#### Box Plots and Cumulative Frequency www.m4ths.com Task 1 – Interpreting Box Plots



(1) Complete the table below using the box plots above.

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	Lowest	Highest	Lower	Median	Upper	IQR
	Value	Value	Quartile	(Q2)	Quartile	
			(Q1)		(Q3)	
A						
В						

### Task 2 – Constructing Box Plots

(1) Complete the table below and construct a box plot for A, B and C below on the same scale.

	Lowest Value	Highest Value	Lower Quartile	Median (Q2)	Upper Quartile	IQR
A	12	92	23	37	54	
В	22	84	37	43		12
С	9	98		28	30	16



# Task 3 – Comparing Box Plots

(1) The two box plots below show the height in mm of identical plant seeds grown at different times.



(a) Write down the range of both sets of plants
(b) On average which crop yielded greater heights? (You must state why you chose your answer.)
(c) Which crops were more consistent in their heights? (You must state why you chose your answer.)
(d) Which crop had the better growing conditions? (You must state why you chose your answer.)

(e) Complete the sentence "75% of plants in Crop A were greater than\_\_\_\_"

(f) Find the IQR for both Crop A and Crop B

(g) Complete the sentence "The\_\_\_\_\_\_is a measure of the average and the \_\_\_\_\_\_and \_\_\_\_are a measure

of the spread of the data"

(2) The box plots below show the scores (out of 20) in a maths exam sat by two different classes (A and B). Make 5 comparisons <u>in context</u> using the data shown.



## Task 4 – Understanding Cumulative Frequency Curves

(1) Mark on the curve below where the lower quartile, median and upper quartile would be read from.



### Task 5 – Constructing Cumulative Frequency Curves

(1) Complete the cumulative frequency table below and construct a cumulative frequency curve using the data.

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Age	Frequency	Cumulative Frequency
$0 < a \le 10$	8	
$10 < a \le 20$	6	
$20 < a \le 40$	11	
$40 < a \le 50$	7	

(Use the scale 1 block = 2 years and 1 block = 2 people)

(2) (a) Complete the cumulative frequency table below and construct a cumulative frequency curve using the data.

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Height in cm	F	CF
$0 < h \leq 5$	16	
$5 < h \leq 15$	15	
$15 < h \leq 30$	24	
$30 < h \leq 50$	18	
$50 < h \leq 60$	8	

(b) Find an estimate for the median, lower quartile and upper quartile and hence estimate the IQR.

(c) Given that the smallest height was 4cm and the largest height was 57cm, construct a box plot to represent the data.

(d) Find the range of the data and state how the range differs to the IQR.

(e) Find an estimate for the % of plants that are greater than 20cm by using the cumulative frequency curve.

(3) (a) Bob is measuring the length of worms in his garden. The information is shown below. Complete the cumulative frequency table below and construct a cumulative frequency curve using the data

Length in mm	F	CF			
$0 < l \le 10$	4				
$10 < l \le 15$		12			
$15 < l \le 25$		41			
$25 < l \le 40$		68			
$40 < l \le 70$		100			

(b) Find an estimate for the median, lower quartile and upper quartile and hence estimate the IQR.(c) Given that the smallest length was 3mm and the greatest length was 66mm, construct a box plot to represent the data.

(d) Find the range of the data.

(e) State what the median represents in a data set.

(4) Draw 3 different box plots on the same set of axes and get your partner to write 5 comparisons in context.

