



F06-30min Crude Rate and Rates of Change: 30-minute Pack

EDEXCEL 1ST0 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** A town has a population of 40,000 and recorded 320 deaths in a year. Work out the crude death rate.

(Total for Question 1 is 1 mark)

- 2** Write down one thing that the crude birth rate does NOT take into account about a population.

(Total for Question 2 is 1 mark)

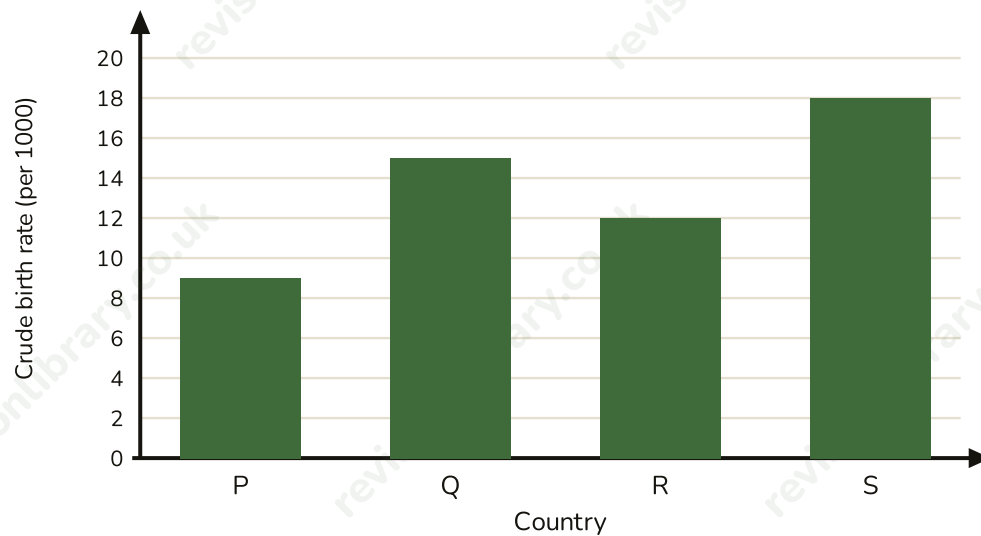
- 3** A shop's sales were £500 in one week and £550 the following week. Work out the percentage rate of change.

(Total for Question 3 is 1 mark)

- 4** A company's profit fell from £8,000 to £6,800. Work out the percentage decrease.

(Total for Question 4 is 1 mark)

- 5 The bar chart shows the crude birth rate (per 1000 population) for four countries, P, Q, R and S, in the same year.



- (a) Write down the crude birth rate of Country R. (1)

- (b) Write down which country has the lowest crude birth rate. (1)

- (c) Work out the difference between the highest and the lowest crude birth rates shown on the chart. (2)

(Total for Question 5 is 4 marks)

6 Oakfield has a population of 6,000 and recorded 90 live births last year. Ferndale has a population of 15,000 and recorded 165 live births in the same year.

(a) Calculate the crude birth rate for Oakfield. (1)

(b) Calculate the crude birth rate for Ferndale. (1)

(c) Ferndale recorded more live births than Oakfield (165 compared with 90). (2)
Explain why the crude birth rate still shows that Oakfield has relatively more births than Ferndale, and why comparing the raw number of births alone would be misleading.

(Total for Question 6 is 4 marks)

7 The national crude birth rate in the country of Bregland is 11 per 1000 population.

(a) Use the national crude birth rate to estimate the number of births expected in the town of Hartwell, which has a population of 32,000. (2)

(b) Give one reason why the actual number of births in Hartwell that year might not exactly match your estimate. (1)

(Total for Question 7 is 3 marks)

8 A cinema sold 2,400 tickets in January and 2,760 tickets in February. Calculate the percentage rate of change in ticket sales from January to February.

(Total for Question 8 is 3 marks)

9 A charity's number of volunteers fell from 240 to 204. Calculate the percentage decrease.

(Total for Question 9 is 2 marks)

10 Using 2019 as a base year (index = 100), a company's average weekly output was 800 units. In 2024, average weekly output was 920 units. Calculate the output index number for 2024.

(Total for Question 10 is 2 marks)

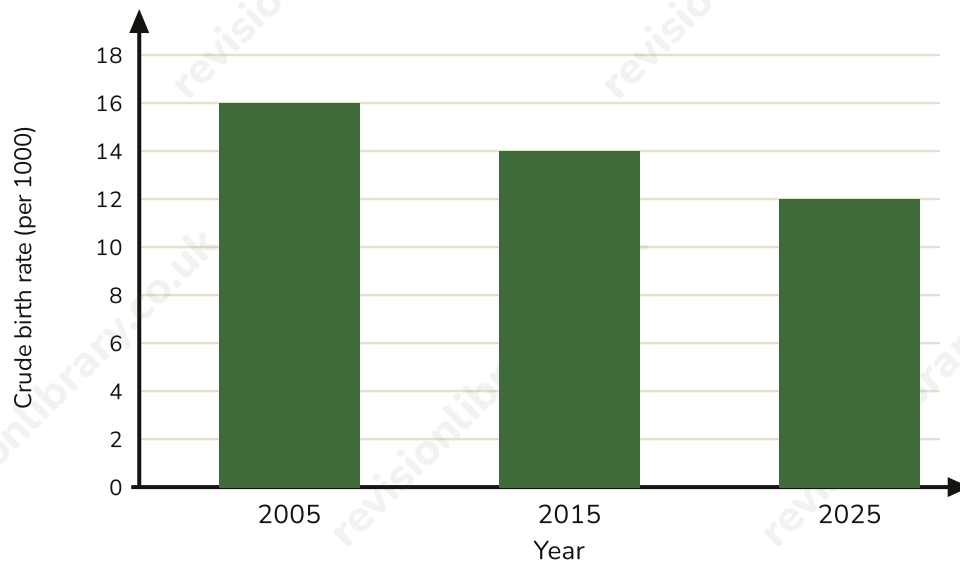
11 An index uses a base year value of 100. Write down what an index number of 130 means compared with the base year.

(Total for Question 11 is 1 mark)

12 A supermarket's weekly revenue rose from £12,000 to £13,800. Calculate the percentage increase.

(Total for Question 12 is 2 marks)

- 13** The bar chart shows the crude birth rate (per 1000 population) for the town of Elmsworth in 2005, 2015 and 2025.



- (a) Write down the crude birth rate in 2015. (1)
-
- (b) Calculate the percentage decrease in the crude birth rate from 2005 to 2025. (2)
-
- (c) Describe the trend in Elmsworth's crude birth rate shown by the chart. (1)
- (d) Give one possible reason for this trend. (1)

(Total for Question 13 is 5 marks)

Mark scheme · F06-30min Crude Rate and Rates of Change: 30-minute Pack

Question 1

- **B1** 8 (per 1000) cao
- **Answer: 8 per 1000**

Question 2

- **B1** the age structure (or gender structure) of the population, oe
- **Answer: The age (or gender) structure of the population.**

Question 3

- **B1** 10% increase cao
- **Answer: 10% increase**

Question 4

- **B1** 15% cao
- **Answer: 15% decrease**

Question 5

- (a) **B1** 12 cao
- (a) **Answer: 12 per 1000**
- (b) **B1** Country P cao
- (b) **Answer: Country P**
- (c) **M1** 18 - 9, oe
- (c) **A1** 9 cao
- (c) **Answer: 9 (per 1000)**

Question 6

- (a) **B1** 15 (per 1000) cao
- (a) **Answer: 15 per 1000**
- (b) **B1** 11 (per 1000) cao
- (b) **Answer: 11 per 1000**
- (c) **B1** identifies that Oakfield's rate (15) is higher than Ferndale's rate (11), even though Oakfield had fewer raw births
- (c) **B1** explains that a rate adjusts for population size so it allows a fair comparison, whereas the raw count is affected by Ferndale simply having a much larger population, oe
- (c) **Answer: Oakfield's crude birth rate (15 per 1000) is higher than Ferndale's (11 per 1000) because Oakfield's births are compared with a much smaller population. Comparing raw counts alone would be misleading, since Ferndale's larger population makes its birth count look bigger even though proportionally fewer people are having babies.**

Question 7

- (a) **M1** $(32000 / 1000) \times 11$, oe
- (a) **A1** 352 cao
- (a) **Answer: 352 births**
- (b) **B1** any valid reason, e.g. Hartwell's age or gender structure may differ from the national average, or the birth rate can vary from year to year or place to place, oe
- (b) **Answer: Hartwell's population may have a different age or gender structure from the national average, so its actual birth rate could differ from the national figure.**

Question 8

- **M1** $2760 - 2400 (= 360)$, oe
- **M1** $360 / 2400$, oe
- **A1** 15% cao
- **Answer: 15% increase**

Question 9

- **M1** $(240 - 204) / 240$, oe
- **A1** 15% cao
- **Answer: 15% decrease**

Question 10

- **M1** $(920 / 800) \times 100$, oe
- **A1** 115 cao
- **Answer: 115**

Question 11

- **B1** 30% higher than the base year value, oe
- **Answer: 30% higher than the base year value.**

Question 12

- **M1** $(13800 - 12000) / 12000$, oe
- **A1** 15% cao
- **Answer: 15% increase**

Question 13

- (a) **B1** 14 cao
- (a) **Answer: 14 per 1000**
- (b) **M1** $(16 - 12) / 16$, oe
- (b) **A1** 25% cao
- (b) **Answer: 25% decrease**
- (c) **B1** the crude birth rate has steadily decreased/fallen from 2005 to 2025, oe
- (c) **Answer: Elmsworth's crude birth rate has steadily decreased between 2005 and 2025.**
- (d) **B1** any sensible reason, e.g. people choosing to have fewer children, an ageing population, young people moving away, oe
- (d) **Answer: People in Elmsworth may be choosing to have fewer children than in the past.**