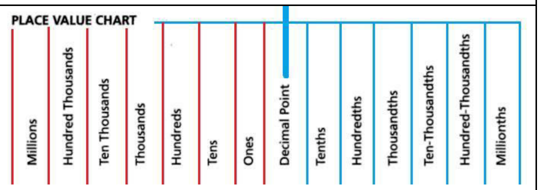
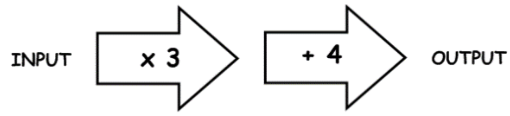
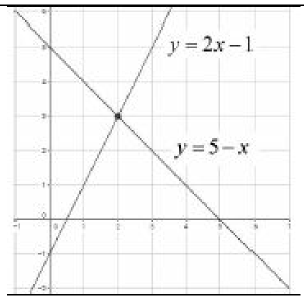
Topic/Skill	Definition/Tips	Example
1. Algebraic Fraction	A fraction whose **numerator** and **denominator** are **algebraic expressions**.	$\frac{6x}{3x-1}$
2. Adding/ Subtracting Algebraic Fractions	For $\frac{a}{b} \pm \frac{c}{d}$, the **common denominator** is bd $\frac{a}{b} \pm \frac{c}{d} = \frac{ad}{bd} \pm \frac{bc}{bd} = \frac{ad \pm bc}{bd}$	$\frac{1}{x} + \frac{x}{2y}$ $= \frac{1(2y)}{2xy} + \frac{x(x)}{2xy}$ $= \frac{2y + x^2}{2xy}$
3. Multiplying Algebraic Fractions	**Multiply** the **numerators together** and the **denominators together**. $\frac{a}{b} \times \frac{c}{d} = \frac{ac}{bd}$	$\frac{x}{3} \times \frac{x+2}{x-2}$ $= \frac{x(x+2)}{3(x-2)}$ $= \frac{x^2+2x}{3x-6}$
4. Dividing Algebraic Fractions	**Multiply** the first fraction by the **reciprocal of the second fraction**. $\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c} = \frac{ad}{bc}$	$\frac{x}{3} \div \frac{2x}{7}$ $= \frac{x}{3} \times \frac{7}{2x}$ $= \frac{7x}{6x} = \frac{7}{6}$
5. Simplifying Algebraic Fractions	**Factorise** the numerator and denominator and **cancel common factors**.	$\frac{x^2+x-6}{2x-4} = \frac{(x+3)(x-2)}{2(x-2)} = \frac{x+3}{2}$

Topic/Skill	Definition/Tips	Example
1. Place Value	The **value** of where a **digit** is within a number.	In 726, the value of the 2 is 20, as it is in the ‘tens’ column.
2. Place Value Columns	The names of the columns that **determine the value of each digit**. The ‘ones’ column is also known as the ‘units’ column.	
3. Rounding	To make a number simpler but keep its value close to what it was. If the **digit to the right** of the rounding digit is **less than 5, round down**. If the **digit to the right** of the rounding digit is **5 or more, round up**.	74 rounded to the nearest ten is 70, because 74 is closer to 70 than 80. 152,879 rounded to the nearest thousand is 153,000.
4. Decimal Place	The **position** of a digit to the **right of a decimal point**.	In the number 0.372, the 7 is in the second decimal place. 0.372 rounded to two decimal places is 0.37, because the 2 tells us to round down. Careful with money - don’t write £27.4, instead write £27.40
5. Significant Figure	The significant figures of a number are the digits which **carry meaning** (ie. are significant) to the size of the number. The **first significant figure** of a number **cannot be zero**. In a number with a decimal, trailing zeros are not significant.	In the number 0.00821, the first significant figure is the 8. In the number 2.740, the 0 is not a significant figure. 0.00821 rounded to 2 significant figures is 0.0082. 19357 rounded to 3 significant figures is 19400. We need to include the two zeros at the end to keep the digits in the same place value columns.
6. Truncation	A method of approximating a decimal number by **dropping all decimal places** past a certain point **without rounding**.	3.14159265… can be truncated to 3.1415 (note that if it had been rounded, it would become 3.1416)
7. Error Interval	A **range of values** that a number could have taken before being rounded or truncated. An error interval is written using inequalities, with a **lower bound** and an **upper bound**.	0.6 has been rounded to 1 decimal place. The error interval is: $0.55 \leq x < 0.65$ The lower bound is 0.55 The upper bound is 0.65

	Note that the lower bound inequality can be 'equal to', but the upper bound cannot be 'equal to'.	
8. Estimate	To find something **close to the correct answer**.	An estimate for the height of a man is 1.8 metres.
9. Approximation	When using approximations to estimate the solution to a calculation, **round each number in the calculation to 1 significant figure**. ≈ means 'approximately equal to'	$\frac{348+692}{0.526} \approx \frac{300+700}{0.5} = 2000$ 'Note that dividing by 0.5 is the same as multiplying by 2'
10. Rational Number	A number of the form $\frac{p}{q}$, where $\boldsymbol{p}$ **and** $\boldsymbol{q}$ **are integers** and $\boldsymbol{q \neq 0}$. A number that cannot be written in this form is called an 'irrational' number	$\frac{4}{9}, 6, -\frac{1}{3}, \sqrt{25}$ are examples of rational numbers. $\pi, \sqrt{2}$ are examples of an irrational numbers.
11. Surd	The **irrational number** that is a **root of a positive integer,** whose value cannot be determined exactly. Surds have **infinite non-recurring decimals**.	$\sqrt{2}$ is a surd because it is a root which cannot be determined exactly. $\sqrt{2} = 1.41421356\ldots$ which never repeats.
12. Rules of Surds	$\sqrt{ab} = \sqrt{a} \times \sqrt{b}$ $\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$ $a\sqrt{c} \pm b\sqrt{c} = (a \pm b)\sqrt{c}$ $\sqrt{a} \times \sqrt{a} = a$	$\sqrt{48} = \sqrt{16} \times \sqrt{3} = 4\sqrt{3}$ $\sqrt{\frac{25}{36}} = \frac{\sqrt{25}}{\sqrt{36}} = \frac{5}{6}$ $2\sqrt{5} + 7\sqrt{5} = 9\sqrt{5}$ $\sqrt{7} \times \sqrt{7} = 7$
13. Rationalise a Denominator	The process of rewriting a fraction so that the **denominator contains only rational numbers**.	$\frac{\sqrt{3}}{\sqrt{2}} = \frac{\sqrt{3} \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}} = \frac{\sqrt{6}}{2}$ $\frac{6}{3+\sqrt{7}} = \frac{6(3-\sqrt{7})}{(3+\sqrt{7})(3-\sqrt{7})}$ $= \frac{18-6\sqrt{7}}{9-7}$ $= \frac{18-6\sqrt{7}}{2} = 9 - 3\sqrt{7}$

Topic/Skill	Definition/Tips	Example
1. Function Machine	Takes an **input** value, performs some **operations** and produces an **output** value.	
2. Function	A **relationship** between two sets of values.	$f(x) = 3x^2 - 5$ 'For any input value, square the term, then multiply by 3, then subtract 5'.
3. Function notation	$f(x)$ $\boldsymbol{x}$ is the **input** value $\boldsymbol{f(x)}$ is the **output** value.	$f(x) = 3x + 11$ Suppose the input value is $x = 5$ The output value is $f(5) = 3 \times 5 + 11 = 26$
4. Inverse function	$f^{-1}(x)$ A function that performs the **opposite process** of the original function. 1. Write the function as $y = f(x)$ 2. Rearrange to make x the subject. 3. Replace the $\boldsymbol{y}$ **with** $\boldsymbol{x}$ and the $\boldsymbol{x}$ **with** $\boldsymbol{f^{-1}(x)}$	$f(x) = (1 - 2x)^5$. Find the inverse. $y = (1 - 2x)^5$ $\sqrt[5]{y} = 1 - 2x$ $1 - \sqrt[5]{y} = 2x$ $\frac{1 - \sqrt[5]{y}}{2} = x$ $f^{-1}(x) = \dfrac{1 - \sqrt[5]{x}}{2}$
5. Composite function	A **combination** of two or more **functions** to create a new function. $\boldsymbol{fg(x)}$ is the composite function that **substitutes** the function $\boldsymbol{g(x)}$ **into** the function $\boldsymbol{f(x)}$. $\boldsymbol{fg(x)}$ means '**do g first, then f**' $\boldsymbol{gf(x)}$ means '**do f first, then g**'	$f(x) = 5x - 3$, $g(x) = \frac{1}{2}x + 1$ What is $fg(4)$? $g(4) = \dfrac{1}{2} \times 4 + 1 = 3$ $f(3) = 5 \times 3 - 3 = 12 = fg(4)$ What is $fg(x)$? $fg(x) = 5\left(\dfrac{1}{2}x + 1\right) - 3 = \dfrac{5}{2}x + 2$

Topic/Skill	Definition/Tips	Example
1. Simultaneous Equations	A set of **two or more equations**, each involving **two or more variables** (letters). The **solutions** to simultaneous equations **satisfy both**/all of the **equations**.	$2x + y = 7$ $3x - y = 8$ $x = 3$ $y = 1$
2. Variable	A **symbol**, usually a **letter**, which **represents a number** which is usually unknown.	In the equation $x + 2 = 5$, x is the variable.
3. Coefficient	A **number** used to **multiply** a **variable**. It is the number that comes before/in front of a letter.	6z 6 is the coefficient z is the variable
4. Solving Simultaneous Equations (by Elimination)	1. **Balance** the **coefficients** of one of the variables. 2. **Eliminate** this variable by adding or subtracting the equations (**Same Sign Subtract, Different Sign Add**) 3. **Solve** the linear equation you get using the other variable. 4. **Substitute** the value you found back into one of the previous equations. 5. **Solve** the equation you get. 6. **Check** that the two values you get satisfy both of the original equations.	$5x + 2y = 9$ $10x + 3y = 16$ Multiply the first equation by 2. $10x + 4y = 18$ $10x + 3y = 16$ Same Sign Subtract (+10x on both) $y = 2$ Substitute $y = 2$ in to equation. $5x + 2 \times 2 = 9$ $5x + 4 = 9$ $5x = 5$ $x = 1$ Solution: $x = 1, y = 2$
5. Solving Simultaneous Equations (by Substitution)	1. **Rearrange** one of the equations into the form $y = ..$ or $x = ..$ 2. **Substitute** the right-hand side of the rearranged equation into the other equation. 3. Expand and **solve** this equation. 4. **Substitute** the value into the $y = ..$ or $x = ..$ equation. 5. **Check** that the two values you get satisfy both of the original equations.	$y - 2x = 3$ $3x + 4y = 1$ Rearrange: $y - 2x = 3 \rightarrow y = 2x + 3$ Substitute: $3x + 4(2x + 3) = 1$ Solve: $3x + 8x + 12 = 1$ $11x = -11$ $x = -1$ Substitute: $y = 2 \times -1 + 3$ $y = 1$ Solution: $x = -1, y = 1$

6. Solving Simultaneous Equations (Graphically)	**Draw the graphs** of the two equations. The **solutions** will be **where the lines meet**. The solution can be written as a **coordinate**.	 $y = 5 - x$ and $y = 2x - 1$. They meet at the point with coordinates (2,3) so the answer is $x = 2$ and $y = 3$
7. Solving Linear and Quadratic Simultaneous Equations	Method 1: If both equations are in the same form (eg. Both $y = \ldots$): 1. Set the equations **equal to each other**. 2. **Rearrange** to make the equation **equal to zero**. 3. **Solve** the quadratic equation. 4. **Substitute** the values back in to one of the equations. Method 2: If the equations are not in the same form: 1. **Rearrange** the linear equation into the form $y = \ldots$ or $x = \ldots$ 2. **Substitute** in to the quadratic equation. 3. **Rearrange** to make the equation **equal to zero**. 4. **Solve** the quadratic equation. 5. **Substitute** the values back in to one of the equations. You should get **two pairs of solutions** (two values for x, two values for y.) Graphically, you should have **two points of intersection**.	Example 1 Solve $y = x^2 - 2x - 5$ and $y = x - 1$ $x^2 - 2x - 5 = x - 1$ $x^2 - 3x - 4 = 0$ $(x - 4)(x + 1) = 0$ $x = 4$ and $x = -1$ $y = 4 - 1 = 3$ and $y = -1 - 1 = -2$ Answers: (4,3) and (-1,-2) Example 2 Solve $x^2 + y^2 = 5$ and $x + y = 3$ $x = 3 - y$ $(3 - y)^2 + y^2 = 5$ $9 - 6y + y^2 + y^2 = 5$ $2y^2 - 6y + 4 = 0$ $y^2 - 3y + 2 = 0$ $(y - 1)(y - 2) = 0$ $y = 1$ and $y = 2$ $x = 3 - 1 = 2$ and $x = 3 - 2 = 1$ Answers: (2,1) and (1,2)

Topic: Summarising Data

<table>
<tr><th>Topic/Skill</th><th>Definition/Tips</th><th>Example</th></tr>
<tr><td>1. Types of Data</td><td>Qualitative Data – non-numerical data
Quantitative Data – numerical data

Continuous Data – data that can take any numerical value within a given range.
Discrete Data – data that can take only specific values within a given range.</td><td>Qualitative Data – eye colour, gender etc.

Continuous Data – weight, voltage etc.

Discrete Data – number of children, shoe size etc.</td></tr>
<tr><td>2. Grouped Data</td><td>Data that has been bundled in to categories.

Seen in grouped frequency tables, histograms, cumulative frequency etc.</td><td><table><tr><th>Foot length, l, (cm)</th><th>Number of children</th></tr><tr><td>$10 \leqslant l < 12$</td><td>5</td></tr><tr><td>$12 \leqslant l < 17$</td><td>53</td></tr></table></td></tr>
<tr><td>3. Primary /Secondary Data</td><td>Primary Data – collected yourself for a specific purpose.

Secondary Data – collected by someone else for another purpose.</td><td>Primary Data – data collected by a student for their own research project.

Secondary Data – Census data used to analyse link between education and earnings.</td></tr>
<tr><td>4. Mean</td><td>Add up the values and divide by how many values there are.</td><td>The mean of 3, 4, 7, 6, 0, 4, 6 is
$\frac{3+4+7+6+0+4+6}{7} = 5$</td></tr>
<tr><td>5. Mean from a Table</td><td>1. Find the midpoints (if necessary)
2. Multiply Frequency by values or midpoints
3. Add up these values
4. Divide this total by the Total Frequency

If grouped data is used, the answer will be an estimate.</td><td><table><tr><th>Height in cm</th><th>Frequency</th><th>Midpoint</th><th>F × M</th></tr><tr><td>$0 < h \leq 10$</td><td>8</td><td>5</td><td>8×5=40</td></tr><tr><td>$10 < h \leq 30$</td><td>10</td><td>20</td><td>10×20=200</td></tr><tr><td>$30 < h \leq 40$</td><td>6</td><td>35</td><td>6×35=210</td></tr><tr><td>Total</td><td>24</td><td>Ignore!</td><td>450</td></tr></table>
Estimated Mean height: 450 ÷ 24 = 18.75cm</td></tr>
<tr><td>6. Median Value</td><td>The middle value.

Put the data in order and find the middle one.
If there are two middle values, find the number half way between them by adding them together and dividing by 2.</td><td>Find the median of: 4, 5, 2, 3, 6, 7, 6

Ordered: 2, 3, 4, 5, 6, 6, 7

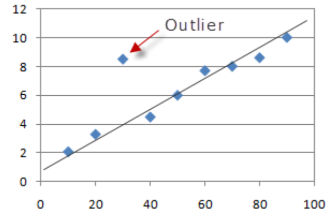
Median = 5</td></tr>
<tr><td>7. Median from a Table</td><td>Use the formula $\frac{(n+1)}{2}$ to find the position of the median.

n is the total frequency.</td><td>If the total frequency is 15, the median will be the $\left(\frac{15+1}{2}\right) = 8th$ position</td></tr>
<tr><td>8. Mode /Modal Value</td><td>Most frequent/common.

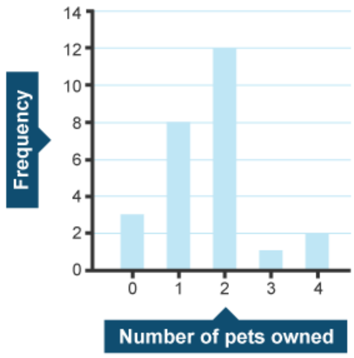
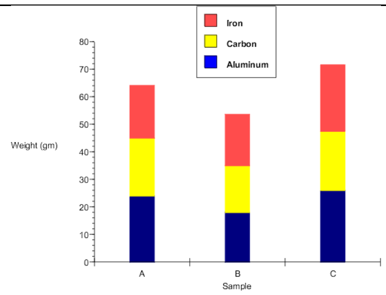
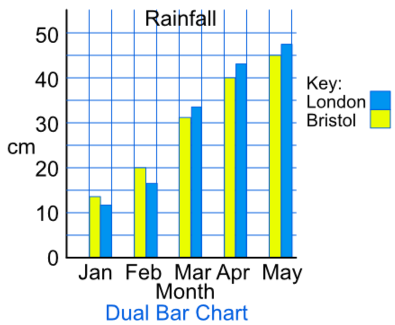
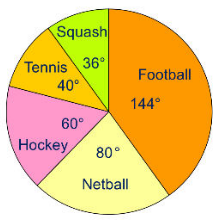
Can have more than one mode (called bi-modal or multi-modal) or no mode (if all values appear once)</td><td>Find the mode: 4, 5, 2, 3, 6, 4, 7, 8, 4

Mode = 4</td></tr>
<tr><td>9. Range</td><td>Highest value subtract the Smallest value</td><td>Find the range: 3, 31, 26, 102, 37, 97.

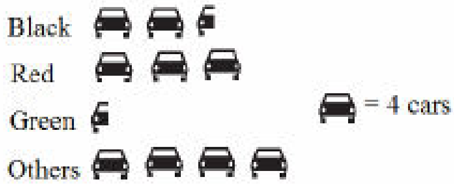
Range = 102-3 = 99</td></tr>
</table>

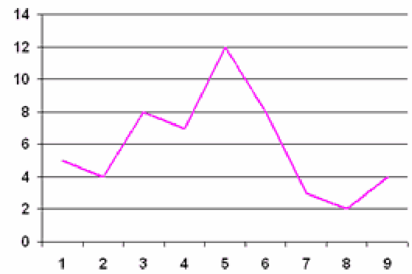
	Range is a 'measure of spread'. The smaller the range the more consistent the data.	
10. Outlier	A value that '**lies outside**' most of the other values in a set of data. An outlier is **much smaller or much larger** than the other values in a set of data.	
11. Lower Quartile	**Divides** the **bottom half** of the data into **two halves**. LQ = $\boldsymbol{Q_1 = \frac{(n+1)}{4} th}$ **value**	Find the lower quartile of: 2, **3**, 4, 5, 6, 6, 7 $Q_1 = \frac{(7+1)}{4} = 2nd$ value → 3
12. Lower Quartile	**Divides** the **top half** of the data into **two halves**. UQ = $\boldsymbol{Q_3 = \frac{3(n+1)}{4} th}$ **value**	Find the upper quartile of: 2, 3, 4, 5, 6, **6**, 7 $Q_3 = \frac{3(7+1)}{4} = 6th$ value → 6
13. Interquartile Range	The **difference** between the **upper quartile and lower quartile.** $\boldsymbol{IQR = Q_3 - Q_1}$ The **smaller** the **interquartile range**, the **more consistent** the data.	Find the IQR of: 2, 3, 4, 5, 6, 6, 7 $IQR = Q_3 - Q_1 = 6 - 3 = 3$

Topic: Representing Data

Topic/Skill	Definition/Tips	Example
1. Frequency Table	A record of **how often each value** in a set of data **occurs**.	Number of marks | Tally marks | Frequency 1 | 卌 || | 7 2 | 卌 | 5 3 | 卌 | | 6 4 | 卌 | 5 5 | ||| | 3 Total | | 26
2. Bar Chart	Represents data as vertical blocks. $x-axis$ shows the **type** of data $y-axis$ shows the **frequency** for each type of data Each bar should be the **same width** There should be **gaps** between each bar Remember to **label** each axis.	
3. Types of Bar Chart	**Compound/Composite** Bar Charts show data stacked on top of each other. **Comparative/Dual** Bar Charts show data side by side.	 
4. Pie Chart	Used for showing **how data breaks down into** its constituent **parts**. When drawing a pie chart, **divide 360° by the total frequency**. This will tell you how many degrees to use for the frequency of each category. Remember to **label** the category that each sector in the pie chart represents.	 If there are 40 people in a survey, then each person will be worth 360÷40=9° of the pie chart.

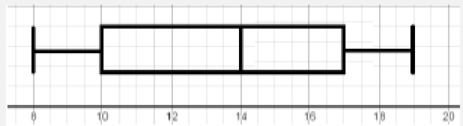
<table>
<tr><td>5. Pictogram</td><td>Uses pictures or symbols to show the value of the data.

A pictogram must have a key.</td><td>
</td></tr>
<tr><td>6. Line Graph</td><td>A graph that uses points connected by straight lines to show how data changes in values.

This can be used for time series data, which is a series of data points spaced over uniform time intervals in time order.</td><td>
</td></tr>
<tr><td>7. Two Way Tables</td><td>A table that organises data around two categories.

Fill out the information step by step using the information given.

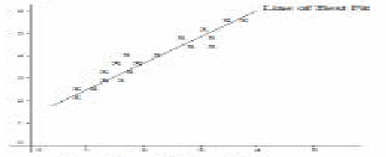
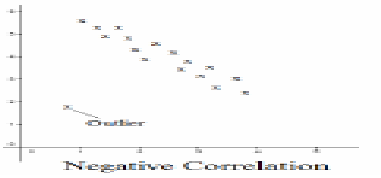
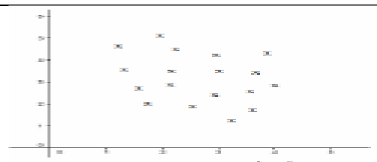
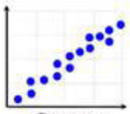
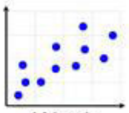
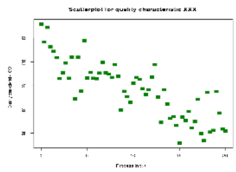
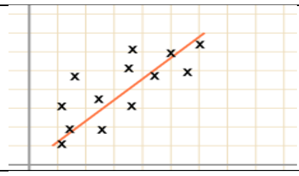
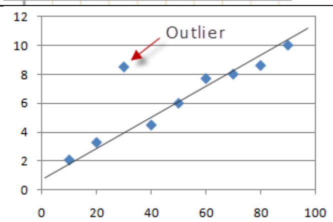
Make sure all the totals add up for all columns and rows.</td><td>Question: Complete the 2 way table below.
<table>
<tr><th></th><th>Left Handed</th><th>Right Handed</th><th>Total</th></tr>
<tr><td>Boys</td><td>10</td><td></td><td>58</td></tr>
<tr><td>Girls</td><td></td><td></td><td></td></tr>
<tr><td>Total</td><td></td><td>84</td><td>100</td></tr>
</table>
Answer: Step 1, fill out the easy parts (the totals)
<table>
<tr><th></th><th>Left Handed</th><th>Right Handed</th><th>Total</th></tr>
<tr><td>Boys</td><td>10</td><td>48</td><td>58</td></tr>
<tr><td>Girls</td><td></td><td></td><td>42</td></tr>
<tr><td>Total</td><td>16</td><td>84</td><td>100</td></tr>
</table>
Answer: Step 2, fill out the remaining parts
<table>
<tr><th></th><th>Left Handed</th><th>Right Handed</th><th>Total</th></tr>
<tr><td>Boys</td><td>10</td><td>48</td><td>58</td></tr>
<tr><td>Girls</td><td>6</td><td>36</td><td>42</td></tr>
<tr><td>Total</td><td>16</td><td>84</td><td>100</td></tr>
</table></td></tr>
<tr><td>8. Box Plots</td><td>The minimum, lower quartile, median, upper quartile and maximum are shown on a box plot.

A box plot can be drawn independently or from a cumulative frequency diagram.</td><td>Students sit a maths test. The highest score is 19, the lowest score is 8, the median is 14, the lower quartile is 10 and the upper quartile is 17. Draw a box plot to represent this information.

</td></tr>
<tr><td>9. Comparing Box Plots</td><td>Write two sentences.
1. Compare the averages using the medians for two sets of data.
2. Compare the spread of the data using the range or IQR for two sets of data.

The <u>smaller</u> the range/IQR, the <u>more consistent</u> the data.

You must compare box plots in the context of the problem.</td><td>‘On average, students in class A were more successful on the test than class B because their median score was higher.’

‘Students in class B were more consistent than class A in their test scores as their IQR was smaller.’</td></tr>
</table>

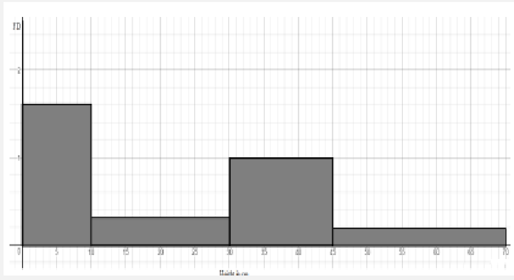
Topic/Skill	Definition/Tips	Example
1. Correlation	Correlation between two sets of data means they are **connected** in some way.	There is correlation between temperature and the number of ice creams sold.
2. Causality	When one variable **influences** another variable.	The more hours you work at a particular job (paid hourly), the higher your income <u>from that job</u> will be.
3. Positive Correlation	As one value **increases** the other value **increases**.	 Positive Correlation
4. Negative Correlation	As one value **increases** the other value **decreases**.	 Negative Correlation
5. No Correlation	There is **no linear relationship** between the two.	 No Correlation
6. Strong Correlation	When two sets of data are **closely linked**.	 Strong Positive Correlation
7. Weak Correlation	When two sets of data have correlation, but are **not closely linked**.	 Weak Positive Correlation
8. Scatter Graph	A graph in which values of **two variables** are plotted along two axes to **compare** them and see if there is any **connection** between them.	
9. Line of Best Fit	A **straight line** that **best represents the data** on a scatter graph.	
10. Outlier	A value that 'lies outside' most of the other values in a set of data. An outlier is **much smaller or much larger** than the other values in a set of data.	

Topic: Histograms and Cumulative Frequency

<table>
<tr><th>Topic/Skill</th><th>Definition/Tips</th><th>Example</th></tr>
<tr>
<td>1. Histograms</td>
<td>
A visual way to display frequency data using bars.

Bars can be unequal in width.

Histograms show frequency density on the y-axis, not frequency.

$$\textbf{Frequency Density} = \frac{\textbf{Frequency}}{\textbf{Class Width}}$$
<table>
<tr><th>Height(cm)</th><th>Frequency</th></tr>
<tr><td>$0 < h \le 10$</td><td>8</td></tr>
<tr><td>$10 < h \le 30$</td><td>6</td></tr>
<tr><td>$30 < h \le 45$</td><td>15</td></tr>
<tr><td>$45 < h \le 70$</td><td>5</td></tr>
</table>
</td>
<td>
<table>
<tr><th>Frequency Density (FD)</th></tr>
<tr><td>$8 \div 5 = 1.6$</td></tr>
<tr><td>$6 \div 20 = 0.3$</td></tr>
<tr><td>$15 \div 15 = 1$</td></tr>
<tr><td>$5 \div 25 = 0.2$</td></tr>
</table>

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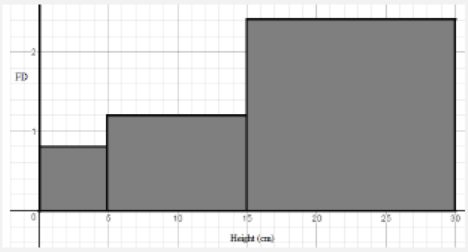
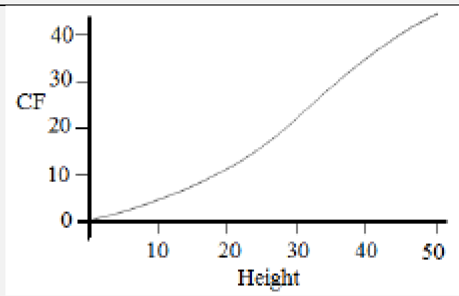
<tr>
<td>2. Interpreting Histograms</td>
<td>
The area of the bar is proportional to the frequency of that class interval.

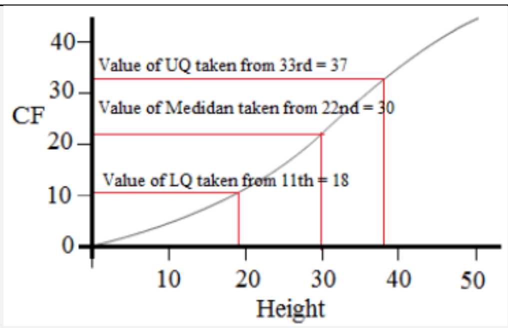
$$\textbf{Frequency} = \textbf{Freq Density} \times \textbf{Class Width}$$
</td>
<td>
A histogram shows information about the heights of a number of plants. 4 plants were less than 5cm tall. Find the number of plants more than 5cm tall.


Above 5cm:
1.2 x 10 + 2.4 x 15 = 12 + 36 = 48
</td>
</tr>
<tr>
<td>3. Cumulative Frequency</td>
<td>
Cumulative Frequency is a running total.

<table>
<tr><th>Age</th><th>Frequency</th></tr>
<tr><td>$0 < a \le 10$</td><td>15</td></tr>
<tr><td>$10 < a \le 40$</td><td>35</td></tr>
<tr><td>$40 < a \le 50$</td><td>10</td></tr>
</table>
</td>
<td>
<table>
<tr><th>Cumulative Frequency</th></tr>
<tr><td>15</td></tr>
<tr><td>15 + 35 = 50</td></tr>
<tr><td>50 + 10 = 60</td></tr>
</table>
</td>
</tr>
<tr>
<td>4. Cumulative Frequency Diagram</td>
<td>
A cumulative frequency diagram is a curve that goes up. It looks a little like a stretched-out S shape.

Plot the cumulative frequencies at the end-point of each interval.
</td>
<td>


</td>
</tr>
</table>

5. Quartiles from Cumulative Frequency Diagram	**Lower Quartile** (Q1): **25%** of the data is less than the lower quartile. **Median** (Q2): **50%** of the data is less than the median. **Upper Quartile** (Q3): **75%** of the data is less than the upper quartile. **Interquartile Range (IQR)**: represents the **middle 50%** of the data.	 $IQR = 37 - 18 = 19$
6. Hypothesis	**A statement that might be true, which can be tested.**	Hypothesis: 'Large dogs are better at catching tennis balls than small dogs'. We can test this hypothesis by having hundreds of different sized dogs try to catch tennis balls.