Insight Mathematics Chapter 9 corrections

by Derek Buchanan

May 19, 2021

In the Insight Mathematics textbook (Ley et al, 2018) there are some errors introduced by adding or subtracting values from normal distribution tables already rounded to 5 decimal places. The result is not necessarily correct to 5 decimal places. This can be remedied by use of the CASIO fx-100 AU PLUS 2nd edition calculator which gives more accurate calculations.

The corrections are for Chapter 9

• Exercise 9E Q5(g), Q5(h), Q7(g), Q7(i), Q10(a), Q13(a)(iii), Q14(c), Q14(d), Q15(a), Q15(b)

• Review Set 3 Q9(c)

• Review Set 4 Q7(c), Q7(d), Q10(c)

For the CASIO fx-100AU PLUS 2nd edition calculator in Statistics Mode, Press MODE 3 1 AC to put it into Statistics Mode and exit the Editor Screen.

Then press SHIFT 1 5 2 z_1) = to get $Q(z_1) := P(0 < z < z_1)$ for some positive z-score z_1.

Exercise 9E

Q5(g) $P(79 < x < 84) = P\left(\frac{79-75}{12} < z < \frac{84-75}{12}\right) = Q\left(\frac{3}{4}\right) - Q\left(\frac{1}{3}\right) = 0.14281$ not 0.14407.

Q5(h) $P(80 < x < 100) = P\left(\frac{80-75}{12} < z < \frac{100-75}{12}\right) = Q\left(\frac{25}{12}\right) - Q\left(\frac{5}{12}\right) = 0.31985$ not 0.31848.

Q7(g) $P(79 < x < 96) = P\left(\frac{79-98}{9} < z < \frac{96-98}{9}\right) = Q\left(\frac{19}{9}\right) - Q\left(\frac{2}{9}\right) = 0.39469$
≈ 0.39 not $0.39551 \approx 0.40$

Q7(i) $P(78 < x < 92) = P\left(\frac{78-98}{9} < z < \frac{92-98}{9}\right) = Q\left(\frac{20}{9}\right) - Q\left(\frac{2}{3}\right) = 0.23936$ not 0.23822.

Q10(a) $P(95 < x < 110) = P\left(\frac{95-100}{15} < z < \frac{110-100}{15}\right) = Q\left(\frac{1}{3}\right) + Q\left(\frac{2}{3}\right) = 0.37807$ not 0.37787.

Q13(a)(iii) $P(420 < x < 458) = P\left(\frac{420-432}{14} < z < \frac{458-432}{14}\right) = Q\left(\frac{6}{7}\right) + Q\left(\frac{13}{7}\right)$
$= 0.77267$ not 0.77367.

Q14(c) $P(170 < x < 175) = P\left(\frac{170-168}{9} < z < \frac{175-168}{9}\right) = Q\left(\frac{7}{9}\right) - Q\left(\frac{2}{9}\right)$
$= 0.19372 \approx 0.19$ not $0.19524 \approx 0.20$.

Q14(d) $1000P(170 < x < 175) = 1000\left(Q\left(\frac{7}{9}\right) - Q\left(\frac{2}{9}\right)\right) = 193.72 \approx 194$ not 195.

Q15(a) $P(2.65 < x < 3.75) = P\left(\frac{2.65-3.1}{0.35} < z < \frac{3.75-3.1}{0.35}\right) = Q\left(\frac{9}{7}\right) + Q\left(\frac{13}{7}\right) = 0.86908$ not 0.87003.

Q15(b) $10000P(2.65 < x < 3.75) = 10000\left(Q\left(\frac{9}{7}\right) + Q\left(\frac{13}{7}\right)\right) = 8690.8 \approx 8691$ not 8700.

Review Set 3

Q9(c) $P(45 < x < 55) = P\left(\frac{45-46}{7} < z < \frac{55-46}{7}\right) = Q\left(\frac{1}{7}\right) + Q\left(\frac{9}{7}\right) = 0.45753$ not 0.45714.

Review Set 4

Q7(c) $100P(1 < z < 2) = 100(Q(2) - Q(1)) = 13.591\% \approx 13.6\%$ not 13.5%.

Q7(d) $100P(2 < z < 3) = 100(Q(3) - Q(2)) = 2.14\%$ not 2.35%.

Q10(c) $P(160 < x < 165) = P\left(\frac{160-162}{8} < z < \frac{165-162}{8}\right) = Q(0.25) + Q(0.375)$
$= 0.24488 \approx 0.24$ not $0.24674 \approx 0.25$.

Reference

Ley, J., et al., Oxford Insight Mathematics Standard 2 Year 12, OUP, 2018.