmanship, rarity, and nostalgic appeal Appraisily. Factors influencing value include:

- **Maker and model** (e.g., Tonka, Marx, Buddy L, Structo) Appraisily
- **Condition** (originality, completeness, paint, decals, wheels) Appraisily
- **Rarity** and **scale** of the model
- **Historical significance** of the truck type

Current market listings show a wide price range, from under \$10 for common models to over \$100 for rare or complete sets eBay +1. This suggests that while mass-market demand may be down, there is still a dedicated collector base willing to pay for high-quality, authentic pieces.

#### Economic and Consumer Trends

During recessions, discretionary spending on collectibles often declines, but:

- **Niche markets** like vintage toy trucks can remain stable if there's a loyal collector base.
- **Online resale platforms** (eBay, Etsy) can help Tennant reach global buyers, bypassing some local retail limitations.
- **Restoration and display** of trucks can be a niche service, adding value to the product line Appraisily.

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## Strategic Recommendations for Tennant

1. **Target the collector market** – Focus marketing on vintage truck collectors, hobbyists, and online communities (e.g., Uncle Al's Toys, Tonka Trucks Collectors Club) [Uncle Al's Toys +1](#) .
2. **Leverage online sales** – Use eBay, Etsy, and social media to reach global buyers and reduce reliance on traditional retail.
3. **Highlight rarity and condition** – Market each model with detailed photos, maker info, and condition reports to appeal to serious collectors [Appraisily](#) .
4. **Consider restoration services** – Offer or partner with restoration to increase perceived value.
5. **Diversify distribution** – Explore pop-up events, toy fairs, and collector meetups to build brand visibility.

## Conclusion

While Tennant Vintage Trucks' sales have suffered from the recession, the vintage metal toy truck market remains active among collectors. By focusing on authenticity, condition, and niche marketing, Tennant can tap into this resilient segment and potentially recover or grow its customer base.

## AI Answer #2: Copilot (Bing version)

Using a different computer, gave Copilot the case assignment with requirements on May 29, 2026.

**Yes — Tennant should launch the limited-edition Ready Red trucks, because the special order generates a positive contribution margin once irrelevant fixed costs are removed.**

### Core Decision

The key question is whether the *incremental revenue* from producing 200 limited-edition trucks exceeds the *incremental (relevant) costs*.

Only **costs that change because of the decision** matter.

### Step 1 — Identify Relevant Costs

#### Relevant variable costs per unit

- Direct materials: **\$25**
- Direct labor: **\$45**
- Variable overhead (includes \$13 licensing): **\$20**
- **Total relevant variable cost per unit = \$90**

#### Are fixed overhead costs relevant?

Fixed overhead includes:

- \$55 per unit for design, specifications, and custom molds
- \$10 per unit for other fixed overhead (since total fixed OH = \$65)

These fixed costs are **NOT relevant** if:

- The molds and design costs are already incurred or unavoidable, or
- They do not change with the decision.

In this problem, the molds and design costs are **allocated fixed costs**, not incremental cash outflows.

They **should not** be included in the decision.

Thus, **relevant fixed cost = \$0**.

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## Step 2 — Compute Contribution Margin

### Revenue

200 trucks × \$150 = **\$30,000**

### Relevant costs

200 trucks × \$90 = **\$18,000**

### Contribution margin

$$\text{CM} = 30,000 - 18,000 = 12,000$$



## Conclusion

**The limited-edition run generates a positive contribution margin of \$12,000.**

Since:

- No additional fixed costs are incurred,
- The molds/design costs are irrelevant allocations,
- The order increases profit by \$12,000,

**→ Tennant should launch the limited-edition Ready Red trucks.**

## AI Answer #3: Microsoft 365 Copilot

Using the Microsoft 365 Copilot app, gave the case assignment with requirements on May 30, 2026.

### Step 1: Identify relevant costs (avoid full absorption costing)

For this **special, limited-edition decision**, we should focus on **relevant (incremental) costs**, not total accounting cost.

#### Variable (relevant) costs per unit:

- Direct materials = \$25
- Direct labor = \$45
- Variable overhead = \$20
  - (includes \$13 licensing fee → still relevant)

✓ Total variable cost per unit = **\$90**

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### Step 2: Consider fixed costs

Fixed overhead = \$65 per unit, but:

- \$55 of this is for **design, specifications, and die-cast molds**
- These are **product-specific** → **avoidable** → **relevant**

👉 Total fixed cost = 200 units × \$55 = **\$11,000**

The remaining \$10 (\$65 – \$55) is likely allocated general fixed overhead → **not relevant**

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### Step 3: Contribution margin

Selling price = \$150

Variable cost = \$90

✓ Contribution margin per unit:

$$150 - 90 = 60$$

For 200 units:

$$200 \times 60 = 12,000$$

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### Step 4: Net benefit

Total contribution margin = 12,000

Less: fixed costs (molds/design) = 11,000

✓ Net profit:

$$12,000 - 11,000 = 1,000$$

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### Step 5: Decision

✓ **Yes, the company should launch the limited edition.**

#### Explanation:

- The project generates a **positive incremental profit of \$1,000**
  - All relevant costs (including licensing and mold setup) are covered
  - Even though total accounting cost per unit appears high, decision-making must focus on **incremental profitability**
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### Final Conclusion:

The Ready Red truck limited edition is financially viable and should be launched because it **adds to profit rather than increasing losses**.

## AI Answer #4: Claude

Gave free Claude app the case assignment with requirements on May 29, 2026.

### Analysis: Ready Red Limited Edition Launch Decision

#### Relevant Cost Framework

For this decision, we need to identify **relevant costs** — those that differ between launching vs. not launching. Fixed overhead that has already been committed is irrelevant if it will be incurred regardless.

However, the problem states the \$55/unit die-cast mold cost covers **design, specifications, and customized molds** created specifically for this product. Since the company traditionally uses each mold set for only one product, these costs are **avoidable** (incurred only if the launch proceeds) and therefore **relevant**.

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#### Contribution Margin Per Unit

	<b>Per Unit</b>
Wholesale selling price	\$150.00
<b>Less relevant costs:</b>	
Direct materials	\$(25.00)
Direct labor	\$(45.00)
Variable overhead (total)	\$(20.00)
<i>includes licensing fee of \$13</i>	
Fixed overhead — mold/design costs	\$(55.00)
<b>Net contribution per unit</b>	<b>\$5.00</b>

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#### Total Profit from Limited Edition Run

	<b>Total (200 units)</b>
Revenue	\$30,000
Direct materials	\$(5,000)
Direct labor	\$(9,000)
Variable overhead	\$(4,000)
Mold/design fixed overhead	\$(11,000)
<b>Net profit</b>	<b>\$1,000</b>

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### **Decision**

**Yes, the company should launch the Ready Red limited edition, but only marginally so.**

The launch generates a **positive net profit of \$1,000** over the 200-unit run, meaning all relevant costs are covered with a small surplus. Several considerations reinforce this recommendation:

1. **Strategic context matters.** The company is experiencing declining sales and negative cash flows during a recession. Even a modest positive contribution helps offset the company's broader fixed cost burden and keeps cash flowing.
2. **The mold costs are the critical judgment call.** If the \$55/unit design and mold costs (\$11,000 total) were sunk or shared with other products, the profit would jump to **\$12,000** — a much easier yes. The decision hinges on confirming these costs are truly avoidable.
3. **Collector market upside.** Limited editions can stimulate interest in the broader 25-truck core line, potentially generating spillover sales not captured in this analysis.
4. **Downside risk is low.** With the full run pre-committed at wholesale (\$150/unit), there is no inventory or demand risk — the \$1,000 gain is essentially locked in.

**Caveat:** If any portion of the \$55/unit fixed overhead is unavoidable (e.g., design costs already incurred), the profitability improves accordingly, strengthening the case to proceed.

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[Claude is AI and can make mistakes. Please double-check responses.](#)

## AI Answer #5: Chat GPT

Gave the free Chat GPT app the case assignment with requirements on May 29, 2026.

This is a **special-order / relevant-cost decision**. The key question is whether the limited-edition truck will generate a positive contribution toward profit.

### Step 1: Identify Relevant Costs

The company will sell **200 trucks at \$150 each**.

#### Revenue:

$$200 \times \$150 = \$30,000$$

Relevant manufacturing costs are those that will be incurred because of this project:

Cost	Per Unit Relevant? Reason		
Direct materials	\$25	Yes	Incremental cost
Direct labor	\$45	Yes	Incremental cost
Variable overhead	\$20	Yes	Incremental cost
Fixed overhead	\$65	Partly	Need to determine avoidable portion

The fixed overhead contains:

- **\$55 per unit for truck design, specifications, and customized die-cast molds**
- Remaining fixed overhead =  $\$65 - \$55 = \$10$  per unit

Because a **new limited-edition truck** requires its own design and mold, the **\$55 per unit is directly attributable to this project and is relevant**.

The remaining **\$10 per unit** represents allocated fixed overhead that will exist regardless of whether the project is undertaken, so it is **not relevant**.

### Step 2: Calculate Relevant Cost per Unit

$$25 + 45 + 20 + 55 = \$145$$

Relevant cost for 200 units:

$$200 \times \$145 = \$29,000$$

### Step 3: Compare Revenue and Relevant Costs

	Total
Revenue	\$30,000
Relevant costs	29,000
Incremental profit	<b>\$1,000</b>

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**Alternative Contribution Format**

Revenue per unit = \$150

Relevant cost per unit = \$145

Incremental profit per unit:

$$\$150 - \$145 = \$5$$

Total profit:

$$200 \times \$5 = \$1,000$$

**Recommendation**

**Yes, Tennant Vintage Trucks should launch the limited-edition Ready Red truck, assuming there are no capacity constraints or other opportunity costs.**

The project generates an **incremental profit of \$1,000**, meaning it contributes positively to company earnings and cash flow. The allocated fixed overhead of **\$10 per unit** is not relevant to the decision because it will be incurred whether or not the limited edition is produced.

Therefore, the limited-edition truck should be accepted because it increases profit by **\$1,000**.