MA 138 Exam 3 Review Problems
ANSWERS

1. Mean = 78.47, median = 74.

2. Ten newborn babies at a hospital had these weights in pounds:
   7.0, 9.5, 6.8, 7.1, 10.1, 8.6, 5.9, 6.2, 7.7, 8.1.
   a. Mean = 7.7 lbs
   b. The eleventh baby would need to weigh a whopping 16.5 pounds!

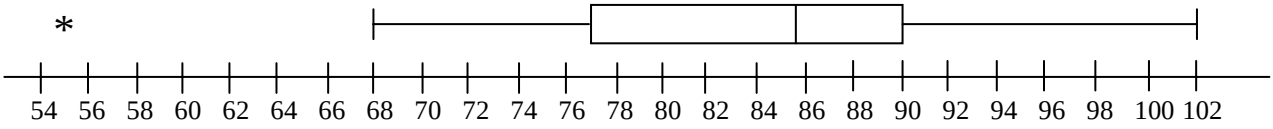
3. 67˚

4. $71,111

5. 78.4%

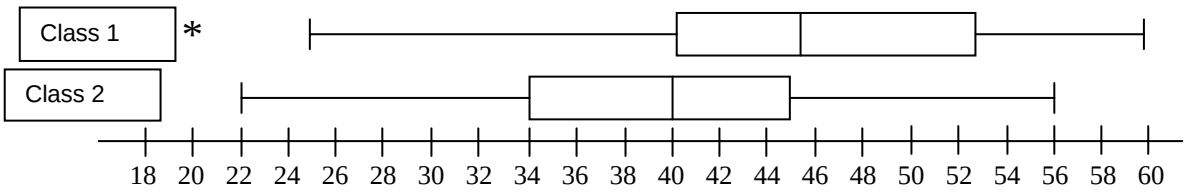
6. Mean = 67.4, Median = 62.5, Lower Quartile = 56.5, Upper Quartile = 84.

7. The median is 85.5, the lower quartile is 77, and the upper quartile is 90. The inner quartile range (IQR) is 90-77 = 13. 1.5 × IQR = 19.5. So any score below 57.5 or above 109.5 is an outlier.



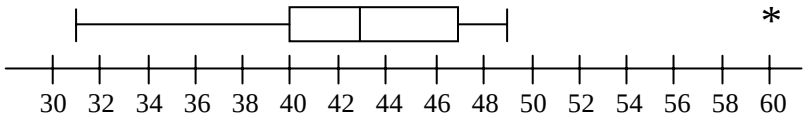
8. Class 1 median = 44.5, lower quartile = 39.5, upper quartile = 52, 1.5 × IQR = 18.75, outliers below 20.75 and above 70.75.

   Class 2 median = 40, lower quartile = 34, upper quartile = 45, 1.5 × IQR = 16.5, so outliers below 17.5 and above 61.5



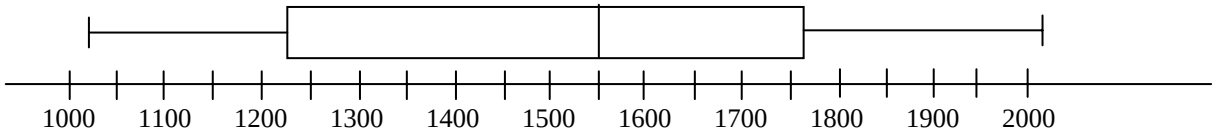
Class 1 appears to have done better. Note that the upper quartile of class 2 is barely above the median of class 1. This means fully 50% of class 1 did as well or better than the top 25% of class 2.

9. Median = 42.5, lower quartile = 40, upper quartile = 47, 1.5 × IQR = 10.5, outliers below 29.5 and above 57.5



10.

a. Median = 1550, lower quartile = 1222, upper quartile = 1767.5, 1.5 × IQR = 818.25, so ouliers would lie below 403.75 or above 2585.75.



b. The median is closer to the upper quartile.
c. The mean is 1505, so it is closer to the upper quartile.
d. No outliers, see work above.

11.

a.

Scores on Test

Class One		Class Two
9 9	1	
7 4 4	2	2 7 8 9
9 9 8 5 5 4 4	3	1 2 2 3 3 3 4 4 5 6 6 7 8 9
9 9 8 8 7 5 5 4 4 3 2 1 1 0 0 0	4	0 0 0 1 1 3 3 4 4 5 5 8 8
9 7 7 6 6 6 6 3 3 3 1 1 1 0 0 0	5	0 0 0 0 1 1 3 6 6 6

b. Class 1 has 75% of the scores at 40 or above, but Class 2 has only 57% at 40 or above. Thus, I would say Class 1 did better.

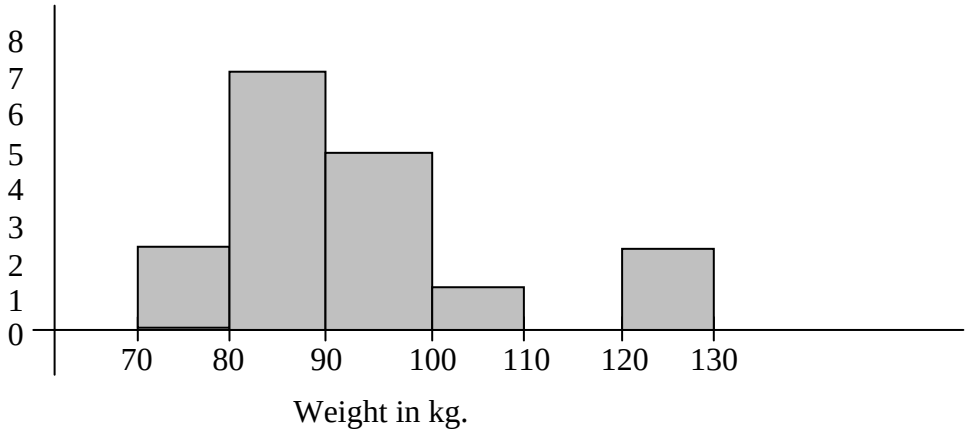
12. The pie graph should have the following central angles: 93˚ for Mountain Park; 144˚ for State Beach; and 123˚ for City Zoo. On the exam, I will NOT ask you to draw a pie graph, though I may ask for the central angles. See #10 for an example of how this would look.

13. a. –1.09 b. 197.4 cm

14. *z*-score on first quiz: 1.82
z-score on second quiz: 1.29
Andy did better on first quiz

15. a. 15
b. 72, 74, 81, 81, 82, 85, 87, 88, 92, 94, 97, 98, 103, 122, 125
c. 88 lb

16. Weights of students in East Jr. High Algebra 1 Class



17. a.

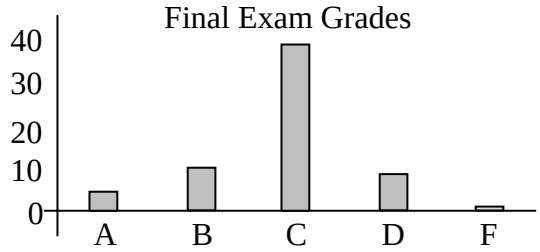
Ages of HKM Employees

1	8 8 9
2	0 1 1 1 3 3 3 3 3 3 4 5 6 6 6 7 9
3	2 2 4 4 4 7
4	1 1 1 5 5 6 8
5	2 2 4 8
6	2 3 3

b. 40s c. 20 d. 17.5%

e. Since the plot is ordered, you can count "leaves" to find the median, which is between 29 and 32, or 30.5 years old.

18. a.



b. A: 24˚ B: 60˚ C: 222˚ D: 48˚ F: 6˚

19. a. 1020 b. 1425 c. 2

20. 6.70

21. 97.5% have 16 oz or more, so 2.5% have less than 16 oz.

22. a. {1, 2, 3, 4, 5, 6, 7}

b. P(even) = $\frac{3}{7}$ c. P(greater than 3) = $\frac{4}{7}$

d. P(prime) = $\frac{4}{7}$ e. P(less than 5) = $\frac{4}{7}$

f. P(odd) = $\frac{4}{7}$

23. a. P(black) = $\frac{5}{12}$ b. P(black or white) = $\frac{3}{4}$

c. P(red) = $\frac{1}{4}$ d. (no red) = $\frac{3}{4}$

e. P(black and white) = 0 f. P(black or white or red) = 1

24. a. P(red) = $\frac{1}{3}$ b. P(blue or yellow) = $\frac{2}{3}$

c. P(not blue) = $\frac{3}{4}$

25. With a pair of dice, there are six ways to roll a 7 and two ways to roll an 11. So the probability of getting 7 or 11 is $\frac{6}{36} + \frac{2}{36} = \frac{8}{36} = \frac{2}{9}$. Moving from probability to odds, this probability means that in nine rolls, you should expect two rolls of 7 or 11. Thus you would expect seven rolls that are *not* 7 or 11. So the odds are 2 to 7, or 2:7.

26. a. P(B) = $\frac{2}{11}$ b. P(consonant) = $\frac{7}{11}$

c. P(A or B) = $\frac{3}{11}$ d. P(vowel) = $\frac{4}{11}$

e. P(C, X, or Z) = 0 f. P(consonant or vowel) = 1

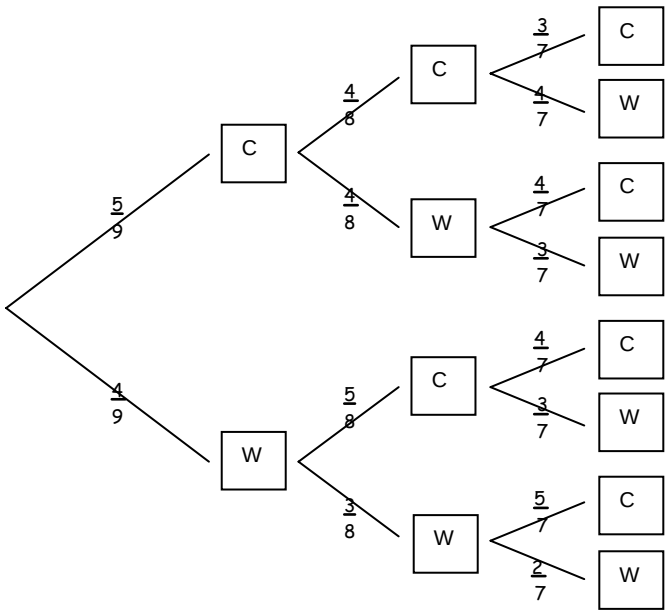
g. P(in MATERIAL or SCIENTIFIC) = $\frac{6}{11}$

27. 7:18

28. 1:48

29. 1:1

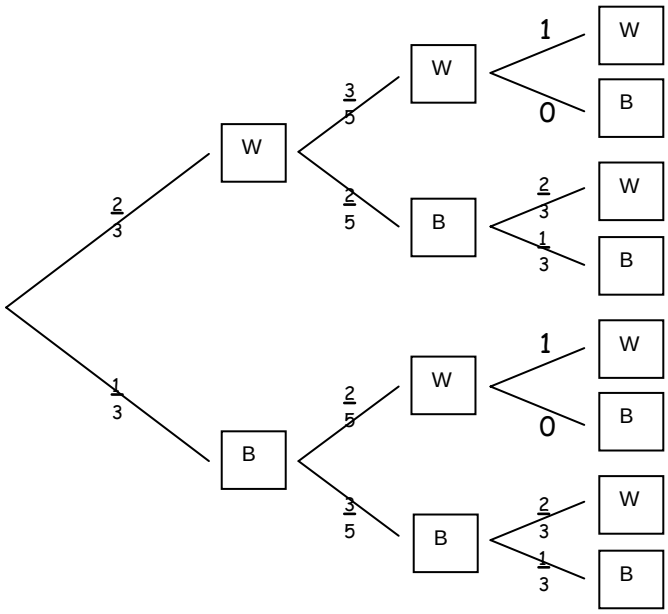
30. a.



b. P(WWW) = $\frac{1}{21}$

c. P(WWW w/o replacement) = $\frac{64}{729}$

31. a.



b. P(last letter is B) = $\frac{7}{45}$

c. P(last letter is W) = $\frac{38}{45}$

d. P(WBW) = $\frac{8}{45}$