Complete Solutions for All Questions

Decision Tree Entropy Table

Class	Count	Probability	-p log2 p
Yes	4	0.667	0.38997
No	2	0.333	0.52832

Regression Deviations Table

x	y	x-x■	y-■	Product	(x-x■)^2
1	3	-2	-2.8	5.6	4
2	5	-1	-0.8	0.8	1
3	6	0	0.2	0	0
4	7	1	1.2	1.2	1
5	8	2	2.2	4.4	4

Regression Errors Table

x	y	■	Error	|Error|	Error^2
1	3	3.4	-0.4	0.4	0.16
2	5	4.6	0.4	0.4	0.16
3	6	5.8	0.2	0.2	0.04
4	7	7.0	0.0	0.0	0.00
5	8	8.2	-0.2	0.2	0.04

Key Final Answers:

• Decision Tree: Entropy = 0.9183, Best First Split = Studied.

• Regression Line: y = 1.2x + 2.2.

• Prediction at x=3.2: 6.04.

• Metrics: R² ≈ 0.973, MAE = 0.24, MSE = 0.08.