

# 2021 VCE Further Mathematics 2 (NHT) examination report

## Specific information

This report provides sample answers or an indication of what answers may have included. Unless otherwise stated, these are not intended to be exemplary or complete responses.

### Section A – Core

#### Data analysis

##### Question 1a.

Correct answer: age and time

##### Question 1b.

3 (name, event, gender)

##### Question 1ci.

28:13

##### Question 1cii.

Event	Gender	
	Female	Male
12 km run	4	4
6 km run	3	2
Total	7	6

##### Question 1di.

60%

##### Question 1dii.

A statement that clearly indicates the contention is supported with a change or difference in one category of *event* was required for the first mark. For the second mark a statement similar to the following (choosing one category) using appropriate percentages was required:

- The percentage of females who participated in the 12km walk (34%) was higher than the percentage of males who participated in that event (16%).

### Question 2a.

The correct answer was symmetric with two outliers.

### Question 2b.

The correct answer was 4.

### Question 2c.

The correct answer was 58.

### Question 2di.

$$\text{Lower fence} = 24 - 1.5 \times 11 = 7.5$$

$$\text{Upper fence} = 35 + 1.5 \times 11 = 51.5$$

### Question 2dii.

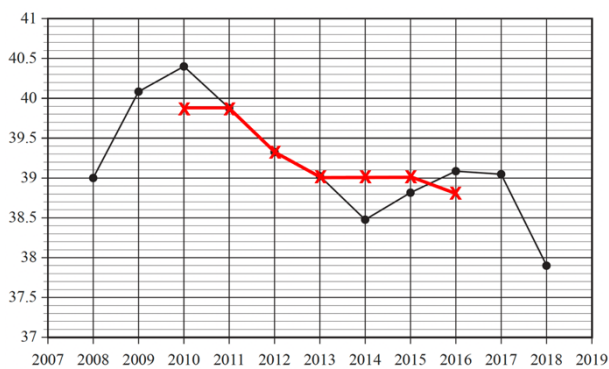
The correct answer was:

$$7.5 < 10 < 51.5$$

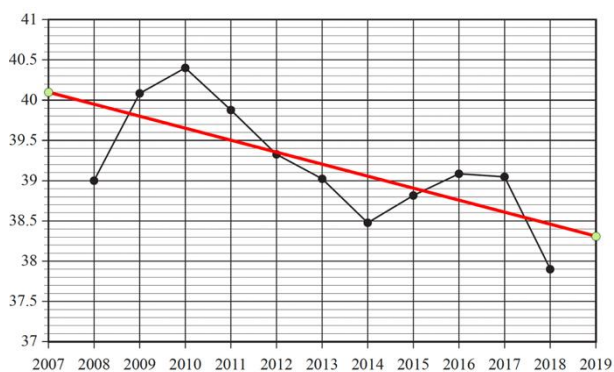
### Question 3a.

The correct answer was 2010.

### Question 3b.



### Question 3c.i.



### Question 3cii.

The correct answer was 0.15 minutes.

### Question 3ciii.

The correct answer was 52.39%.

### Question 3civ.

The correct answer was  $-0.56$ .

### Question 4a.

The correct answer was 2.94 minutes.

### Question 4bi.

The correct answer was 2036.

### Question 4bii.

The correct answer was 7 seconds.

### Question 4biii.

A similar decreasing trend continues beyond 2018.

## Recursion and financial modelling

### Question 5a.

The correct answer was \$240 000.

### Question 5b.

The correct answer was  $\frac{800}{240000} \times 12 \times 100\%$

### Question 5c.

792.98

707.02

237 185.98

### Question 6a.

$$V_1 = 120\,000 - 10\,920 = 109\,080$$

$$V_2 = 109\,080 - 10\,920 = 98\,160$$

### Question 6b.

The correct answer was 60.

### Question 6c.

The correct answer was 9.1%.

### Question 7a.

The correct answer was Year 1.

### Question 7b.

The correct answer was 219.

### Question 7c.

Yes, as balance after five years of \$99759.42 is less than \$100 000

### Question 8

$$V_0 = 600\,000 \quad V_{n+1} = 1.0095V_n - 5700$$

## Section B – Modules

### Module 1 – Matrices

#### Question 1a.

The correct answer was  $3 \times 1$ .

#### Question 1bi.

$$\begin{bmatrix} 60 & 132 & 48 \\ 65 & 143 & 52 \\ 75 & 165 & 60 \end{bmatrix}$$

#### Question 1bii.

The number of Year 9 students awarded a credit in English.

#### Question 1c.

$$[60 \ 65 \ 75] \times \begin{bmatrix} 0.25 \\ 0.28 \\ 0.30 \end{bmatrix}$$

OR

$$[0.25 \ 0.28 \ 0.30] \times \begin{bmatrix} 60 \\ 65 \\ 75 \end{bmatrix}$$

#### Question 2a.

The correct answer was Amy and Ellie.

#### Question 2b.

The correct answer was:

Cleo → Ellie → Brian → Amy

#### Question 3a.

The correct answer: 29% of students obtaining a credit this year are expected to obtain a distinction next year.

#### Question 3b.

$$1 - 0.29 - 0.09 = 0.62$$

### Question 3c.i.

The correct answer was 0.02.

### Question 3cii.

The correct answer was 87.

### Question 4.

The correct answer was 26.

## Module 2 – Networks and decision mathematics

### Question 1a.

The correct answer was 3.

### Question 1b.

The correct answer was 55 km.

### Question 1c.

The correct answer was loop.

### Question 1d.

	<i>home</i>	<i>P</i>	<i>Q</i>	<i>R</i>	<i>S</i>	<i>airport</i>
<i>home</i>	0	1	0	0	1	0
<i>P</i>	1	0	1	1	0	0
<i>Q</i>	0	1	0	1	0	1

### Question 2a.

The correct answer was 6.

### Question 2b.

The correct answer was 54.

### Question 2c.

The correct answer was 47.

### Question 2d.

The correct answer was Hong Kong and London.

### Question 3a.

The correct answer was 4.

### Question 3b.

**B**

**5**

### Question 3c.

The correct answer was 4.

### Question 3d.

Reduced by one week

## Module 3 – Geometry and measurement

### Question 1a.

The correct answer was 69 metres.

### Question 1b.

$$\text{Length} = \sqrt{23^2 - 11.5^2}$$

### Question 1c.

The correct answer was  $229 \text{ m}^2$ .

### Question 1d.

The correct answer was  $24\,429 \text{ cm}^3$ .

### Question 1e.

The correct answer was 20 cm.

### Question 2a.

$$h = \frac{1244}{\rho \cdot 6^2}$$

### Question 2b.

The correct answer was  $933 \text{ cm}^3$ .

### Question 2c.

The correct answer was  $254.5 \text{ cm}^2$ .

### Question 3a.

$$\tan \vartheta = \frac{918}{1310} \rightarrow \vartheta = 35^\circ \text{ to the nearest degree}$$

$$\text{Bearing} = 270^\circ - 35^\circ = 235^\circ$$

### Question 3b.

The correct answer was 657 km.

## Module 4 – Graphs and relations

### Question 1a.

The correct answer was 55 m.

### Question 1b.

The correct answer was 6 km.

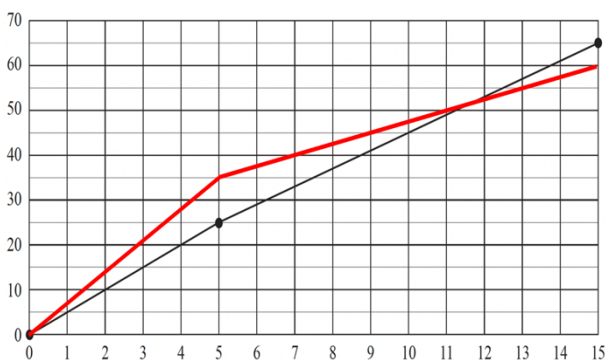
### Question 1ci.

$$\frac{175 - 150}{5 - 3} = 12.5$$

### Question 1cii.

The correct answer was m / km.

### Question 2a.





### Question 2bi.

$$a = \frac{60 - 35}{15 - 5} = 2.5$$

### Question 2bii.

$$b = 35 - 2.5 \times 5 = 22.5$$

### Question 2c.

The correct answer was 12 km/h.

### Question 2d.

The correct answer was 51 minutes 40 seconds.

### Question 3a.

$$x \text{ £ } 10000$$

### Question 3b.

The correct answer was \$46 800.

### Question 3c.

The correct answer was \$12 500.