

Gross weight at take-off.....2544 kg

Gross moment index at take-off.....653.06

100 kg of fuel on board at take-off [all in the main tanks]

Pilot and three passengers in rows one and two

Each person weighs 77 kg

Eight 20 kg packets in the rear compartment

The aircraft is to be in balance at zero fuel weight as well as at take-off.

The number parcels that must be off-loaded to allow the carriage of two more passengers is -

Choose one ☐ 3 xanswer. ☒ none X☐ 1 x☐ 2 ✓

Item	W	A	M
ACFT	2544		653.06
R1	154	2290	35.266
R2	154	3300	50.82
rear	160	5000	80
fuel	- 100	1780	- 17.8

At take-off with the fuel in the aircraft looks like this.

ITEM	WEIGHT	ARM	MOMENT
Gross at T/O	2544		653.06
Add the passengers	+154	4300	66.2
New condition	2698		719.26

ZFW : 2444 801.286

The CofG is now $7192600 \div 2696 = 2666\text{mm}$ looks OK. BUT:

The aircraft must be in balance at ZFW as well, so take the fuel out.

New condition	2698		719.26
Mains	-100	1780	-17.8
Now	2598		701.46

CofG is now $7014600 \div 2598 = 2700\text{mm}$. Out of the envelope.

Do a weight to subtract from the rear-

Present weight

2598

Present CofG

2700

Present moment

701.46

Required CofG

2680

Shift

20

Wt to subtract

22 kg

Comp

5000

The packets are 20kg each, so you will have to **remove 2 packets**.

Incorrect

Marks for this submission: 0/2.

An Echo aircraft has a basic empty weight and moment of 1863 kg and 490.75