

WEIGHT AND BALANCE

Use the following practice questions to get your reps in! The more you practice, the easier this process becomes. Refer to the end of this document for answers. When it comes time to take the Practice Written Tests and FAA Written, this should feel natural.

1. Refer to Figure #34. What is the weight and CG?

Basic Empty Weight: 1535lbs
Starting Moment: 61,000lb-in
Pilot: 210lbs
Front Seat Pax: 155lbs
Rear Seat Pax: 130lbs
Bags: 45lbs
Fuel: 30 gallons
Oil: 8 quarts

2. Refer to Figure #34. What is the weight and CG?

Basic Empty Weight: 1535lbs
Starting Moment: 61,000lb-in
Pilot: 125lbs
Front Seat Pax: 115lbs
Rear Seat Pax: 0lbs
Bags: 0lbs
Fuel: 22 gallons
Oil: 8 quarts

3. Refer to Figure #34. What is the weight and CG?

Basic Empty Weight: 1535lbs
Starting Moment: 61,000lb-in
Pilot: 220lbs
Front Seat Pax: 190lbs
Rear Seat Pax: 135lbs
Bags: 0lbs
Fuel: 40 gallons
Oil: 8 quarts

4. Refer to Figure #34. What is the weight and CG?

Basic Empty Weight: 1535lbs
Starting Moment: 61,000lb-in
Pilot: 185lbs
Front Seat Pax: 145lbs
Rear Seat Pax: 50lbs
Bags: 25lbs
Fuel: 18 gallons
Oil: 8 quarts

5. Refer to Figures #32 and #33. What is the weight and CG?

Basic Empty Weight: 2015lbs
Starting Moment: 155,400lb-in
Pilot: 210lbs
Front Seat Pax: 155lbs
Rear Seat Pax: 130lbs
Bags: 45lbs
Fuel: 30 gallons (main tanks)

6. Refer to Figure #34. What is the weight and CG?

Basic Empty Weight: 1535lbs
Starting Moment: 61,000lb-in
Pilot: 140lbs
Front Seat Pax: 0lbs
Rear Seat Pax: 0lbs
Bags: 0lbs
Fuel: 35 gallons
Oil: 8 quarts

7. Refer to Figures #32 and #33. What is the weight and CG?

Basic Empty Weight: 2015lbs
Starting Moment: 155,400lb-in
Pilot: 160lbs
Front Seat Pax: 155lbs
Rear Seat Pax: 155lbs
Bags: 15lbs
Fuel: 44 gallons (main tanks)

8. Refer to Figures #32 and #33. What is the weight and CG?

Basic Empty Weight: 2015lbs
Starting Moment: 155,400lb-in
Pilot: 210lbs
Front Seat Pax: 0lbs
Rear Seat Pax: 0lbs
Bags: 55lbs
Fuel: 26 gallons (main tanks)

9. Refer to Figure #32 and #33. What is the weight and CG?

Basic Empty Weight: 2015lbs
Starting Moment: 155,400lb-in
Pilot: 105lbs
Front Seat Pax: 215lbs
Rear Seat Pax: 145lbs
Bags: 65lbs
Fuel: 44 gallons (main tanks) and 10 gallons (aux tanks)

10. Refer to Figure #34. What is the weight and CG?

Basic Empty Weight: 1535lbs
Starting Moment: 61,000lb-in
Pilot: 193lbs
Front Seat Pax: 155lbs
Rear Seat Pax: 0lbs
Bags: 0lbs
Fuel: 38 gallons
Oil: 8 quarts

11. Refer to Figure #34. What is the weight and CG?

Basic Empty Weight: 1535lbs
Starting Moment: 61,000lb-in
Pilot: 185lbs
Front Seat Pax: 85lbs
Rear Seat Pax: 0lbs
Bags: 0lbs
Fuel: 23 gallons
Oil: 8 quarts

12. Refer to Figures #32 and #33. What is the weight and CG?

Basic Empty Weight: 2015lbs
Starting Moment: 155,400lb-in
Pilot: 135lbs
Front Seat Pax: 145lbs
Rear Seat Pax: 0lbs
Bags: 45lbs
Fuel: 33 gallons (main tanks)

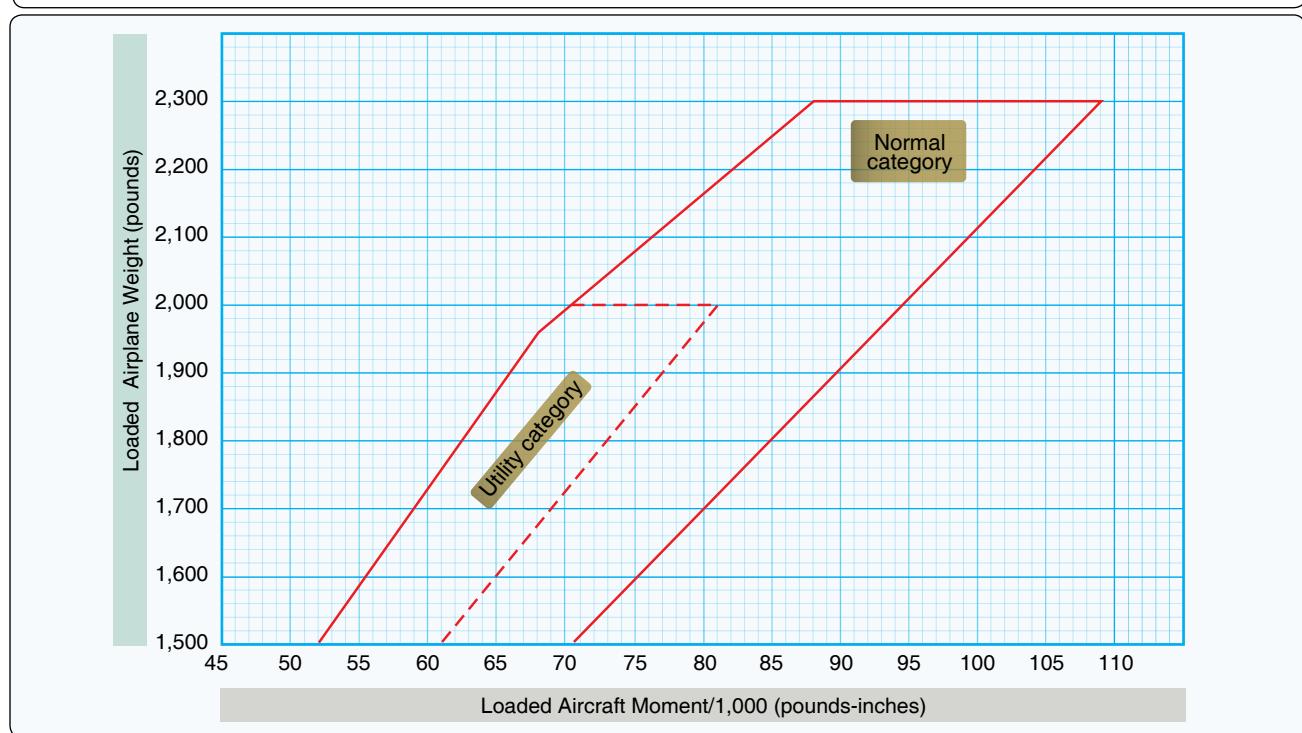
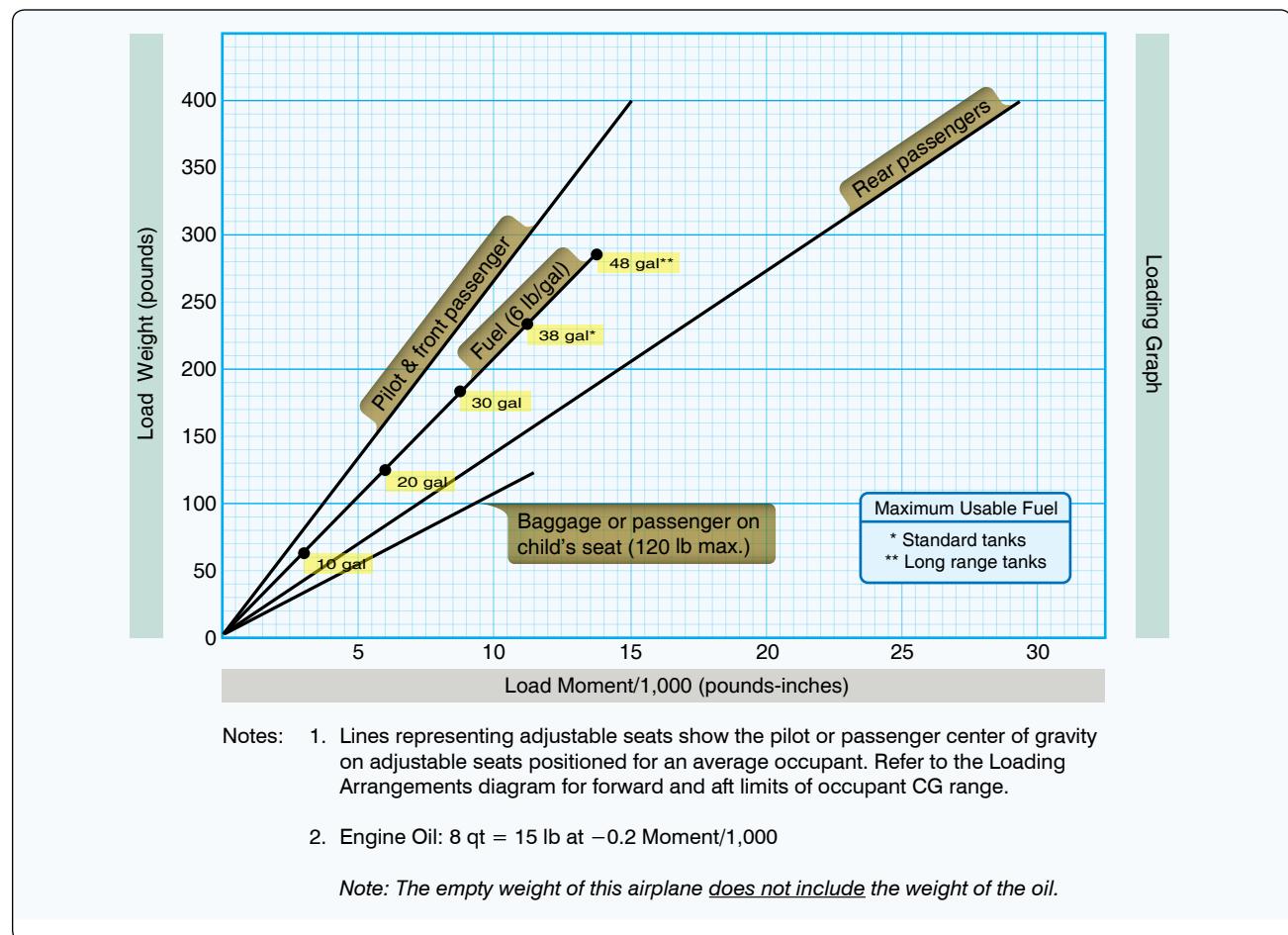


Figure 34. Airplane Weight and Balance Graphs.

Useful load weights and moments			
Baggage or 5th seat occupant		Occupants	
ARM 140		Front seats ARM 85 Rear seats ARM 121	
Weight	Moment 100	Weight	Moment 100
10	14	120	102
20	28	130	110
30	42	140	119
40	56	150	128
50	70	160	136
60	84	170	144
70	98	180	153
80	112	190	162
90	126	200	170
100	140		
110	154		
120	168		
130	182		
140	196		
150	210		
160	224		
170	238		
180	252		
190	266		
200	280		
210	294		
220	308		
230	322		
240	336		
250	350		
260	364		
270	378		
Usable fuel			
Main wing tanks ARM 75			
Gallons	Weight	Moment 100	
5	30	22	
10	60	45	
15	90	68	
20	120	90	
25	150	112	
30	180	135	
35	210	158	
40	240	180	
44	264	198	
Auxiliary wing tanks ARM 94			
Gallons	Weight	Moment 100	
5	30	28	
10	60	56	
15	90	85	
19	114	107	
*Oil			
Quarts	Weight	Moment 100	
10	19	5	
*Included in basic empty weight.			
Weight condition	Forward CG limit	AFT CG limit	
2,950 lb (takeoff or landing)	82.1	84.7	
2,525 lb	77.5	85.7	
2,475 lb or less	77.0	85.7	

Figure 32. Airplane Weight and Balance Tables.

Moment limits vs weight (continued)					
Weight	Minimum Moment 100	Maximum Moment 100	Weight	Minimum Moment 100	Maximum Moment 100
2,100	1,617	1,800	2,500	1,932	2,143
2,110	1,625	1,808	2,510	1,942	2,151
2,120	1,632	1,817	2,520	1,953	2,160
2,130	1,640	1,825	2,530	1,963	2,168
2,140	1,648	1,834	2,540	1,974	2,176
2,150	1,656	1,843	2,550	1,984	2,184
2,160	1,663	1,851	2,560	1,995	2,192
2,170	1,671	1,860	2,570	2,005	2,200
2,180	1,679	1,868	2,580	2,016	2,208
2,190	1,686	1,877	2,590	2,026	2,216
2,200	1,694	1,885	2,600	2,037	2,224
2,210	1,702	1,894	2,610	2,048	2,232
2,220	1,709	1,903	2,620	2,058	2,239
2,230	1,717	1,911	2,630	2,069	2,247
2,240	1,725	1,920	2,640	2,080	2,255
2,250	1,733	1,928	2,650	2,090	2,263
2,260	1,740	1,937	2,660	2,101	2,271
2,270	1,748	1,945	2,670	2,112	2,279
2,280	1,756	1,954	2,680	2,123	2,287
2,290	1,763	1,963	2,690	2,133	2,295
2,300	1,771	1,971	2,700	2,144	2,303
2,310	1,779	1,980	2,710	2,155	2,311
2,320	1,786	1,988	2,720	2,166	2,319
2,330	1,794	1,997	2,730	2,177	2,326
2,340	1,802	2,005	2,740	2,188	2,334
2,350	1,810	2,014	2,750	2,199	2,342
2,360	1,817	2,023	2,760	2,210	2,350
2,370	1,825	2,031	2,770	2,221	2,358
2,380	1,833	2,040	2,780	2,232	2,366
2,390	1,840	2,048	2,790	2,243	2,374
2,400	1,848	2,057	2,800	2,254	2,381
2,410	1,856	2,065	2,810	2,265	2,389
2,420	1,863	2,074	2,820	2,276	2,397
2,430	1,871	2,083	2,830	2,287	2,405
2,440	1,879	2,091	2,840	2,298	2,413
2,450	1,887	2,100	2,850	2,309	2,421
2,460	1,894	2,108	2,860	2,320	2,428
2,470	1,902	2,117	2,870	2,332	2,436
2,480	1,911	2,125	2,880	2,343	2,444
2,490	1,921	2,134	2,890	2,354	2,452
			2,900	2,365	2,460
			2,910	2,377	2,468
			2,920	2,388	2,475
			2,930	2,399	2,483
			2,940	2,411	2,491
			2,950	2,422	2,499

Figure 33. Airplane Weight and Balance Tables.

ANSWER KEY

1. 2270lbs at 42.85in
2. 1922lbs at 41.39in
3. 2335lbs at 41.78in
4. 2063lbs at 41.49in
5. 2735lbs at 81.15in
6. 1900lbs at 41.55in
7. 2764lbs at 80.61in
8. 2436lbs at 79.08in
9. 2869lbs at 81.80in
10. 2126lbs at 40.32in
11. 1958lbs at 40.19in
12. 2538lbs at 78.94in