Source A for Question 1

T plc is a manufacturing business which uses activity based costing (ABC) to apportion certain costs. The following information is available.

1 The company manufactures two products: X and Y.
Annual production is 1000 units of X and 3000 units of Y.

2 The unit production costs of the products are as follows:

	X $	Y $
Direct materials	14.00	15.00
Direct labour	12.00	15.00
Direct overheads	10.00	11.00
Quality inspections	2.34	1.30
Machine set-ups	3.60	1.95
Factory rent	6.00	6.00
Total	47.94	50.25

3 Costs are apportioned using the following bases.

	X	Y
Quality inspections per year	300	500
Machine set-ups per year	40	65
Factory rent	per unit	

4 Selling prices are set at production cost plus 50%.

1 Read Source A in the insert.

(a) Discuss:

(i) whether or not apportioning the factory rent on a per unit basis is the most suitable way to apportion that cost.

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(ii) whether or not setting selling prices by use of a fixed mark-up is the most suitable way to set them.

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Additional information

The company is considering starting production of a third product, Z. This would affect costs and revenues as follows:

1 The number of units of X and Y being manufactured would be unchanged. Production of Z would be 2000 units per year.

2 The direct costs of X and Y would be unchanged. The total direct cost of one unit of Z would be $34.

3 Products X and Y would continue to have the same number of quality inspections and machine set-ups. Product Z would have 500 inspections and 50 set-ups.

Because of the increase in the number of quality inspections, an additional inspector would have to be employed. This would double the total cost of quality inspections per year.

The increase in the number of machine set-ups would increase the total cost, which would become $13 020.

4 The increase in production would necessitate the rental of additional floor space. This would increase the total cost of factory rent which would become $30 000. This would continue to be apportioned on a per unit basis.

(b) Calculate the **total** annual cost of quality inspections if production of Z takes place.

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(c) Calculate the **increase** per year in the following costs which would occur if production of Z takes place.

(i) machine set-ups

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(ii) factory rent.

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(d) Calculate the selling price of one unit of **each** product if production of Z takes place.

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Additional information

The directors think that in the second year of production of Z the company should reduce the number of quality inspections it makes for the new product.

(e) Advise the directors whether or not they should reduce the number of quality inspections of product Z. Justify your answer.

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[Total: 25]

Question	Answer	Marks
1(a)(i)	**Discuss:** **whether or not apportioning the factory rent on a per unit basis is the most suitable way to apportion that cost.** It is simple to apply **(1)** but may not be realistic **(1)** and floor area might be a more suitable basis **(1).** **Max 2** **Accept other valid responses.**	**2**
1(a)(ii)	**Discuss:** **whether or not setting selling prices by use of a fixed mark-up is the most suitable way to set them.** It is also simple to apply **(1)** but does not consider the price that competitors may be charging **(1).** If costs reduce then a fixed percentage mark-up will reduce the profit **(1).** **Max 2** **Accept other valid responses.**	**2**
1(b)	**Calculate the total annual cost of quality inspections if production of Z takes place.** [(2.34 × 1000) + (1.3 × 3000)] **(1)** × 2 = $12 480 **(1)**	**2**
1(c)(i)	**Calculate the <u>increase</u> per year in the following costs which would occur if production of Z takes place.** **machine set ups** 13 020 – [(3.6 × 1000) + (1.95 × 3000)] **(1)** = $3570 **(1)**	**2**
1(c)(ii)	**Calculate the <u>increase</u> per year in the following costs which would occur if production of Z took place.** **factory rent** 30 000 – (4000 × 6) **(1)** = $6000 **(1)**	**2**

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>1(d)</td><td>

Calculate the selling price of one unit of <u>each</u> product if production of Z takes place.

<table>
<tr><td></td><td>X
$</td><td>Y
$</td><td>Z
$</td><td></td></tr>
<tr><td>Direct costs</td><td>36.00</td><td>41.00</td><td>34.00</td><td>(1) row</td></tr>
<tr><td>Quality inspections
W1</td><td>2.88
(1)OF</td><td>1.60
(1)OF</td><td>2.40
(1)OF</td><td></td></tr>
<tr><td>Machine set ups W2</td><td>3.36</td><td>1.82</td><td>2.10</td><td>(1) row</td></tr>
<tr><td>Factory rent W3</td><td>5.00</td><td>5.00</td><td>5.00</td><td>(1) row</td></tr>
<tr><td>Total</td><td>47.24</td><td>49.42</td><td>43.50</td><td></td></tr>
<tr><td>Mark-up</td><td>23.62</td><td>24.71</td><td>21.75</td><td>(1)OF row</td></tr>
<tr><td>Selling price</td><td>70.86</td><td>74.13</td><td>65.25</td><td>(1)OF row</td></tr>
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W1 Quality inspections
X 12 480 (OF) × 300/1300 × 1/1000 = 2.88
Y 12 480 (OF) × 500/1300 × 1/3000 = 1.60
Z 12 480 (OF) × 500/1300 × 1/2000 = 2.40

W2 Machine set ups
X 13 020 (CF) × 40/155 × 1/1000 = 3.36
Y 13 020 (CF) × 65/155 × 1/3000 = 1.82
Z 13 020 (CF) × 50/155 × 1/2000 = 2.10

W3 Factory rent
30 000/(1000 + 3000 + 2000) = 5.00

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<tr><td>1(e)</td><td>

Advise the directors whether or not they should reduce the number of quality inspections of product Z. Justify your answer

Once production is well established it should be clear to management that the quality is satisfactory **(1).**
Although a second member of staff has been employed it may be possible to reduce the hours which one or both are working/deploy them elsewhere **(1)** but this may demotivate other employees **(1).** However this will reduce total costs **(1)** and therefore the mark up / selling price **(1).**
If the salaries of the inspection staff are fixed **(1)** the total cost cannot be reduced **(1)** and the inspection cost apportioned to the other products will increase **(1).**
There may be an impact on quality **(1)** which may affect customer satisfaction **(1).**

Max 6
Decision supported with a comment (1)
Accept other valid responses

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