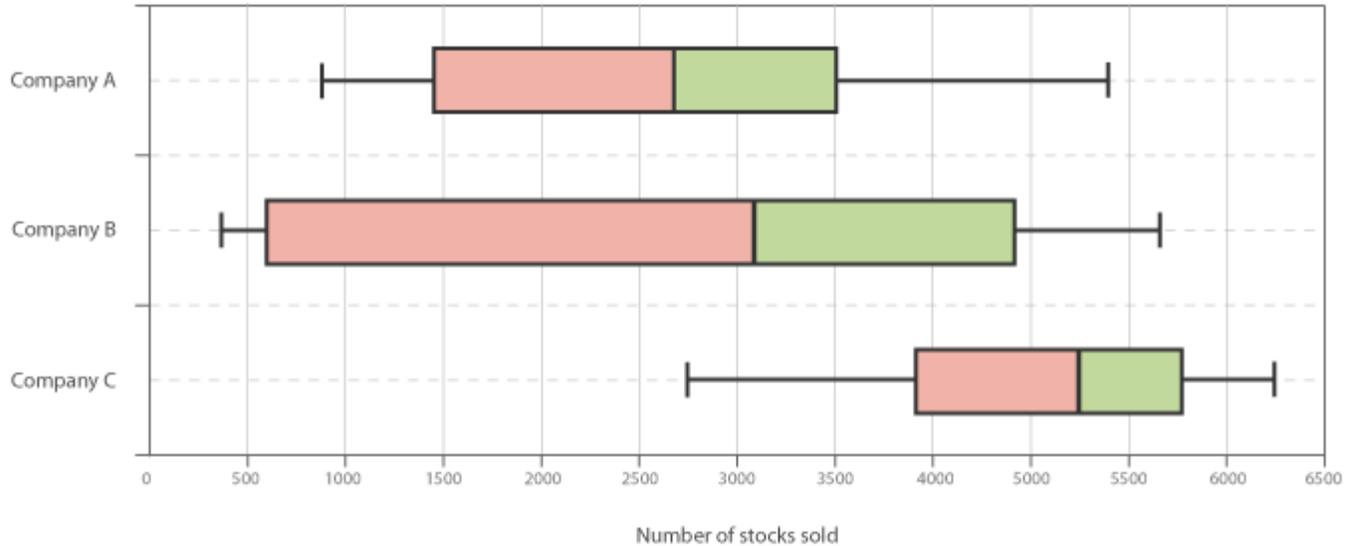


**IB Math SL Semester Exam REVIEW NO CALCULATORS ON THIS SECTION**

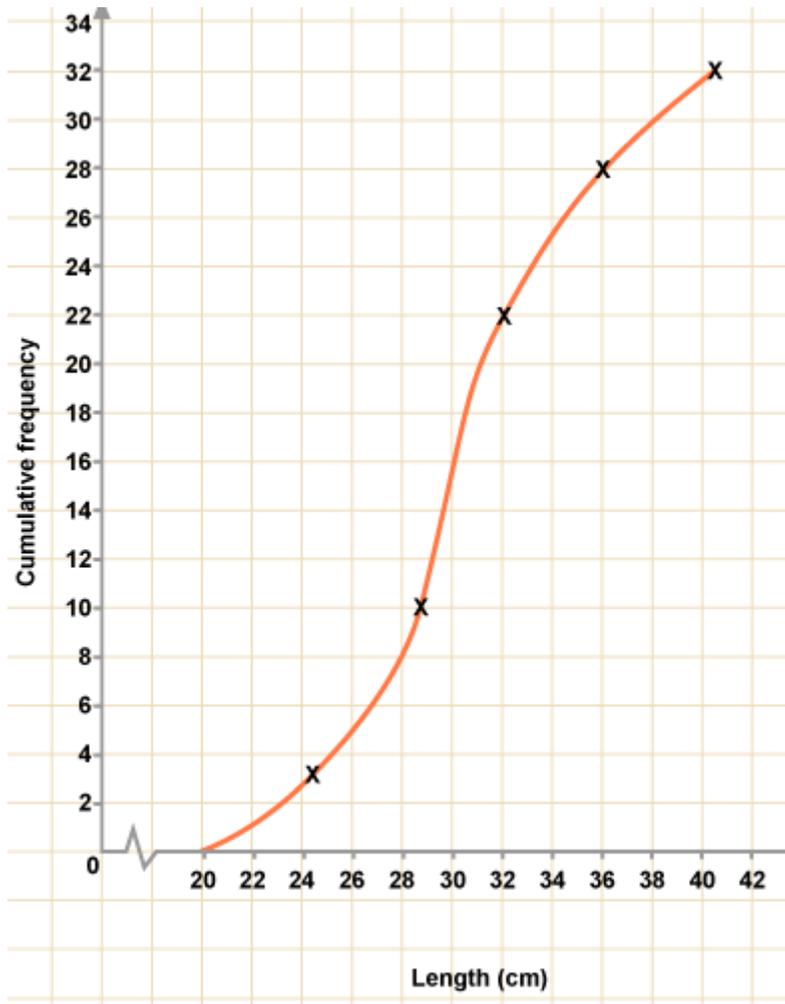
[1] Consider the data set: **1, 2, 4, 6, 9, 14**. Determine each of the following.

- [a] the mean: \_\_\_\_\_ [e] the upper quartile: \_\_\_\_\_  
 [b] the lower quartile: \_\_\_\_\_ [f] the interquartile range: \_\_\_\_\_  
 [c] the median: \_\_\_\_\_ [d] the range: \_\_\_\_\_

[2] Consider the following box plots for the number of stocks sold for three companies.



[a] Which company has largest range of stocks sold? \_\_\_\_\_



- [b] Which company has a lower quartile of about 600 stocks sold? \_\_\_\_\_  
 [c] Which company has an upper quartile of about 3500 stocks sold? \_\_\_\_\_  
 [d] Which company has the lowest median number of stocks sold? \_\_\_\_\_  
 [e] State the interquartile range for company C  
 \_\_\_\_\_

[3] A cumulative frequency graph is shown for the weights of a set of lengths..

- [a] How many values are in the data set? \_\_\_\_\_  
 [a] Estimate the median length. \_\_\_\_\_  
 [b] Estimate the upper quartile: \_\_\_\_\_  
 [c] Estimate the lower quartile: \_\_\_\_\_  
 [c] Estimate the number of values between 20 and 30cm. \_\_\_\_\_

[4] For events A and B it is known that  $P(A) = 0.3$ ,  $P(B) = 0.5$ , and  $P(A \cup B) = 0.6$ .

[a] Find  $P(A \cap B)$ .

[b] Are A and B independent events?

[c] Find  $P(A' \cap B')$ .

[5] For events C and D it is  $P(C \cap D) = \frac{1}{5}$  and  $P(C|D) = \frac{1}{3}$ . Find  $P(D)$ . Show your use of a formula.

[6] For events E and F it is known that  $P(E) = 0.55$ ,  $P(F) = 0.65$ , and  $P(E' \cap F') = 0.05$ .

[a] Find  $P(E \cap F)$

[b] Find  $P(E|F)$

[7] The scores on a certain standardized exam have a mean score of 20 with a standard deviation of 2 points. The scores are normally distributed.

[a] What exam score is 2 standard deviations above the mean? \_\_\_\_\_

[b] What is the probability that a randomly selected student has score between 20 and 22? \_\_\_\_\_

[c] What is the probability that a randomly selected student has a score of 18 or less? \_\_\_\_\_

[8] Two 6-sided dice are rolled. Let the random variable X be the number of  $\square$ 's that show.

[a] Find  $P(X = 0)$

[b] Find  $P(X = 2)$

[c] Find  $E(X)$

[9] Find  $f'(2)$  the slope of the line tangent to the graph of  $f(x) = 2x^2 - x + 1$  at  $x = 3$ .

[10] Find  $f'(x)$ , the derivative function for  $f(x) = \sqrt{2x - 5}$ .

[11] A survey was made of the number of poems students have read in the last week.

Number of poems read	0	1	2	3	4	5	6	7	8
frequency	2	5	9	17	35	37	31	23	10

[a] Find the median number of poems read. \_\_\_\_\_

[b] Find the lower quartile. \_\_\_\_\_

[c] Find the mode. \_\_\_\_\_

Weights (kg)	frequency
$20 \leq x < 25$	4
$25 \leq x < 30$	9
$30 \leq x < 35$	17
$35 \leq x < 40$	14
$40 \leq x < 45$	11
$45 \leq x < 50$	9

[12] Consider the table of grouped data shown here.

[a] Estimate the mean of the data. \_\_\_\_\_

[b] Estimate the median of the data. \_\_\_\_\_

[c] Estimate the standard deviation of the data. \_\_\_\_\_

[d] Name the modal class: \_\_\_\_\_

[13] A bag contains 4 red marbles and 7 green marbles. Two marbles are drawn without replacement.

[a] Find the probability that both marbles are red.

[b] Find the probability that the marbles drawn are different colors.

[14] This table shows the probability distribution for the discrete random variable  $X$ .

$x$	0	1	2	3	4
$P(X=x)$	0.02	$p$	$2p$	0.2	0.18

[a] Find the value of  $p$ . Show work.

[b] Find  $E(X)$ , the expected value of  $X$ . Show work.

[15] In a particular game, you roll 5 six-sided dice. Let the random variable  $X$  be the number of 's that show up when the 5 dice are rolled.

[a] Find the probability of getting exactly 3 's when you roll the 5 dice. \_\_\_\_\_

[b] Find the probability of getting at least 3 's when you roll the 5 dice.

[16] The scores on a certain exam are normally distributed scores with  $\mu = 32$  and  $\sigma = 2.75$ .

[a] Find the standardized normal score ( $z$ -score) for an exam score of 35.

[b] Find the probability of a randomly selected exam score being above 35.

[c] Circle the standardized normal score ( $z$ -score) which is at the 90<sup>th</sup> percentile (better than 90% of other scores). Circle the correct value.    -1.282                      -0.674                      0.674                      1.282

[d] 25% of students score below  $x$  on this exam. Find  $x$