HIGHER

6.2 Crude and Standardised Rates: 1-hour Pack

Total Marks

EDEXCEL 1ST0 · Calculator allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A health authority applies local age-specific death rates (per 1000) to a standard population.

Age group	Local rate per 1000	Standard population
under 30	4	40000
30 to 59	20	50000
60 and over	57	30000

(a) Work out the expected number of deaths in each age group in the standard population.

(b) Work out the standardised death rate per 1000, to 2 decimal places if needed.

(Total for Question 1 is 4 marks)

© Revision Library | revisionlibrary.co.uk

2 A health authority applies local age-specific death rates (per 1000) to a standard population.

Age group	Local rate per 1000	Standard population
under 30	3	50000
30 to 59	16	40000
60 and over	21	30000

(a) Work out the expected number of deaths in each age group in the standard population.
(b) Work out the standardised death rate per 1000, to 2 decimal places if needed.

(Total for Question 2 is 4 marks)

---

3 A random sample of 80 students in a school was taken. 6 of them walk to work. There are 5000 students in the school altogether. Estimate the number of students in the school who walk to work. Give your answer to the nearest whole number.

(Total for Question 3 is 3 marks)

© Revision Library | revisionlibrary.co.uk

4 A health authority applies local age-specific death rates (per 1000) to a standard population.

Age group	Local rate per 1000	Standard population
under 30	5	30000
30 to 59	6	50000
60 and over	56	20000

(a) Work out the expected number of deaths in each age group in the standard population.
(b) Work out the standardised death rate per 1000, to 2 decimal places if needed.

(Total for Question 4 is 4 marks)

---

5 A rate was 188 per 100 000 people in 2015 and 748 per 100 000 in 2019.
(a) Work out the percentage change in the rate, to 1 decimal place if needed.
(b) Work out the mean change in the rate per year.

(Total for Question 5 is 4 marks)

---

6 Two surveys estimate the proportion of members of a gym who cycle. Survey A: 19 of 25 cycle. Survey B: 80 of 100 cycle.
(a) Work out the proportion who cycle in each survey as a percentage, to 1 decimal place if needed.
(b) Which survey is likely to give the more reliable estimate, and why?

(Total for Question 6 is 4 marks)

© Revision Library | revisionlibrary.co.uk

7 A health authority applies local age-specific death rates (per 1000) to a standard population.

Age group	Local rate per 1000	Standard population
under 30	2	40000
30 to 59	9	60000
60 and over	58	20000

(a) Work out the expected number of deaths in each age group in the standard population.
(b) Work out the standardised death rate per 1000, to 2 decimal places if needed.

(Total for Question 7 is 4 marks)

---

8 A rate was 278 per 100 000 people in 2011 and 634 per 100 000 in 2019.
(a) Work out the percentage change in the rate, to 1 decimal place if needed.
(b) Work out the mean change in the rate per year.

(Total for Question 8 is 4 marks)

---

9 A random sample of 200 residents of a town was taken. 58 of them have a library card. There are 3000 residents of the town altogether. Estimate the number of residents of the town who have a library card. Give your answer to the nearest whole number.

(Total for Question 9 is 3 marks)

© Revision Library | revisionlibrary.co.uk

10 A rate was 880 per 100 000 people in 2010 and 110 per 100 000 in 2020.

(a) Work out the percentage change in the rate, to 1 decimal place if needed.

(b) Work out the mean change in the rate per year.

(Total for Question 10 is 4 marks)

---

11 A health authority applies local age-specific death rates (per 1000) to a standard population.

Age group	Local rate per 1000	Standard population
under 30	2	30000
30 to 59	18	60000
60 and over	60	10000

(a) Work out the expected number of deaths in each age group in the standard population.

(b) Work out the standardised death rate per 1000, to 2 decimal places if needed.

(Total for Question 11 is 4 marks)

---

12 A rate was 821 per 100 000 people in 2014 and 239 per 100 000 in 2020.

(a) Work out the percentage change in the rate, to 1 decimal place if needed.

(b) Work out the mean change in the rate per year.

(Total for Question 12 is 4 marks)

© Revision Library | revisionlibrary.co.uk

13 A health authority applies local age-specific death rates (per 1000) to a standard population.

Age group	Local rate per 1000	Standard population
under 30	6	50000
30 to 59	20	50000
60 and over	25	30000

(a) Work out the expected number of deaths in each age group in the standard population.
(b) Work out the standardised death rate per 1000, to 2 decimal places if needed.

(Total for Question 13 is 4 marks)

---

14 A random sample of 100 residents of a town was taken. 34 of them use a bike. There are 1200 residents of the town altogether. Estimate the number of residents of the town who use a bike. Give your answer to the nearest whole number.

(Total for Question 14 is 3 marks)

---

15 In one year, Town A (population 40000) had 477 road accidents and Town C (population 40000) had 542 road accidents.
(a) Work out the crude rate per 1000 for each place, to 2 decimal places if needed.
(b) Which place has the higher rate?

(Total for Question 15 is 4 marks)

© Revision Library | revisionlibrary.co.uk

Mark scheme · 6.2 Crude and Standardised Rates: 1-hour Pack

Question 1

rate x standard population / 1000	**M1**
expected deaths 160, 1000, 1710	**A1**
total expected deaths divided by 120000, x 1000	**M1**
23.92 cao	**A1**

Answer: (a) 160, 1000, 1710; (b) 23.92

Question 2

rate x standard population / 1000	**M1**
expected deaths 150, 640, 630	**A1**
total expected deaths divided by 120000, x 1000	**M1**
11.83 cao	**A1**

Answer: (a) 150, 640, 630; (b) 11.83

Question 3

6/80	**M1**
3/40 x 5000	**M1**
375 cao	**A1**

Answer: 375

Question 4

rate x standard population / 1000	**M1**
expected deaths 150, 300, 1120	**A1**
total expected deaths divided by 100000, x 1000	**M1**
15.7 cao	**A1**

Answer: (a) 150, 300, 1120; (b) 15.7

Question 5

(748 - 188) / 188 x 100	**M1**
297.9% cao	**A1**
(748 - 188) / 4	**M1**
140 cao	**A1**

Answer: (a) 297.9%; (b) 140 per year

Question 6

19/25 x 100 or 80/100 x 100	**M1**
76% and 80% cao	**A1**
Survey B	**B1**
it has a larger sample (100 compared with 25)	**B1**

Answer: (a) 76% and 80%; (b) Survey B, larger sample

Question 7

rate x standard population / 1000	**M1**
expected deaths 80, 540, 1160	**A1**
total expected deaths divided by 120000, x 1000	**M1**
14.83 cao	**A1**

Answer: (a) 80, 540, 1160; (b) 14.83

Question 8

(634 - 278) / 278 x 100	**M1**
128.1% cao	**A1**
(634 - 278) / 8	**M1**
44.5 cao	**A1**

Answer: (a) 128.1%; (b) 44.5 per year

Question 9

58/200	**M1**
29/100 x 3000	**M1**
870 cao	**A1**

Answer: 870

Question 10

(110 - 880) / 880 x 100	**M1**
-87.5% cao	**A1**
(110 - 880) / 10	**M1**
-77 cao	**A1**

Answer: (a) -87.5%; (b) -77 per year

Question 11

rate x standard population / 1000	**M1**
expected deaths 60, 1080, 600	**A1**
total expected deaths divided by 100000, x 1000	**M1**
17.4 cao	**A1**

Answer: (a) 60, 1080, 600; (b) 17.4

Question 12

(239 - 821) / 821 x 100	**M1**
-70.9% cao	**A1**
(239 - 821) / 6	**M1**
-97 cao	**A1**

Answer: (a) -70.9%; (b) -97 per year

Question 13

rate x standard population / 1000	**M1**
expected deaths 300, 1000, 750	**A1**
total expected deaths divided by 130000, x 1000	**M1**
15.77 cao	**A1**

Answer: (a) 300, 1000, 750; (b) 15.77

Question 14

34/100	**M1**
17/50 x 1200	**M1**
408 cao	**A1**

Answer: 408

Question 15

477 / 40000 x 1000	**M1**
11.93 cao	**A1**
13.55 cao	**A1**
Town C	**B1**

Answer: (a) 11.93 and 13.55; (b) Town C

© Revision Library | revisionlibrary.co.uk