



S13-30min Index Numbers: 30-minute Pack

EDEXCEL 1ST0 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** Four items, W, X, Y and Z, each have an index number for this year, all using the same base year (=100):

Item	Index number
W	104
X	96
Y	122
Z	100

- (a) Which item has stayed at exactly the same price as in the base year? (1)

.....

- (b) Which item is the only one to have decreased in price since the base year? (1)

.....

- (c) Which item has had the greatest percentage increase in price since the base year, (2)
and what is that percentage increase?

.....

(Total for Question 1 is 4 marks)

- 2** An allotment society uses 2015 as the base year for the annual rental fee of a standard plot.

Year	Rental fee (£)
2015 (base year)	40.00
2019	46.00
2023	52.00

- (a)** Show that the index number for the rental fee in 2019 is 115. (2)

- (b)** Work out the index number for the rental fee in 2023. (2)

-
- (c)** Write down which of the two years, 2019 or 2023, saw the bigger percentage increase in the rental fee since 2015. (1)

.....

(Total for Question 2 is 5 marks)

- 3** A film streaming service uses 2020 as the base year for its monthly subscription price.

Year	Subscription price (£)
2020 (base year)	6.00
2022	6.90
2023	7.50
2025	8.40

- (a) Calculate the index number for the subscription price in 2022. (2)

.....

- (b) Calculate the index number for the subscription price in 2023. (2)

.....

- (c) Calculate the index number for the subscription price in 2025. (2)

.....

- (d) Write down the first year shown in the table in which the subscription price index exceeded 120. (1)

.....

(Total for Question 3 is 7 marks)

4 Two market stalls, Stall A and Stall B, each use 2020 as the base year for the price of their most popular item. In 2024, Stall A's item had a price index number of 132, and Stall B's item had a price index number of 121.

(a) Write down which stall's item has increased in price by the greater percentage since 2020. **(1)**

.....
(b) Stall A's item cost £5.00 in 2020. Stall B's item cost £8.00 in 2020. Work out the price of each stall's item in 2024. **(4)**

.....
(c) State which stall's item is more expensive in 2024, and explain why this is not the stall identified in part (a). **(2)**

(Total for Question 4 is 7 marks)

- 5** The Retail Price Index (RPI) measures the average change in the prices of a range of goods and services bought by households. The table shows the RPI for three years, using 2018 as the base year.

Year	RPI (2018 = 100)
2018 (base year)	100
2022	115
2024	121

- (a) Write down what an RPI of 115 in 2022 tells you about average prices, compared with 2018. (1)

- (b) A charity gives a fixed £200 prize each year from 2018 to 2024, without increasing it in line with the RPI. Explain whether the £200 prize is worth more, or less, in real terms in 2024, compared with 2018. (2)

- (c) Work out how much the charity would need to give as the prize in 2024, if it wanted the prize to have kept pace with the RPI since 2018. (2)

(Total for Question 5 is 5 marks)

- 6** A school wants to track how the cost of hiring a coach for the annual Year 10 geography trip has changed over time, by building a simple price index. It plans to follow the statistical enquiry cycle.
- (a) (Plan) State one decision the school must make before it can build a fixed-base index for the coach hire cost. (1)
- (b) (Collect) The school could get one coach hire quote each year from a single company, or collect quotes from several companies each year and use the average. Give one reason why using the average of several companies' quotes gives a more reliable index. (1)
- (c) (Process) The school used 2019 as the base year, when the average coach hire quote was £360. In 2024, the average quote was £441. Calculate the index number for the coach hire cost in 2024. (2)
-
- (d) (Interpret) Interpret the index number found in part (c) in the context of the coach hire cost. (1)
- (e) (Evaluate) The school only tracked the coach hire cost, but the total cost of the trip also includes entry fees and food. Suggest one improvement the school could make to better track the overall cost of the whole trip using index numbers. (1)

(Total for Question 6 is 6 marks)

Mark scheme · S13-30min Index Numbers: 30-minute Pack

Question 1

- (a) **B1** Z cao
- (a) **Answer: Z**
- (b) **B1** X cao
- (b) **Answer: X**
- (c) **B1** Y
- (c) **B1** 22 (%) cao
- (c) **Answer: Y, 22%**

Question 2

- (a) **M1** 46.00/40.00, oe
- (a) **A1** 115 cso
- (a) **Answer: 115**
- (b) **M1** 52.00/40.00, oe
- (b) **A1** 130 cao
- (b) **Answer: 130**
- (c) **B1** 2023, ft from (b) (index 130 > index 115)
- (c) **Answer: 2023**

Question 3

- (a) **M1** 6.90/6.00, oe
- (a) **A1** 115 cao
- (a) **Answer: 115**
- (b) **M1** 7.50/6.00, oe
- (b) **A1** 125 cao
- (b) **Answer: 125**
- (c) **M1** 8.40/6.00, oe
- (c) **A1** 140 cao
- (c) **Answer: 140**
- (d) **B1** 2023 cao, ft from (a)-(c)
- (d) **Answer: 2023**

Question 4

- (a) **B1** Stall A cao
- (a) **Answer: Stall A**
- (b) **M1** 5.00 x 1.32, oe
- (b) **A1** 6.60 cao (Stall A)
- (b) **M1** 8.00 x 1.21, oe
- (b) **A1** 9.68 cao (Stall B)
- (b) **Answer: Stall A: £6.60; Stall B: £9.68**
- (c) **B1** Stall B, ft from (b) (£9.68 > £6.60)
- (c) **B1** because the percentage increase depends only on each stall's own starting (base) price, not on the size of that price; Stall B started from a higher base price, so even a smaller percentage rise still gives a higher final price, oe
- (c) **Answer: Stall B (£9.68), even though Stall A had the greater percentage increase, because percentage increase does not depend on the actual size of the starting price - Stall B started from a higher base price (£8.00 vs £5.00).**

Question 5

- (a) **B1** average prices were 15% higher in 2022 than in 2018, oe
- **(a) Answer: Average prices were 15% higher in 2022 than in 2018.**
- (b) **B1** worth less in real terms, oe
- (b) **B1** because the RPI rose from 100 to 121 (average prices up 21%) while the prize stayed at £200, so the fixed £200 buys fewer goods and services in 2024 than it did in 2018, oe
- **(b) Answer: Worth less in real terms: average prices rose by 21% (RPI 100 to 121) while the prize stayed fixed at £200, so it buys less in 2024 than it did in 2018.**
- (c) **M1** $200 \times (121/100)$, oe
- (c) **A1** 242 cao
- **(c) Answer: £242**

Question 6

- (a) **B1** which year to use as the base year, oe
- **(a) Answer: Which year to use as the base year.**
- (b) **B1** it reduces the effect of any one company's unusually high or low quote, giving a more typical/representative price each year, oe
- **(b) Answer: Using several companies' quotes reduces the effect of one company having an unusually high or low price, giving a more typical figure for each year.**
- (c) **M1** $441/360$, oe
- (c) **A1** 122.5 cao
- **(c) Answer: 122.5**
- (d) **B1** the average cost of hiring the coach has risen by 22.5% since 2019, ft from (c), oe
- **(d) Answer: The average cost of hiring the coach has risen by 22.5% since 2019.**
- (e) **B1** build a combined (weighted) index that includes coach hire, entry fees and food, rather than tracking coach hire alone, oe
- **(e) Answer: Build a combined index that includes coach hire, entry fees and food, rather than tracking the coach hire cost alone.**