4 D Limited has two production departments and two service departments at one of its factories where absorption costing is used. Some forecast factory overheads have already been allocated and apportioned as follows:

	Production departments		Service departments	
	Cutting $	Assembly $	Maintenance $	Canteen $
Factory overheads	223 480	217 980	45 270	36 260

The following forecast factory overheads are still to be apportioned.

	$
Depreciation of machinery	48 000
Power	40 200

Canteen department overheads should be reapportioned on the basis of the number of employees. Maintenance department overheads should be reapportioned on the basis of the number of machines in production departments.

The following data is available.

	Production departments		Service departments	
	Cutting	Assembly	Maintenance	Canteen
Machinery at carrying value	$90 000	$66 000	$18 000	$6 000
Number of machines	43	27		
Kilowatt hours	1 800	1 500	100	200
Number of employees	27	18	5	
Budgeted machine hours	40 000	33 500		
Budgeted direct labour hours	23 000	62 500		

REQUIRED

(a) Complete the following table to show the apportionment of factory overheads and the reapportionment of service department overheads.

	Production departments		Service departments	
	Cutting	Assembly	Maintenance	Canteen
	$	$	$	$
Factory overheads	223480	217980	45270	36260
Depreciation of machinery				
Power				
Total overheads				
Reapportionment				
Subtotal				
Reapportionment				
Total overheads				

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(b) Calculate, to **two** decimal places, an overhead absorption rate for **each** production department, using a suitable basis.

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Additional information

The following information is available.

	Cutting department	Assembly department
Direct labour rate per hour	$10.90	$8.20
Machine hours per unit	8	6
Labour hours per unit	3	4

Direct materials cost $6.95 per unit.

Selling prices are set to achieve a profit margin of 25%.

A customer has placed an order for 40 units.

REQUIRED

(c) Calculate the selling price to be quoted for this order of 40 units.

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(d) State **two** causes of under absorption of overheads.

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Additional information

At the other factory a single product, Product Exe, is currently being made. Marginal costing is used at this factory.

The following information is available.

Selling price per unit	$48
Contribution per unit	$13
Direct labour	2.5 hours per unit at $10 per hour
Fixed costs	$96 000 per annum
Factory capacity	28 000 labour hours per year
Current production level	80% of factory capacity

All units produced are sold.

REQUIRED

(e) Calculate the profit made each year from Product Exe.

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Additional information

The directors plan to make a new product, Product Wye, at this factory at the request of an important customer. The following details are available.

1 The factory will be able to operate at full capacity.

2 All units produced will be sold.

3 Product Wye will have a selling price of $64 per unit and a contribution of $8 per unit.

4 Product Wye will require direct labour at $10 per hour for 1.5 hours per unit.

5 The customer requires 10 000 units of Product Wye each year. The customer will **only** accept this quantity each year.

6 In order to complete the customer's order, production of Product Exe will be reduced.

7 Some new machinery will be required costing $36 000. Machinery is depreciated by 20% per annum.

8 A loan of $20 000 at 5% per annum interest will be required to finance the purchase of the new machinery.

REQUIRED

(f) Calculate the **total** profit from both products which will be made in the first year if this plan is put into operation.

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(g) Advise the directors whether this plan should be put into operation. Justify your answer by considering **both** financial and non-financial factors.

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