Forecasting
Problem 1 Solution

Example Problem Solution
Computer Software Firm

Step 1: Compute the Exponential Smoothing Forecast

$$F_{t+1} = \alpha D_t + (1 - \alpha)F_t$$

Period	D_t	F_t
1	56	—
2	61	56.00
3	55	58.00
4	70	56.80
5	66	62.08
6	65	63.65
7	72	64.18
8	75	67.31
9	—	70.39

Example Problem Solution
Computer Software Firm

Step 2: Compute the Adjusted Exponential Smoothing Forecast $AF_{t+1} = F_{t+1} + T_{t+1}$

where $T_{t+1} = \beta(F_{t+1} - F_t) + (1 - \beta)T_t$

Period	D_t	F_t	AF_t
1	56	—	—
2	61	56.00	56.00
3	55	58.00	58.40
4	70	56.80	56.88
5	66	62.08	63.20
6	65	63.65	64.86
7	72	64.18	65.26
8	75	67.31	68.80
9	—	70.39	72.19

Example Problem Solution
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Period	D_t	F_t	AF_t	$D_t - F_t$	$D_t - AF_t$
1	56	—	—	—	—
2	61	56.00	56.00	5.00	5.00
3	55	58.00	58.40	-3.00	-3.40
4	70	56.80	56.88	13.20	13.12
5	66	62.08	63.20	3.92	2.80
6	65	63.65	64.86	1.35	0.14
7	72	64.18	65.26	7.81	6.73
8	75	67.31	68.80	7.68	6.20
9	—	70.39	72.19	—	—

Example Problem Solution
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Step 3: Compute the MAD Values

$$MAD(F_t) = \frac{\sum |D_t - F_t|}{n} = \frac{41.97}{7} = 5.99$$

$$MAD(AF_t) = \frac{\sum |D_t - AF_t|}{n} = \frac{37.39}{7} = 5.34$$

Example Problem Solution
Computer Software Firm

Period	D_t	F_t	AF_t	$D_t - F_t$	$D_t - AF_t$
1	56	—	—	—	—
2	61	56.00	56.00	5.00	5.00
3	55	58.00	58.40	-3.00	-3.40
4	70	56.80	56.88	13.20	13.12
5	66	62.08	63.20	3.92	2.80
6	65	63.65	64.86	1.35	0.14
7	72	64.18	65.26	7.81	6.73
8	75	67.31	68.80	7.68	6.20
9	—	70.39	72.19	—	—
				∑ = 41.97	**∑ = 37.39**

Example Problem Solution
Computer Software Firm

Step 4: Compute the Cumulative Error

$$E(F_t) = 41.97$$

$$E(AF_t) = 37.39$$