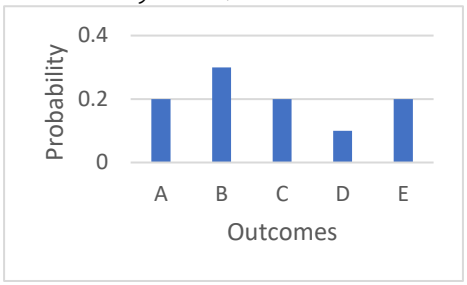
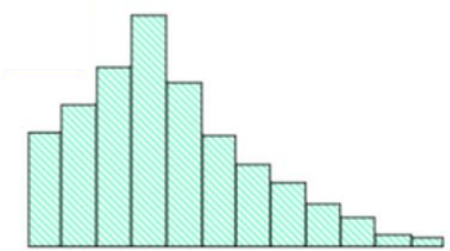
GCSE STATISTICS: TERM 11.3 MIXED TOPIC TASKS

Week 1.1

Does this diagram represent a Uniform distribution?  No	$X \sim B(15, 0.24)$ What is n? 15	State the Bibnomial Formula ${}_nC_r \times p^r \times q^{n-r}$
The number of red counters when drawn from a bag of 3 red, 12 blue and 5 green is recorded What is n? 20	$X \sim B(16, 0.49)$ Find $P(X = 8)$ 0.196	Does this diagram represent a Normal Distribution? No 
I flip a coin 12 times How many different ways can I get exactly 4 heads? 495	$X \sim B(18, 0.16)$ Find $P(X \leq 2)$ 0.433	A Normal Distribution is used to represent the results of a test out of 50 for students in 11C The mean score is known to be 31 with a standard deviation of 5.7 Between which two scores are 68% of the marks between? 25.3 – 36.7

Score ___ / 9

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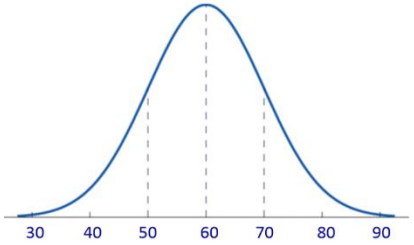
Week 1.1

Random numbers from 0 to n are created using a calculator. The first 5 numbers to be drawn out are 25, 38, 17, 18 and 98 Calculate the mean of these numbers and use it to estimate the number of values available 78.4	Fill in the blanks: For data which is normally distributed 95 % of the data values lie within 2 standard deviations of the mean?	$X \sim B(20, 0.73)$ Find $P(X \geq 18)$ 0.064
The number of red counters when drawn from a bag of 5 red, 5 blue and 20 green is recorded What is q? 25/30	$X \sim B(40, 0.17)$ What is q? 0.83	Estimate the mean from the normal distribution below  60
I flip a coin 20 times How many different ways can I get exactly 15 heads? 15504	$X \sim B(10, 0.72)$ Find $P(X = 7)$ 0.264	A Normal Distribution is used to represent the results of a test out of 100 for students in 11D The mean score is known to be 46 with a standard deviation of 9.5 Between which two scores are 95% of the marks between? 27 - 65

Score ___ / 9

GCSE STATISTICS: TERM 11.3 MIXED TOPIC TASKS

Week 2.1

TRUE or FALSE? 1.89 is a possible standardized score TRUE	TRUE or FALSE? -0.01 is a possible standardized score TRUE	TRUE or FALSE? 10 is a possible standardized score TRUE
Interpret a standardized score of 0 The score is equal to the mean	Interpret a standardized score of 0.25 The score is above the mean	Interpret a standardized score of -0.38 The score is below the mean
A data set has a mean of 25 and a s.d. of 4.5 Calculate the standardised score for Anita who achieved 23 in the assessment -0.444	State the formula for a Standardized Score $\frac{score - mean}{standard\ deviation}$	A data set has a mean of 1.8kg and s.d. of 0.1kg Calculate the standardised score for the next batch which weight 1.95kg 1.5

Score ___ / 9

GCSE STATISTICS: TERM 11.3 MIXED TOPIC TASKS

Week 2.2

Interpret a standardized score of -0.25 The score was below the mean	Interpret a standardized score of 0.56 The score was above the mean	Interpret a standardized score of 0 The score was equal to the mean
A data set has a mean of 20mins and s.d. of 2mins Calculate the standardised score for Dave who took 21.5mins 0.75	State the formula for a Standardized Score $\frac{\textbf{score} - \textbf{mean}}{\textbf{standard deviation}}$	A data set has a mean of 46 and s.d. of 3.5 Calculate the standardised score for Brian who scored 40 on the assessment -1.71
In the base year there were 250 calculators sold In 2022 there were 320 calculators sold Calculate the Index Number for calculator sold in 2022 128	State the formula for an index number $\frac{quatity}{quantity\ in\ base\ year}\ X\ 100$	2012 index = 100 2020 index = 94 Interpret the 2020 index number for the number of visitors to the factory In 2020 there were 6% fewer visitors compared to 2012

Score ___ / 9

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Week 3.1

A data set has a mean of 127cm and s.d. of 15.4cm Calculate the standardised score for Rian who was 136cm tall 0.584	State the formula for a Standardized Score $\frac{\boldsymbol{score - mean}}{\boldsymbol{standard\ deviation}}$	A data set has a mean of 350ml and s.d. of 22ml Calculate the standardised score for the next bottle which contains 335ml -0.682
2020 index = 100 2021 index = 102.4 Interpret the 2021 price relatiive for the cost of lollipops In 2021 the price increased by 2.4% compared to 2020	State the formula for price relative $\frac{price}{price\ in\ base\ year}\ X\ 100$	In the base year a reusable mug cost 22.99 In 2023 the same mug cost 24.99 Calculate the price relative for the mug in 2023 108.7
In 2019 boxes of fish weigh an average of 248g In 2020 boxes of the same fish weigh an average of 235g Calculate the chain base index number for the weight of the boxes of fish 94.8	State the formula for Chain Base Index Numbers $\frac{quatity}{quantity\ in\ \boldsymbol{previous}\ year}\ X\ 100$	2015 chain base index = 105 2016 chain base index = 102 Interpret the 2016 chain base index number for the number of cups of tea made in the office In 2016 the number of cups of tea made in the office increased by 2% from 2015

Score ___ / 9

GCSE STATISTICS: TERM 11.3 MIXED TOPIC TASKS

Week 3.2

2010 index = 100 2020 index = 98.3

Interpret the 2020 price relatiive for the cost of nail wraps online

In 2020 the price decreased 1.7% from 2010

State the formula for index numbers

$$\frac{quatity}{quantity\ in\ base\ year}\ X\ 100$$

In the base year the average score was 215
In 2018 the average score was 224
Calculate the index number for the score for 2018

104.2

In 2021 the price of a zebra pen was 98p
In 2022 the price of a zebra pen increased by 8p
Calculate the chain base index number for the price of a zebra pen

108.2

State the formula for Chain Base Index Numbers

$$\frac{quatity}{quantity\ in\ \boldsymbol{previous}\ year}\ X\ 100$$

2020 chain base index = 97
2021 cahin base index = 99

Interpret the cain base index number for 2021 for the volume of lemonade per bottle

In 2021 the volume of lemonade decreased by 1% compared to 2020

Calculate the weighted index number for cement ingredients in 2023

Ingredient	2020	2023	Weighting w
Sand	100	112	1
Water	100	118	2
Aggregate	100	119	3

117.5

State the formula for a weighted index number

$$\frac{\sum(index\ number\ x\ weight)}{\sum weights}$$

Calculate the weighted index number for the average score in 2020

Assessment	2016	2020	Weighting w
Paper A	100	98	20%
Paper B	100	92	20%
Coursework	100	96	60%

95.6

Score ___ / 9

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Week 4.1

In 2022 the average number of people per crossing was 2041
In 2023 the average number increase by 450
Calculate the chain base index number for the average number of people per crossing

122

State the formula for Chain Base Index Numbers

$$\frac{quatity}{quantity\ in\ \textbf{previous}\ year}\ X\ 100$$

2018 chain base index = 100
2019 cahin base index = 100

Interpret the cain base index number for price of bottles of water in 2019

In 2019 the price for a bottle of water was the same as in 2018

Calculate the weighted index number for the price of the pancake ingredients in 2022

Ingredient	2021	2022	Weighting w
Flour	100	109	2
Milk	100	112	2
Egg	100	110	1

110.4

State the formula for a weighted price relative

$$\frac{\sum(index\ number\ x\ weight)}{\sum weights}$$

Calculate the weighted index number for the colours in 2020

Colour	2010	2020	Weighting w
Blue	100	102	2
Yellow	100	95	5
White	100	100	1

97.4

In Central London there is approximately 1435500 people
Last year there were 56000 births recorded
Calculate the crude birth rate

39.0

State the formula for crude birth rates

$$\frac{number\ of\ births}{total\ populaiton}\ X\ 1000$$

The number of deaths recorded on Isle of Skye in 2015 was 44. The crude death rate was reported as 4
Estimate the populstion of the Isle of Skye in 2015

11000

Score ___ / 9

GCSE STATISTICS: TERM 11.3 MIXED TOPIC TASKS

Week 4.2

Calculate the weighted index number for the price of the metals in 2021

Ingredient	2019	2020	Weighting w
Gold	100	146	50
Platinum	100	125	20
Copper	100	95	30

126.5

State the formula for a weighted price relative

$$\frac{\sum(index\ number\ x\ weight)}{\sum weights}$$

Calculate the weighted index number for the assessments in 2019

Assessment	2018	2019	Weighting w
Paper 1	100	103	40
Paper 2	100	105	30
Paper 3	100	104	30

103.9

The number of accidents recorded last year was 260 with a crude accident rate calculated to be 20

Estimate the size of the population

13000

State the formula for crude death rates

$$\frac{number\ of\ deaths}{total\ populaiton}\ X\ 1000$$

In 2016, the number of deaths was recorded to be 316 in the town of Colesville which had a populaiton of 24 000

Calculate the crude death rate for 2016

13.2

TRUE or FALSE?

A crude birth rate of 23 in 30-40 year old women compared to a crude birth rate of 42 in 20-30 year old women shows that there are more births in women age 20-30

FALSE

State the formula for standardized rates

$$\frac{\sum(crude\ rate\ x\ standard\ population)}{\sum standard\ populaiton}$$

TRUE or FALSE?

A curde death rate of 54 in 1920 comapred to a crude deaths rate of 27 in 2020 shows that fewer people died in 2020

FALSE

Score ___ / 9

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Week 5.1

In Wordsley, of the 14000 journeys that went past the camera on A424, 267 or them were found to be speeding. Calculate the crude speeding rate on the A424 19.1	State the formula for crude birth rates $\frac{number\ of\ births}{total\ populaiton}\ X\ 1000$	Last week there were 25 deaths recorded due to disease X. The crude death rate was calcuated to be 5 Estimate the size of the populaiton 5000
TRUE or FALSE? A crude death rate of 22 in the UK compared to a crude death rate of 26 in Germany shows that more people died in Germany FALSE	State the formula for standardized rates $\frac{\sum(crude\ rate\ x\ standard\ population)}{\sum standard\ populaiton}$	TRUE or FALSE? A crude birth rate of 8.5 in St James' hospital compared to a crude birth rate of 0.2 in All Seasons hospital shows that there were more births in St James' hospital FALSE
If a mean falls above the upper action limit, what should we do? Take immediate action Stop the process immediately	For Control Charts State the formula for the warning limits $\mu \pm 2\sigma$	IF a mean falls between the lower warning and lower aciton limit, what should we do? Take another Sample

Score ___ / 9

GCSE STATISTICS: TERM 11.3 MIXED TOPIC TASKS

Week 5.2

TRUE or FALSE? A crude birth rate of 20 in Hanover compared to a crude birth rate of 24 in Junturn shows that there were more births in Junturn than Hanover FALSE	State the formula for standardized rates $\frac{\sum(crude\ rate\ x\ standard\ population)}{\sum standard\ populaiton}$	TRUE or FALSE? A crude death rate of 41 in 2020 compared to 32 in 2021 shows there were fewer deaths in 2021 FALSE
If a mean falls between the upper action and upper warning limit, what should we do? Take another sample	For Control Charts State the formula for the action limits $\mu \pm 3\sigma$	If a mean falls between the upper and lower warning limit, what should we do? No action to be taken
Target value = 256g s.d. = 5.3g Calculate the upper action limit 271.9g	Target value = 500ml s.d. = 0.5ml Calculate the lower action limit 498.5ml	Target value = 2m s.d. = 5cm Calculate the upper warning limit 210cm

Score ___ / 9

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Week 6.1

TRUE or FALSE? 0 is a possible standardized score TRUE	2012 index = 100 2022 index = 121 Interpret the 2022 price relatiive for the cost of highlighters in 2022 In 2022 the cost of the lhighlighters was 21% more than in 2012	In 1988 there were 24700 births in a city with a population of 965800 Calculate the crude birth rate for the city in 1988 25.6
Interpret a standardized score of 0.2 The score is above the mean	In 2019 the price of a bag of chips was £2.40 In 2020 the price went up to £2.80 Calculate the chain base index number for the price of a bag of chips 112.9	TRUE or FALSE? A crude birth rate of 114 in the UK compared to a crude birth rate of 104 in Germany shows that fewer people were born in Germany FALSE
A data set has a mean of 102kg and a s.d. of 52g Calculate the standardised score for the next bog which weighs 112kg 0.192	State the formula for crude birth rates $\frac{number\ of\ births}{total\ populaiton}\ X\ 1000$	If a mean falls below the lower action limit, what should we do? Take immidiate action Stop the process immidiatly

Score ___ / 9

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Week 6.2

Interpret a standardized score of -2.5 The socre was below the mean	2015 chain base index = 112 2016 cahin base index = 109 Interpret the cain base index number for cost of a tank of petrol in 2016 In 2016 the cost of a tank of petrol was 9% more than in 2015	State the formula for a Standardized Score $\frac{score - mean}{standard\ deviation}$
A data set has a mean of 100 and s.d. of 8 Calculate the standardised score for Alysia who score 92 on their assessment -1	For Control Charts State the formula for the action limits $\mu \pm 3\sigma$	If a mean falls between the lower warning limit and lower action limit, what should we do? Take another sample
State the formula for Chain Base Index Numbers $\frac{quatity}{quantity\ in\ previous\ year} X\ 100$	TRUE or FALSE? A crude accident rate of 2.9 in 2013 compared to 3.7 in 2023 shows there were more accidents in 2023 FALSE	Target value = 500ft s.d. = 12ft Calculate the lower action 464

Score ___ / 9