



Course Review Assignment

40

1. The scores below show which level on the beep test each student in a physical education class was able to get to.

3, 3, 10, 4, 14, 4, 8, 6, 14, 7, 13, 3, 11, 11, 12, 5, 11, 11, 4, 5

a) Organize the data in a frequency table

[1]

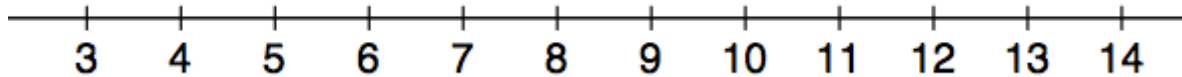
Level on Beep Test	Tally	Frequency

b) Calculate the mean, median and mode of the data

[3]

c) Find the median of the lower half of the data  $Q_1$  and the median of the upper half of the data  $Q_3$  [2]

d) Create a box and whisker plot for the data. [1]



2. After students completed the beep test they had to perform as many push-ups as they could until failure. Determine if there is a correlation between a student's beep test score and their push-up score by answering the following questions about the data below. [4]

<b>Beep Test</b>	3	10	11	4	5	8	6	11
<b>Push-Ups</b>	7	25	24	10	12	14	15	35

a) Use the TI-83 calculator to create a scatter plot and line of best fit. State the equation of the line of best fit, to 3 decimal places.

b) Use the line of best fit to calculate the expected number of push-ups completed by the student who got to level 14 on the beep test.

c) State the correlation coefficient. Explain what it represents in this particular situation.

d) State the coefficient of determination. Explain what it represents in this particular situation.

3. Another portion of a fitness test for the physical education class was a timed 3 km run. The results (in minutes) for each of the students in the class are listed below. [3]

10.6, 10.7, 12.5, 13.4, 15.1, 15.2, 15.2, 16.0, 16.1, 16.5, 16.9, 17.8, 17.9, 18.0, 19.2, 19.7, 20.0, 23.4, 24.8, 26.5

a) Calculate a bin width that would form six uniform intervals

b) Calculate the starting and end point for each of the six intervals. Then complete the frequency distribution.

Interval	Frequency

c) Create an appropriate histogram.



4. What is the experimental probability of a student finishing the 3 km run in less than 15 minutes? [1]
5. Assume the data for the times for the 3 km run are normally distributed and determine the following... [4]
- a) What percentage of students that take the fitness test next year should be expected to finish the run in less than 17 minutes?
- b) What percentage of students that take the fitness test next year should be expected to finish the run in between 17 and 21 minutes?
- c) If a future grade 9 student asks you what time they need to get in the 3 km run to score in the 80<sup>th</sup> percentile, what would you tell them?
- d) What percent of students would you expect to be within 1 standard deviation of the mean time?

6. Twenty people apply to become one of the 5 new astronauts for the next Space Shuttle mission. Seven of the applicants are women. Find ...

[4]

a) the total number of groups of new astronauts that are possible.

b) the number of photographs of the new astronauts that are possible if they all stand in a line.

c) the number of groups that will contain at least 2 women.

d) the probability that no women are in the final group.

7. How many arrangements are there for the letters in the word BASKETBALL ?

[1]

**8.** The King's senior boys basketball team consists of 9 grade twelve's and 3 grade eleven's. [2]

a) Create a probability distribution for the number of grade eleven's in the five player starting line-up if they are chosen at random.

b) What is the expected number of grade eleven's in the five player starting line-up if it is chosen at random?

**9.** If in a basketball game a player with a free throw percentage of 73% takes 8 free throws, determine the probability that... [3]

a) They make exactly 6

b) They make all 8

c) They make less than 2

**10.** Use the normal approximation to the binomial distribution to determine the probability of a basketball player making at least 15 of his 30 shots during a game if his career shooting percentage is 42%

[1]

**11.** Mr. De Boer wants to choose a random sample of students from King's to be allowed to miss afternoon classes to go watch the senior girl's basketball team play in the regional finals. He was only able to get two buses to take students to the game and is unsure of a fair way to determine who gets to go. Explain how he could use the following sampling techniques to determine who goes.

[5]

a) Simple random

b) Stratified random

c) Multi-stage random

d) Cluster random

e) Systematic random

12. Expand fully  $(2x - 7)^4$

[1]

13. In the expansion of  $\left(3x + \frac{2}{x^3}\right)^8$  find:

[4]

a) The number of terms

b) The 5<sup>th</sup> term

c) The constant term

d) The term containing  $x^4$