Non-calculator Questions

Edexcel

1.

Jessie writes a report about the number of shoppers at the shopping centre.

She writes,

"Last week, we were only open for 6 days because of a bank holiday.
The mean number of shoppers was 21 thousand a day and the range was
19.5 thousand shoppers."

Jessie has this information about this week:

Day of the week	Shoppers this week (in thousands)
Monday	15.4
Tuesday	12.5
Wednesday	17.3
Thursday	19.8
Friday	26.2
Saturday	39.6
Sunday	31.6

Compare this week and last week using the means and the ranges.

[3 marks]

Your answer:

Calculator Questions

Edexcel

1.

Data set A has a median value of 3.1

Here is data set B.

14	−9	28	−38	−13	−2

(a) Write a statement to compare the median values of the two sets of data.

(2)

(b) Show a check of your answer for the median of data set B.

(1)

2.

Vera is a shop manager.

She has this information about the income in her shop for eight weeks this year.

Week	1	2	3	4	5	6	7	8
Income (thousands of £)	53.5	42.3	39.8	45.1	52.4	19.4	47.9	42.5

The median income for the same eight weeks last year was £49 300

Vera knows that the median income for these eight weeks has decreased this year compared to last year.

(a) Work out the percentage decrease of the median income.

Give your answer to 2 decimal places.

(4)

%

NCFE

3.

The manager of a small business claims that the mean salary in the company has gone up by over 10% in the last year.

One of the workers says that the gap between the highest and lowest earners has more than doubled.

Use this data about the company salaries to decide whether **each** of the statements is true. Show your working.

[5 marks]

Annual salaries (£s)						
Last year (12 employees)				This year (14 employees)		
15 275	42 122	15 679		15 500	33 775	17 995	34 065
20 000	25 344	25 879		21 339	20 112	24 995	23 115
85 682	15 998	53 245		157 250	40 631	45 888	
55 333	70 507	32 196		60 200	80 555	17 160	

Your answer:

4

Liam thinks he might watch either Rainbow Prism or The Infinity Zone.

He looks at the scores given by different newspapers.
The scores are out of 100

	Rainbow Prism	The Infinity Zone
Daily Times	75	75
London Post	63	68
City Observer	52	not scored
Newcastle Daily	38	50
Entertainment	70	74
Britain Today	83	65
This Week	60	79
Northern Gazette	41	40
Sunday Extra	52	63

Which of the two films would you suggest Liam watches next?
Use **two** appropriate statistical measures to explain your answer.

[3 marks]

Your answer:

5.

The range of sale prices of flats in building A is £25 900

The mean sale price of flats in building A is £201 850

The table shows the sale prices of six similar flats in building B.

£195 000	£207 500	£189 400	£191 800	£216 000	£209 540

Calculate **both** the range **and** mean of the sale prices for flats in building B.
Use these values to make **two** comparisons between the sale prices in the two
buildings.

[3 marks]

Your
answer:

City & Guilds

6.

A company has made some changes to the way its employees work.

The manager wants to know if these changes have made any difference to the number of days employees take off work because of illness.

She can't just compare the total days as there are fewer people working in each department after the changes.

She gives you this information about the employees in one department.

Number of days each employee took off sick in the year BEFORE the changes			
14	12	11	8
12	0	15	6
11	3	10	7
0	5	8	10
15	16	14	3

Number of days each employee took off sick in the year AFTER the changes		
12	0	2
11	3	7
14	10	10
3	8	9
8	4	4

Did the changes make any difference to the average number of days that employees took off sick?

Explain your findings to the manager. Show calculations to support your explanation.

Decision (yes/no) _____

Explanation and supporting calculations

(5 marks)

7.

A team manager wants to pick four people for a bowling competition.

She decides to pick players with consistently good average **(median)** scoring performances.

She picks the following three people.

Player	Average score (median) over last eight matches	Range of scores over last eight matches
Archie	105	26
Baz	101	37
Cathy	99	32

She needs one more player to make up the team.
She look at the scores of two more players.

Scores in last eight matches	
Dave	**Elaine**
78	87
48	98
102	101
98	84
86	93
101	79
67	87
96	97

Make suitable calculations for Dave and Elaine.
Decide which player best fits the requirements. Explain your decision using figures.

Player picked *(tick one box)* **Dave** ☐   **Elaine** ☐

Explanation and supporting calculations

(5 marks)

8.

A health club conducts a survey to compare the average number of hours of sleep of members.

Members report their results each week.

A woman takes part in this survey. She wears a fitness band, which records the number of hours she sleeps.

She wants to compare her own results week by week.

Last week she slept a mean time of 5 hours 19 minutes with a range of 4 hours 49 minutes.

This is the record for this week.

This week	Duration of sleep
Monday	8 hours 22 minutes
Tuesday	6 hours 49 minutes
Wednesday	5 hours 59 minutes
Thursday	5 hours 49 minutes
Friday	6 hours 44 minutes
Saturday	7 hours 16 minutes
Sunday	5 hours 55 minutes

What are the results that the woman reports to the health club?
What comparison can she make between her own results?
Make **two** comments using figures.

Show your working

Comment 1

Comment 2

(6 marks)

9.

a) Raheema is concerned about the environment and is looking for ways to be more eco-friendly.

Raheema is researching the use of solar panels for her house. She has found some information on the total number of sun hours per month where she lives for 2016 and 2017.

Total sun hours per month		
	2016	2017
January	21	47
February	75	61
March	112	119
April	147	128
May	206	214
June	143	108
July	112	144
August	146	126
September	105	94
October	97	56
November	64	6
December	21	

Average sun hours per month 2017	
Mean	94.5

Raheema thinks the total number of sun hours was higher in December 2017 than in December 2016. Is she correct? (3 marks)

Show your calculations and/or workings out here:

Write your answer in this box.

b) Which year had the greatest range of sun hours? (1 mark)

Show your calculations here:

Write your answer in this box.

c) To generate the maximum amount of electricity, a solar panel needs to face south and have a tilt angle of 30°. This will generate a maximum of 1.225kWh of electricity for each hour of sunshine. In June there were 108 hours of sunshine.

Raheema's roof faces south-west and has a tilt angle of 50°. To find out how much electricity her solar panel will produce, she needs to divide the maximum electricity that could be generated by a factor given in the table below.

Raheema usually pays £0.143 per kWh of electricity.

Tilt Angle	Facing South-west	Facing South	Facing South-east
60°	1.15	1.07	1.15
50°	1.09	1.03	1.08
40°	1.05	1.01	1.05
30°	1.04	1	1.04

How much would the electricity generated in June cost if she had to pay for it?

(3 marks)

Show your calculations and/or workings out here:

Write your answer in this box.

AQA

10.a)

Eve and Stefan each take part in a quiz every week.
They look at their scores in the first 12 weeks that the quiz takes place.

Here is a summary of the data for Eve.

Range	15
Mean	41.25

The frequency table shows the data for Stefan.

Score	Frequency
37	1
38	1
39	0
40	4
41	2
42	0
43	4

Stefan says,

        "My scores were more consistent."

Is he correct?
Give a reason for your answer.
You **must** show your working.

[2 marks]

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b)

Eve says,

"On average, my scores were higher."

Is she correct?
Give a reason for your answer.
You **must** show your working.

[4 marks]

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11.

Paul and Fran want to enter a 60 km cycle race.

They look at the reviews of two races, A and B, from last year.

Each review gives a score out of 5 stars to show how good the race was.

Here is some information about the review scores for **Race A**.

Mean	4.1 stars
Median	4 stars
Range	3 stars

The frequency table shows the review scores of **Race B**.

Review Score (stars)	Frequency
1	0
2	1
3	1
4	4
5	6

They enter the race with the higher average review score.

Which race do they enter?
You **must** show your working.

[4 marks]

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