

**Overview**

*The Core 1 and 2 examinations are a mix of objective format and case questions. The maximum length for an individual case will be 60 minutes. The Core cases must assess the cross-competency integration, problem-solving and communication elements, which will be introduced in Core 1 and 2 (see CPA Competency Map for the competency areas being integrated). Core 1 case(s) will reflect mostly routine and low to medium complexity situations, and will provide candidates with sufficient direction to demonstrate an early level of professional skill development. By the end of Core 2, candidates should be more comfortable with cases and have further developed their critical thinking ability; Core 2 case(s) could be a bit more complex than in Core 1; Core 2 cases could also incorporate Core 1 (and any Entry level) learnings as the program builds on prior learnings.*

**BOLT BLADES LTD.****(Suggested time: 60 minutes)**

Bolt Blades Ltd. (BBL) is a manufacturer of blades used in industrial equipment. The manufacturing process starts with compressing and cutting large pieces of steel, called “blanks,” into rough-cut blades that BBL calls “Part No. 101.” Part No. 101 is then ground and polished, and the polished blades are cut into the shapes required for customers’ orders. The blades must pass strict tolerance requirements. Part No. 101 is an essential part of all of BBL’s finished products. Although BBL has a reputation in the market for producing high-quality blades, the finished products are generic, so BBL competes mostly on price and on-time delivery.

Today is April 1, 2022. You, CPA, are the finance manager at BBL, and the general manager has called a meeting with you and the managers from engineering, production, and purchasing.

The general manager begins the meeting: “BBL’s production variances have been reaching alarming levels.”

The production manager responds: “Machine 1, which produces Part No. 101, is causing all the difficulties. Machine 1 uses old technology, vibrates loudly and stops often during the production process, causing blades to break. To slow the vibration and reduce pressure, we added gaskets to the machine but the improvement did not last long. The broken blades need to be removed from the machine, which increases labour hours and wastes direct materials – the blanks. I have scheduled our most experienced technicians on Machine 1 but have had little success.”

The purchasing manager adds: “In an attempt to solve this issue, I obtained extra-thin blanks from a new vendor, which were used for the entire first quarter of 2022. These blanks are more fragile than the regular blanks used by BBL.”

The general manager turns to you: “I want you to review the historical variance report (Appendix I) and the production activity data from the first quarter of 2022 (Appendix II), explain the main causes of the unfavourable variances in previous years, and determine whether the variances have improved in the first quarter of 2022 with the use of the extra-thin blanks.”

The engineering manager mentions: “I am not sure that the use of extra-thin blanks will be a saving in the long term because we may have more product returns. There are many suppliers that produce parts equivalent to Part No. 101. I inspected the quality of blades produced by ACE Inc. (ACE) and find them comparable to Part No. 101, but I do not know whether purchasing from ACE would be financially beneficial to BBL (Appendix III).”

The production manager adds: “Because of these unforeseen stops and delays in the process, we were having difficulty meeting the production deadlines. I think it is time to replace Machine 1. I have not yet done extensive research but I found one machine that uses the best technology available. I believe that this machine will speed up production of Part No. 101 and will significantly reduce our direct materials waste (Appendix IV).”

The general manager asks you to review the data provided by the production manager, ignoring tax implications in your analysis, and quantify the impact of replacing Machine 1. The general manager also asks you to discuss the pros and cons of each of the options discussed in the meeting, and to provide an overall recommendation.

**APPENDIX I  
PART NO. 101**

*Variance Analysis  
2019 – 2021*

<b>Direct cost variances – Favourable (Unfavourable)</b> <i>(in thousands of dollars)</i>						
	<b>2019</b>	<b>2020</b>	<b>2021</b>			
	<b>Variance total</b>	<b>Variance total</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>
Material price variance	\$ 5	\$ 29	\$ 75	(\$ 25)	(\$ 60)	\$ 50
Material quantity variance	(\$ 8)	(\$110)	(\$120)	(\$480)	(\$ 60)	(\$480)
Labour rate variance	\$20	(\$ 1)	(\$ 20)	(\$ 25)	(\$ 30)	(\$ 40)
Labour efficiency variance	\$14	(\$ 5)	(\$ 60)	(\$110)	(\$ 80)	(\$ 90)
Total variances from standard costs	\$31	(\$ 87)	(\$125)	(\$640)	(\$230)	(\$560)

**APPENDIX II**  
**PART NO. 101**  
**FINANCIAL DATA – 2022**

*Standard costs and activity*  
*First quarter, 2022*

<b>Per-unit standards:</b>	<b>Quantity</b>	<b>Price/rate</b>	<b>Total</b>
Standard for materials, in kg	0.2200	\$ 1.05	\$ 0.231
Standard for labour, in labour hours	0.0950	\$15.00	1.425
			<b>\$ 1.656</b>

**Activity for the quarter (actual):**

Sales revenue	\$27,000,000
Blades produced and sold	9,000,000
Material purchased, in kg	2,010,000
Actual cost of material purchased	\$ 2,231,100
Actual material used, in kg	1,960,200
Actual direct labour hours used	846,450
Actual direct labour cost	\$12,709,447
Actual overhead (all fixed costs)	\$11,610,000

**APPENDIX III  
ACE INC.**

ACE was established in 2020, has grown rapidly, and is starting to build an industry reputation for producing good-quality products. ACE mainly produces parts for blade equipment and machines, which it sells to other companies or wholesalers.

The company is willing to supply their blade that is comparable to Part No. 101 for \$1.70 per unit. BBL would purchase 35,000,000 units per year and does not expect changes in the purchase volume for the next few years.

If Part No. 101 is purchased from ACE, BBL could sublease its current manufacturing facility and equipment and could lay off the five technicians and one production manager who currently produce Part No. 101, providing severance payments to each. Technicians' and production manager's salaries are determined annually and are fixed costs.

Some of the financial implications of outsourcing are as follows:

Annual sublease of facility and equipment	\$1,800,000
Annual technician salary per person	\$ 45,000
Annual production manager salary	\$ 80,000
Total of severance payments	\$ 31,250

**APPENDIX IV  
PURCHASE OF NEW MACHINE**

If the new machine is purchased, it would replace Machine 1 and would be used for the full production of Part No.101.

Details of this potential transaction are as follows:

**New machine**

Cost	\$2,800,000
Initial setup costs	\$ 30,000
Expected reduction in maintenance, annually	\$ 525,000
Expected reduction in repair costs, annually	\$ 25,000
Expected increase in depreciation expense, annually	\$ 330,000
Useful life	8 years
Salvage value at end of useful life	\$ 50,000

**Current machine (Machine 1)**

Estimated current selling price	\$ 70,000
Current net book value	\$160,000
Remaining useful life	8 years
Salvage value at end of useful life	\$ 0

BBL requires a 12% return on investment for all of its investment projects. Ignore tax implications.