MEI FP1 MATRICES EXERCISE 1A

1) $\underline{A} = \begin{pmatrix} 1 & 2 \\ 3 & -1 \end{pmatrix}$ $\underline{B} = \begin{pmatrix} -2 & 3 \\ 1 & -4 \end{pmatrix}$ $\underline{C} = \begin{pmatrix} 2 & 1 & 5 \\ 3 & 0 & 1 \end{pmatrix}$

$\underline{D} = \begin{pmatrix} -3 & 6 & 0 \\ 1 & 2 & -1 \end{pmatrix}$ $\underline{E} = \begin{pmatrix} 5 & 2 \\ 0 & -1 \\ -2 & 4 \end{pmatrix}$ $\underline{F} = \begin{pmatrix} -1 & 6 \\ 3 & 2 \\ 8 & -4 \end{pmatrix}$

i) $\underline{A}$ = 2×2
ii) $\underline{C}$ = 2×3
iii) $\underline{E}$ = 3×2

2) i) $\underline{A} + \underline{B} = \begin{pmatrix} 1+-2 & 2+3 \\ 3+1 & -1+-4 \end{pmatrix}$

$= \begin{pmatrix} -1 & 5 \\ 4 & -5 \end{pmatrix}$

ii) $\underline{C} - \underline{D} = \begin{pmatrix} 2--3 & 1-6 & 5-0 \\ 3-1 & 0-2 & 1--1 \end{pmatrix}$

$= \begin{pmatrix} 5 & -5 & 5 \\ 2 & -2 & 2 \end{pmatrix}$

iii) $\underline{A} + \underline{F}$, $\underline{A}$ and $\underline{F}$ do not conform

iv) $3\underline{B} = \begin{pmatrix} 3\times-2 & 3\times3 \\ 3\times1 & 3\times-4 \end{pmatrix}$

$= \begin{pmatrix} -6 & 9 \\ 3 & -12 \end{pmatrix}$

v) $3\underline{E} - 2\underline{F}$

$3\underline{E} = \begin{pmatrix} 15 & 6 \\ 0 & -3 \\ -6 & 12 \end{pmatrix}$ $2\underline{F} = \begin{pmatrix} -2 & 12 \\ 6 & 4 \\ 16 & -8 \end{pmatrix}$

$3\underline{E} - 2\underline{F} = \begin{pmatrix} 17 & -6 \\ -6 & -7 \\ -22 & 20 \end{pmatrix}$

vi) $2\underline{D} - \underline{A}$ $\underline{D}$ and $\underline{A}$ do not conform

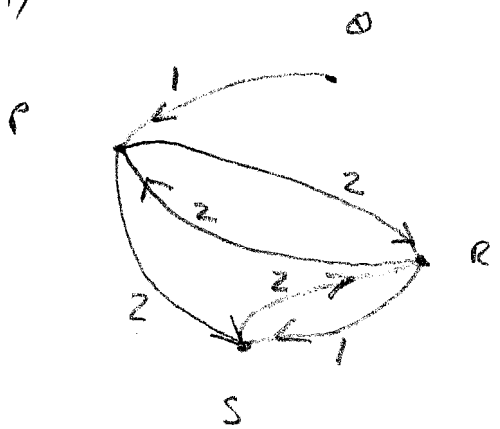
3) i)

From \ To	P	Q	R	S
P	0	2	1	0
Q	1	0	2	1
R	0	2	0	2
S	1	0	1	0

ii)
$$\begin{pmatrix} 0 & 2 & 3 & 2 \\ 2 & 0 & 2 & 1 \\ 2 & 2 & 0 & 3 \\ 1 & 0 & 3 & 0 \end{pmatrix} - \begin{pmatrix} 0 & 2 & 1 & 0 \\ 1 & 0 & 2 & 1 \\ 0 & 2 & 0 & 2 \\ 1 & 0 & 1 & 0 \end{pmatrix}$$

From \ To	P	Q	R	S
P	0	0	2	2
Q	1	0	0	0
R	2	0	0	1
S	0	0	2	0

iii)



4) i)

	W	D	L	F	A
CITY	1	0	1	4	4
RANGERS	0	0	1	0	2
TOWN	1	1	0	7	5
UNITED	0	1	0	3	3

Complete result

	W	D	L	F	A
C	3	1	1	10	7
R	0	0	4	2	10
T	3	1	1	11	8
U	1	2	1	8	6

4 cont)

ii) $\begin{pmatrix} 4 & 1 & 1 & 12 & 8 \\ 1 & 1 & 4 & 5 & 12 \\ 3 & 1 & 2 & 12 & 10 \\ 1 & 3 & 2 & 10 & 9 \end{pmatrix} - \begin{pmatrix} 3 & 1 & 1 & 10 & 7 \\ 0 & 0 & 4 & 2 & 10 \\ 3 & 1 & 1 & 11 & 8 \\ 1 & 2 & 1 & 8 & 6 \end{pmatrix}$

$= \begin{array}{c} \\ C \\ R \\ T \\ U \end{array} \begin{array}{c} \begin{array}{ccccc} W & D & L & F & A \end{array} \\ \begin{pmatrix} 1 & 0 & 0 & 2 & 1 \\ 1 & 1 & 0 & 3 & 2 \\ 0 & 0 & 1 & 1 & 2 \\ 0 & 1 & 1 & 2 & 3 \end{pmatrix} \end{array}$

CITY 2 v 1 UNITED

RANGERS 2 v 1 TOWN

RANGERS 1 v 1 UNITED

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5)

$\underline{P} = \begin{pmatrix} 17 & 8 & 10 & 15 \\ 6 & 12 & 19 & 3 \\ 24 & 10 & 11 & 6 \end{pmatrix}$

$\underline{Q} = \begin{pmatrix} 2 & 5 & 3 & 0 \\ 1 & 3 & 4 & 6 \\ 5 & 0 & 2 & 3 \end{pmatrix}$

$\underline{P} - \underline{Q} = \begin{pmatrix} 15 & 3 & 7 & 15 \\ 5 & 9 & 15 & -3 \\ 19 & 10 & 9 & 3 \end{pmatrix}$

i) Stock levels after current orders dispatched

Negative indicates that the orders for that particular colour and size of jacket cannot be met.

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ii) $\begin{pmatrix} 15 & 3 & 7 & 15 \\ 5 & 9 & 15 & -3 \\ 19 & 10 & 9 & 3 \end{pmatrix} + \begin{pmatrix} 5 & 10 & 10 & 5 \\ 10 & 10 & 5 & 15 \\ 0 & 0 & 5 & 5 \end{pmatrix}$

$= \begin{pmatrix} 20 & 13 & 17 & 20 \\ 15 & 19 & 20 & 12 \\ 19 & 10 & 14 & 8 \end{pmatrix}$

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iii) $6 \begin{pmatrix} 2 & 5 & 3 & 0 \\ 1 & 3 & 4 & 6 \\ 5 & 0 & 2 & 3 \end{pmatrix}$

$= \begin{pmatrix} 12 & 30 & 18 & 0 \\ 6 & 18 & 24 & 36 \\ 30 & 0 & 12 & 18 \end{pmatrix}$

Unlikely to be realistic A week too short a time to indicate sales pattern

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