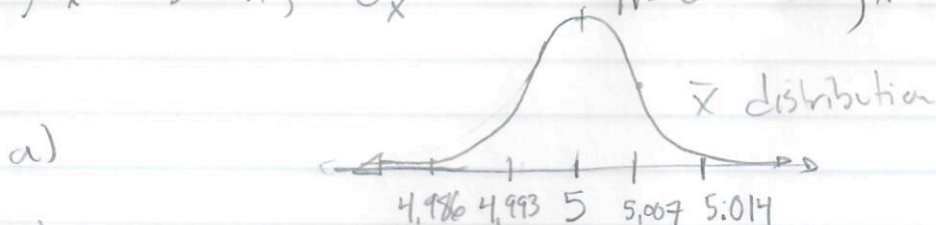


## Sample Exam 2 Solutions

1. The distribution becomes closer to a normal distribution as you add more dice. This is predicted by the Central Limit Theorem.

2.  $\mu_{\bar{x}} = 5\text{mm}$ ,  $\sigma_{\bar{x}} = .0508/\sqrt{50} = .007$ ,  $\bar{x}$  is approximately normal.



b)  $\bar{x} = 4.992$  is reasonably likely to happen by chance, so it is not significantly different from the advertised mean of 5mm.

(By the way, this is badly worded question)

3. Why is this on the sample exam? This was an exam 1 question. Still:

a)  $z = (30 - 23)/8.5 = 0.824$       b) 79.5%

4.  $n = 40$ ,  $\sigma_{\bar{x}} = 2.5/\sqrt{40} = 0.395$ ,  $\bar{x}$  has  $N(11, 0.395)$  distribution.

a) Avg cow produces 11, so expect  $40 \cdot 11 = 440\text{kg}$

b)  $P(\text{total} < 400\text{kg}) = P(\bar{x} < 10) = \text{pnorm}(10, 11, 0.395) = .0057$

5. a) Obs study      b) All listeners of that radio station  
c) Gender, Favorite band.      d) Age, Time spent listening to radio each day

6. Apparently, there is no #6.

7. a) F      b) F      c) T      d) T      e) F (parameters describe populations)

8. a) 0.18      b) 0.72

9. sample(160023:160599, 5)

10. Want  $10 = z_{.95} \sigma_{\bar{x}} = 1.96 \cdot \frac{90}{\sqrt{n}}$ , so  $n > 311.17$ , use  $n = 312$ .