6. Dunn Auto Repair (DAR)

Alistair Dunn runs an auto mechanic shop called Dunn Auto Repair that services all types of cars and trucks. Alistair owns the Dunn Auto property, but he still has mortgage payments to make to the bank, bundled together with insurance and local property taxes that the bank then pays on his behalf. Alistair pays his brother Keith to do the accounting and customer service, while Alistair handles all other business functions. Costs and revenues for repairs vary widely, but he can calculate an average cost and revenue figure per repair that does not change very significantly per month. The most frequent service that Alistair sells is an oil change, which the shop completes on average 300 times per month. In a typical month, Dunn completes around 150 other types of repairs that tend to cost more than oil changes. Below is a breakdown of Dunn Auto Repair's monthly costs and revenues.

	Average cost Average revenue
Oil change supplies	$18 per change $50
Oil change direct wages paid	$15 per change -
Average materials cost of repairs	$115 per repair $300
Average direct wage cost	$75 per repair -
Average utility expenses	$500 per month -
Marketing expenses	$150 per month -
Mortgage, insurance, and property taxes	$1700 per month -
Keith's salary	$5000 per month -

A company that allows customers to book appointments with independent mechanics that come to their houses has just started operating in Alistair's city. The company's low overheads allow it to offer lower prices on certain types of repairs, though Alistair can perform more complex repairs that require a shop. Alistair is considering hiring two additional staff members to offer oil changes at people's homes as well. Alistair believes that he could charge an average price of $100 for this, with the supplies and labour costing him about $50.

Question	**Marks**
A. With the information presented in the case study and tables, identify two variable costs for DAR.	2
B. With the information presented in the case study and tables, identify two fixed costs for DAR.	2
C. With reference to DAR, explain the difference between fixed and indirect costs.	4
D. If Alistair offered in-home oil changes, explain one example of a change to his direct costs.	2

E. Define the term revenue.	2
F. Other than the in-home oil changes, suggest two possible new revenue streams that an auto mechanic such as DAR could attempt to create.	4
G. Explain two challenges that Alistair may face if he were to launch the in-home oil change service.	6

Author's note: *Some texts include the construction of cost and revenue curves in this section, despite the IB syllabus indicating that the depth of teaching does not go beyond AO2 for this question. Thus, while it is entirely reasonable to have students practice calculations and construct graphs in this section, the IB syllabus would only include command terms such as "construct" and "calculate" if it indicated the teaching level is up to AO4. Cost and revenue calculations do not explicitly come up in the syllabus until section 5.5 on break even. If the teacher determines that it would be beneficial to go ahead and prepare students for AO4 at this point, then here are some extension questions.*

Extension Questions for AO4	**Marks**
H. If Alistair does 100 oil changes and 120 repairs each month, calculate the total monthly revenue that Alistair would make.	2
I. Plot the current fixed cost curve for DAR.	2
J. Plot the total revenue for DAR for *repairs only,* up to 30 auto repairs per month.	2
K. Plot the total cost curve for DAR for *repairs only,* up to 30 auto repairs per month.	2

7. McQuiggan Ramblers (MR)

McQuiggan Ramblers is a boutique manufacturer of high-quality hiking shoes owned by sole trader Liam McQuiggan. Customers must come in for appointments to have their walk analyzed and their precise foot measurements taken, as well as to discuss other customized features. For advertising, McQuiggan Ramblers relies largely on customers eagerly spreading the word about the shoes.

Liam employs a small staff of 6 people, which keeps his costs low but means that he seldom has time for holidays and sometimes has difficulty keeping up with demand. He is considering expanding production by hiring more highly skilled staff to take some of the design burden off of himself and free up time for further production, but new employee training is very time-consuming. He is also a bit concerned that hiring more staff may impact his image as a customer-focused retailer with, as he says, “incredible quality at a price so reasonable, it’s silly.” Expanding production would also require him to rent a larger production facility for the shoes, though his storefront could remain the same. He estimates that the new facility’s rent would add another $1800 per month and an initial $15,000 for equipment and other setup expenses, but he also believes that he could double his production. Each of the facilities he is looking at would also require Liam to sign a lease agreement for a minimum of three years.

After an article in an outdoors magazine mentioned MR, word of his business spread much further beyond his city, expansion now seems more urgent. On average, the business can produce 100 pairs of shoes per month, but it can sometimes take up to 2 months between when the customer places their order and when the shoe is finished and the purchase is completed. Though some customers pay in full at the time of order, most pay 25% of the purchase price upfront, with the rest paid when the shoe is completed. For the last five years, Liam has been able to fund his business through retained profit; he would like to expand without relying on external finance, especially as interest rates have nearly doubled in the last year, but he knows that the up-front expenses of an expansion would make it very challenging to keep enough cash available to the business without using his personal savings.

Question	**Marks**
A. Explain what would happen to McQuiggan’s average fixed cost if he were able to increase the production of shoes without expanding to a new facility.	2
B. Identify two variable costs for MR.	2
C. Explain a benefit and a drawback of Liam attempting to develop an additional revenue stream beyond sales of custom-made shoes.	4
D. Identify two possible indirect costs for MR.	2
E. Explain the difference between sales revenue and sales volume.	4
F. Explain two challenges of Liam attempting to reduce his direct costs per unit.	6
G. Explain two challenges if Liam were to rent a new production facility.	6