

Month/Year	January	February	March	April	May	June	July	August	September	October	November	December
2013												
Starting	120,816.00	125,871	120,415	132,696	125,386	124,197	135,897	121,361	141,836	129,436	131,764	127,822
Shipped	26,203	33,738	18,977	40,057	33,429	18,070	47,283	1,852	42,170	30,419	32,223	22,894
Production	31,258	28,281	31,258	32,747	32,240	29,770	32,747	22,327	29,770	32,747	28,281	20,839
Ending	125,871	120,415	132,696	125,386	124,197	135,897	121,361	141,836	129,436	131,764	127,822	125,767
2014												
Starting	125,767	131,395	126,075	139,201	132,010	130,192	144,269	129,639	149,643	138,731	141,597	136,333
Shipped	27,135	34,962	19,637	41,514	34,581	18,685	48,953	1,838	43,675	31,457	33,346	23,677
Production	32,763	29,642	32,763	34,323	32,763	32,763	34,323	21,842	32,763	34,323	28,082	23,402
Ending	131,395	126,075	139,201	132,010	130,192	144,269	129,639	149,643	138,731	141,597	136,333	136,058
Month/ Year	Days/Month	2013	Starting	Shipped	Production	Ending						
January	31	120,816	26,203	31,258	125,386							
February	28	125,871	33,738	28,281	120,415							
March	31	120,415	18,977	31,258	132,696							
April	30	132,696	40,057	32,747	125,386							
May	31	125,386	33,429	32,240	124,197							
June	30	124,197	18,070	29,770	135,897							
July	31	135,897	47,283	32,747	121,361							
August	31	121,361	1,852	22,327	141,836							
September	30	141,836	42,170	29,770	129,436							
October	31	129,436	30,419	32,747	131,764							
November	30	131,764	32,223	28,281	127,822							
December	31	127,822	22,894	20,839	125,767							
Days/Month	2014											
January	31	125,767	27,135	32,763	131,395							
February	28	131,395	34,962	29,642	126,075							
March	31	126,075	19,637	32,763	139,201							
April	30	139,201	41,514	34,323	132,010							
May	31	132,010	34,581	32,763	130,192							
June	30	130,192	18,685	32,763	144,269							
July	31	144,269	48,953	34,323	129,639							
August	31	129,639	1,838	21,842	149,643							
September	30	149,643	43,675	32,763	138,731							
October	31	138,731	31,457	34,323	141,597							
November	30	141,597	33,346	28,082	136,333							
December	31	136,333	23,677	23,402	136,058							

Month/Year	2013	Starting	Shipped	Production	Ending	Avg Inventory	Lead Time	Error	ABS % Error	Squared Error	Calculating Safety Stock
January	120,816	26,203	31,258	125,871	123,543.58	4.71	-5,055	0.19	25566563.62		
February	125,871	33,738	28,281	120,415	123,143.03	3.65	5,457	0.16	2974873.32	Average Demand (d)	
March	120,415	18,977	31,258	132,698	128,555.39	6.67	-12,281	0.65	150831557.82	Standard Deviation of Demand (sd)	
April	132,698	40,057	32,747	125,386	129,040.99	3.22	7,310	0.18	53438379.45	Average Lead Time (t)	
May	125,386	33,429	32,240	120,971	124,747.11	3.73	1,189	0.04	1413219.38	Standard Deviation of Lead Time (st)	
June	120,971	18,770	31,270	130,387	124,647.05	7.29	-11,700	0.65	150831557.82	Service Level (Percentage)	
July	135,897	47,283	32,747	121,361	128,628.90	2.72	14,936	0.31	211299864.48	Service Level (k)	
August	121,361	18,582	22,327	141,834	131,698.51	7.08	419241712.65	Combined Standard Deviation (Sc)			
September	141,834	47,170	20,770	136,566	136,566.54	3.22	12,440	0.29	150831557.82	Safety Stock (SS)	
October	128,436	30,419	32,747	131,764	130,599.69	4.29	-2,328	0.08	5418852.37		
November	131,764	32,223	28,281	127,822	129,793.09	4.03	3,942	0.12	15536492.10		
December	127,822	22,894	20,839	125,767	126,794.73	5.54	2,055	0.09	4223436.01		
January	125,767	21,165	21,263	125,444	125,444	4.14	5,928	0.21	316519.66		
February	131,395	34,962	29,642	126,075	128,735.14	3.68	5,320	0.15	28273788.85		
March	126,075	19,637	32,763	130,201	132,638.24	6.75	-13,126	0.67	17224822.33		
April	130,201	41,514	34,323	132,010	133,364.24	3.27	7,191	0.17	13212474.82		
May	132,010	34,511	32,233	131,100.44	131,100.44	3.79	1,118	0.05	33017.04		
June	130,192	18,685	32,763	144,269	137,230.57	7.34	-14,078	0.75	1981925.1874		
July	144,269	48,953	34,323	129,634	129,634.36	2.80	14,830	0.30	214040956.37		
August	129,634	18,838	21,842	149,643	139,841.20	75.97	-20,004	1.98	4085494.44		
September	149,643	47,275	32,763	144,176	144,176.16	3.30	10,112	0.25	11957850.04		
October	138,731	31,457	34,323	141,597	140,193.78	4.46	-2,866	0.09	8213161.38		
November	141,597	33,346	29,876	136,333	138,964.88	4.17	5,264	0.16	27706104.81		
December	136,333	23,677	23,402	136,058	136,195.52	5.75	275	0.01	75651.99		
	Original	Moving Average (3)	Cumulative Average	Exponential Smoothing	Naive Forecast	Moving Average (6)					
Mean Error	-624	-530	72	-866	-513	-449					
Mean ABS % Error	158.39%	210.63%	180.86%	186.06%	308.46%	199.39%					
Mean Squared Error	115,846,923.88	236,613,691.11	178,638,843.40	237,582,217.53	591,225,739.84	199,160,744.47					
	Moving Average (3)	2013	Starting	Shipped	Production	Ending		Error	ABS % Error	Squared Error	
January	120,816	26,203	31,258	125,871	123,543.58	4.71	-5,055	0.19	25566563.62		
February	125,871	33,738	28,281	120,415	123,143.03	3.65	5,457	0.16	2974873.32		
March	120,415	18,977	31,258	132,698	128,555.39	6.67	-12,281	0.65	150831557.82		
April	132,698	40,057	32,747	125,386	129,040.99	3.22	7,310	0.18	53438379.45		
May	125,386	33,429	32,240	120,971	124,747.11	3.73	1,189	0.04	1413219.38		
June	120,971	18,770	31,270	130,387	124,647.05	7.29	-11,700	0.65	150831557.82		
July	129,191	47,283	30,519	112,427	112,427.00	16.74	16,764	0.35	280131696		
August	112,427	18,582	23,307	130,599	130,599.69	3.22	-10,795	0.38	9686505		
September	143,502	42,170	22,402	123,734	123,734	19,768	0.47	390773824			
October	123,734	30,419	30,435	123,750	123,750	-16	0.00	54843281			
November	123,750	32,223	29,876	119,341	119,341	7,409	0.23	1483519.99			
December	119,341	22,894	29,493	125,601	125,601	-14,443	0.53	1483519.99			
January	128,394	27,135	26,512	129,761	129,761	-1,377	0.05	1898129			
February	129,761	34,962	27,417	122,216	122,216	7,545	0.22	5692705			
March	122,216	19,637	28,330	130,909	130,909	-8,693	0.44	75568249			
April	130,909	41,474	31,108	27,245	116,160	14,266	0.34	2004691			
May	116,160	34,581	30,508	120,407	120,407	-2,343	0.07	8488489			
June	114,097	18,685	31,911	127,323	127,323	-13,226	0.71	174927076			
July	127,323	48,953	31,593	109,963	109,963	17,360	0.35	301369800			
August	109,963	18,388	34,073	142,198	142,198	-32,235	17.54	103095225			
September	142,198	43,755	31,309	121,174	121,174	20,516	0.47	4296626			
October	121,174	31,457	31,499	121,714	121,714	-3,32	0.00	1024			
November	121,714	33,346	25,657	114,025	114,025	7,689	0.23	59102721			
December	114,025	23,677	36,159	126,507	126,507	-12,482	0.53	155800324			
	Cumulative Average	2013	Starting	Shipped	Production	Ending		Error	ABS % Error	Squared Error	
January	120,816	26,203	31,258	125,871	123,543.58	4.71	-5,055	0.19	25566563.62		
February	125,871	33,738	28,281	120,415	123,143.03	3.65	5,457	0.16	2974873.32		
March	120,415	18,977	31,258	132,698	128,555.39	6.67	-12,281	0.65	150831557.82		
April	132,698	40,057	32,747	125,386	129,040.99	3.22	7,310	0.18	53438379.45		
May	125,386	33,429	32,240	120,971	124,747.11	3.73	1,189	0.04	1413219.38		
June	120,971	18,770	31,270	130,387	124,647.05	7.29	-11,700	0.65	150831557.82		
July	129,191	47,283	30,519	112,427	112,427.00	16.74	16,764	0.35	280131696		
August	112,427	18,582	23,307	130,599	130,599.69	3.22	-10,795	0.38	9686505		
September	143,502	42,170	22,402	123,734	123,734	19,768	0.47	390773824			
October	123,734	30,419	30,435	122,005	122,005	-1,324	0.04	54843281			
November	122,005	22,894	29,493	125,601	125,601	-6,599	0.29	45656801			
December	119,002	22,894	29,493	125,601	125,601	-6,599	0.29	45656801			
January	128,394	27,135	26,512	129,761	129,761	1,968	0.07	32084			
February	129,761	34,962	28,804	121,251	121,251	6,158	0.18	37920954			
March	121,251	19,637	29,244	130,858	130,858	-9,607	0.49	9229449			
April	130,858	41,514	30,481	128,608	128,608	5,711	0.15	16863921			
May	128,608	34,511	32,233	120,410	120,410	-10,29	0.59	26791241			
June	120,776	18,685	29,714	123,805	123,805	-19,851	0.41	394062201			
July	123,805	48,953	29,102	103,954	103,954	-28,308	15.40	801342864			
August	103,954	18,388	30,148	132,262	132,262	-14,944	0.34	22213136			
September	132,262	43,675	28,731	117,318	117,318	-3,014	0.06	409636			
October	117,318	31,457	31,543	130,334	130,334	3,812	0.11	14531344			
November	115,304	33,346	29,534	111,492	111,492	-9,023	0.25	36276529			
December	111,492	23,677	29,700	117,515	117,515	-7,780	0.33	6052800			
	Exponential Smoothing	2013	Starting	Shipped	Production	Ending		Error	ABS % Error	Squared Error	
January	120,816	26,203	31,258	125,871	123,543.58	4.71	-5,055	0.19	25566563.62		
February	125,871	33,738	28,281	120,415	123,143.03	3.65	5,457	0.16	2974873.32		
March	120,415	18,977	31,258	132,698	128,555.39	6.67	-12,281	0.65	150831557.82		
April	132,698	40,057	32,747	125,386	129,040.99	3.22	7,310	0.18	53438379.45		
May	125,386	33,429	32,240	120,971	124,747.11	3.73	1,189	0.04	1413219.38		
June	120,971	18,770	31,270	130,387	124,647.05	7.29	-11,700	0.65	150831557.82		
July	129,191	47,283	30,519	112,427	112,427.00	16.74	16,764	0.35	280131696		
August	112,427	18,582	23,307	130,599	130,599.69	3.22	-10,795	0.38	9686505		
September	143,502	42,170	22,402	123,734	123,734	19,768	0.47	390773824			
October	123,734	30,419	30,435	122,005	122,005	-1,324	0.04	54843281			
November	122,005	22,894	29,493	125,601	125,601	-6,599	0.29	45656801			
December	119,002	22,894	29,493	125,601	125,601	-6,599	0.29	45656801			
January	128,394	27,135	26,512	129,761	129,761	1,968	0.07	32084			
February	129,761	34,962	28,804	121,251	121,251	6,158	0.18	37920954			
March	121,251	19,637	29,244	130,858	130,858	-9,607	0.49	9229449			
April	130,858	41,514	30,481	128,608	128,608	-14,531	0.43	2030751			
May	128,608	34,511	32,233	120,410	120,410	-12,411	0.69	44436400			
June	120,816	18,685	29,854	118,179	118,179	7,827	0.22	61261929			
July	118,179	47,283	31,563	147,890	147,890	-15,237	0.75	23485625			
August	147,890	40,170	31,563	133,568	133,568	-8,938	0.06	4352164			

October		130,886	31,457	29,548	128,975			1,911	0.06	3651921	
November		128,975	33,346	28,922	124,551			4,424	0.13	19571776	
December		124,551	23,677	31,854	132,728			-8,177	0.35	68863329	

Period	Demand	Existing Forecast	Moving Average (3 month) Forecast	Cumulative Average Forecast	Exponential Smoothing Forecast	Naive Forecast	Moving Average (5 month) Forecast
1	26,203	31,258	31,258	31,258	31,258	31,258	31,258
2	33,738	28,281	28,281	28,281	28,281	31,258	28,281
3	18,977	31,258	31,258	31,258	31,258	31,258	31,258
4	40,057	32,747	32,747	30,266	30,429	32,994	32,747
5	33,429	32,240	32,240	30,762	30,390	23,182	32,240
6	18,070	29,770	29,770	32,082	30,396	34,995	31,010
7	47,283	32,747	32,747	31,586	30,377	33,899	29,395
8	1,852	22,327	22,327	31,586	30,282	22,819	30,142
9	42,170	29,770	29,770	28,281	30,205	39,944	31,266
10	30,419	32,747	32,747	28,281	30,119	13,280	29,578
11	32,223	28,281	28,281	30,242	33,503	13,280	30,988
12	22,694	20,839	20,839	30,266	30,302	31,344	33,503
13	27,135	32,763	32,763	27,289	30,543	31,959	28,689
14	34,962	29,642	29,642	27,294	30,566	25,614	28,178
15	19,637	32,763	32,763	27,748	30,864	26,679	30,006
16	41,514	34,323	34,323	31,723	31,221	32,477	27,140
17	34,581	32,763	32,763	32,243	31,607	23,489	29,820
18	18,685	32,763	32,763	33,283	31,593	36,107	29,615
19	48,953	34,323	34,323	33,283	31,500	35,039	36,107
20	1,838	21,842	21,842	33,283	31,203	23,591	35,039
21	43,675	32,763	32,763	29,642	30,786	41,344	23,591
22	31,457	34,323	34,323	29,642	30,162	13,690	41,344
23	33,346	28,082	28,082	29,642	30,336	34,680	13,690
24	23,677	23,402	23,402	31,723	30,683	32,424	34,680



Period	Demand	Existing Forecast	Cumulative Average Forecast																			
1	26,203	31,258	31,258																			
2	33,738	28,281	28,281																			
3	18,977	31,258	31,258																			
4	40,057	32,747	30,113																			
5	33,429	32,240	30,058																			
6	18,070	29,770	29,924																			
7	47,283	32,747	29,802																			
8	1,852	22,327	29,803																			
9	42,170	29,770	29,630																			
10	30,419	32,747	30,087																			
11	32,223	28,281	30,108																			
12	22,894	20,839	29,919																			
13	27,135	32,763	30,045																			
14	34,962	29,642	30,813																			
15	19,637	32,763	30,635																			
16	41,514	34,323	30,735																			
17	34,581	32,763	30,509																			
18	18,685	32,763	30,033																			
19	48,953	34,323	29,642																			
20	1,838	21,842	29,122																			
21	43,675	32,763	28,082																			
22	31,457	34,323	29,642																			
23	33,346	28,082	28,602																			
24	23,677	23,402	25,742																			

