Answers Written Out for 23

1. Residuals:

fit$residuals

1 2 3 4 5 6 7 8

0.96758105 1.22737094 0.57679116 -0.42824608 0.09858105 0.54730978 -0.39451735 0.79861829

9 10 11 12 13 14 15 16

-2.74003597 0.05444541 0.26409967 0.25913691 0.03709967 -0.03290033 -0.15034448 -0.19938171

17 18 19 20 21 22 23 24

0.43727254 -0.30469022 -0.13772746 -0.77259183 -0.48290033 0.42758105 0.52979116 0.76261829

25 26 27 28 29 30 31 32

0.35479116 -0.02255459 -0.78120884 -0.38924608 0.74744541 0.13058105 0.84227254 -0.36028332

33 34 35 36 37 38 39 40

-0.27220884 0.25144541 -0.11124608 0.02609967 0.45158105 0.01113691 0.38661829 0.52244541

41 42 43 44 45 46 47 48

-0.14555459 -0.62486309 -0.50590033 -0.87355459 -1.17103597 -0.42890033 -1.13469022 -0.69645619

49 50 51 52 53 54 55 56

0.10023530 0.99306243 -0.29138171 0.61671668 0.14261829 -0.17155459 0.50109967 0.41213691

57 58 59 60 61 62 63 64

0.23058105 -0.69659183 0.04413691 0.69596403 -0.16272746 -0.29107321 0.28527254 0.59892679

65 66 67 68 69 70 71 72

-0.63686309 -0.47741895 -0.39090033 0.35748265 -1.00693757 0.50892679 0.14840817 -0.04107321

73 74 75 76 77 78 79 80

-0.33093757 -0.11293757 0.67996403 -0.05659183 0.21492679 -0.03955459 0.79879116 0.07682840

81 82 83 84 85 86 87 88

0.43240817 0.18140817 -1.04455459 0.51848265 0.12327254 -0.24238171 0.18261829 0.71596403

89 90 91 92 93 94 95 96

0.95623530 -0.42341895 0.84009967 -0.97938171 0.34427254 0.21106243 0.50996403 0.78709967

97 98 99 100 101 102 103 104

-0.04938171 -0.05441895 -0.10476470 -0.50193757 -1.24372746 -1.22993757 -0.01159183 0.23448265

105 106 107 108 109 110 111 112

-0.13190033 0.24300127 -0.28472746 0.41979116 0.59079116 -0.21772746 0.45075392 0.32113691

113 114 115 116 117 118 119 120

-0.49659183 -0.60459183 -1.83169022 0.99440817 0.55996403 0.71279116 -0.87528332 -0.25320884

Sum of Residuals: -2.942091e-15 which is close to 0. Probably not equal to zero because of rounding as it talks about in the textbook.

b) The estimated variance is 0.3883 and the estimated standard deviation is 0.6231. The units of the standard deviation should be GPA.