Additional Assessment Materials
Summer 2021

Pearson Edexcel

GCSE (9-1) in Mathematics 1MA1 Higher (Calculator) (Public release version)

Topic 3: Probability & Statistics (Test 2)

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Additional Assessment Materials, Summer 2021

General guidance to Additional Assessment Materials for use in 2021

Context

- Additional Assessment Materials are being produced for GCSE, AS and A levels (with the exception of Art and Design).
- The Additional Assessment Materials presented in this booklet are an optional part of the range of evidence teachers may use when deciding on a candidate's grade.
- 2021 Additional Assessment Materials have been drawn from previous examination materials, namely past papers.
- Additional Assessment Materials have come from past papers both published (those materials available publicly) and unpublished (those currently under padlock to our centres) presented in a different format to allow teachers to adapt them for use with candidate.

Purpose

- The purpose of this resource to provide qualification-specific sets/groups of questions covering the knowledge, skills and understanding relevant to this Pearson qualification.
- This document should be used in conjunction with the mapping guidance which will map content and/or skills covered within each set of questions.
- These materials are only intended to support the summer 2021 series.

1 The table shows the probabilities that a biased dice will land on 2, on 3, on 4, on 5 and on 6

Number on dice	**1**	**2**	**3**	**4**	**5**	**6**
Probability		0.17	0.18	0.09	0.15	0.1

Neymar rolls the biased dice 200 times.
Work out an estimate for the total number of times the dice will land on 1 or on 3

…..……..

(Total for Question 1 is 3 marks)

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2 There are only blue cubes, red cubes and yellow cubes in a box.

The table shows the probability of taking at random a blue cube from the box.

Colour	blue	red	yellow
Probability	0.2		

The number of red cubes in the box is the same as the number of yellow cubes in the box.

(a) Complete the table.

(2)

There are 12 blue cubes in the box.

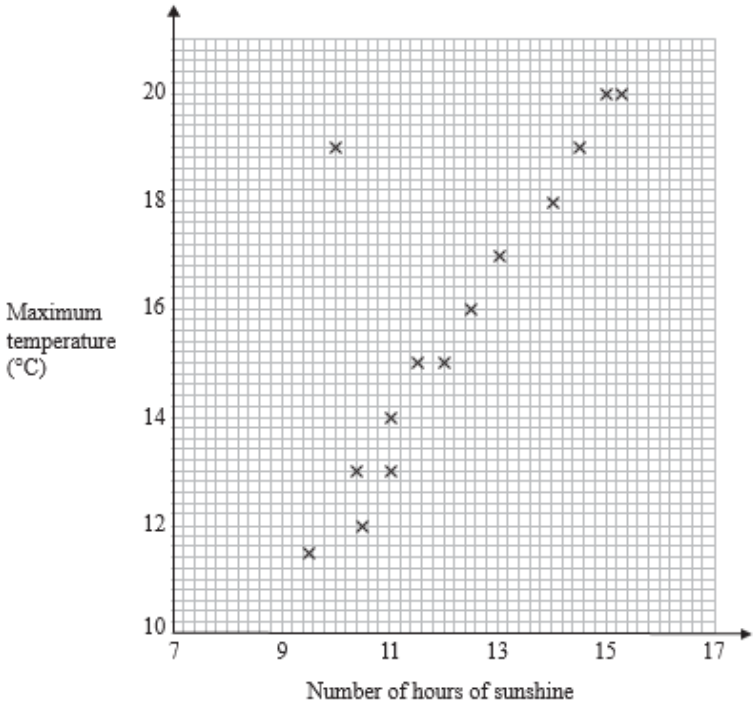
(b) Work out the total number of cubes in the box.

…….....

(2)

(Total for Question 2 is 4 marks)

3 The scatter graph shows the maximum temperature and the number of hours of sunshine in fourteen British towns on one day.



(a) One of the points is an outlier.

Write down the coordinates of this point

(..... , ...)

(1)

.....

(1)

On the same day, in another British town, the maximum temperature was 16.4 °C.

(b) Estimate the number of hours of sunshine in this town on this day

…… hours

(2)

A weatherman says,

"Temperatures are higher on days when there is more sunshine."

(c) Does the scatter graph support what the weatherman says?

Give a reason for your answer.

.....

.....

(2)

(Total for Question 3 is 5 marks)

4 The table shows information about the weekly earnings of 20 people who work in a shop.

Weekly earnings (£x)	**Frequency**
$150 < x \leqslant 250$	1
$250 < x \leqslant 350$	11
$350 < x \leqslant 450$	5
$450 < x \leqslant 550$	0
$550 < x \leqslant 650$	3

(a) Work out an estimate for the mean of the weekly earnings.

£.....

(3)

Nadiya says,

"The mean may **not** be the best average to use to represent this information."

(b) Do you agree with Nadiya?
You must justify your answer.

.....

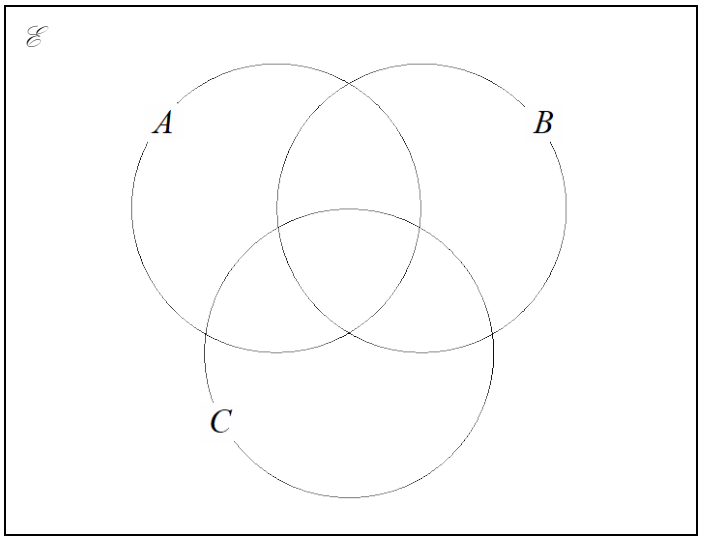
.....

(1)

(Total for Question 4 is 4 marks)

5 $\mathscr{E}$ = {even numbers between 1 and 25}
A = {2, 8, 10, 14}
B = {6, 8, 20}
C = {8, 18, 20, 22}

(a) Complete the Venn diagram for this information.



(4)

A number is chosen at random from $\mathscr{E}$.

(b) Find the probability that the number is a member of $A \cap B$.

.....

(2)

(Total for Question 5 is 6 marks)

6 The table shows information about the heights of 80 children.

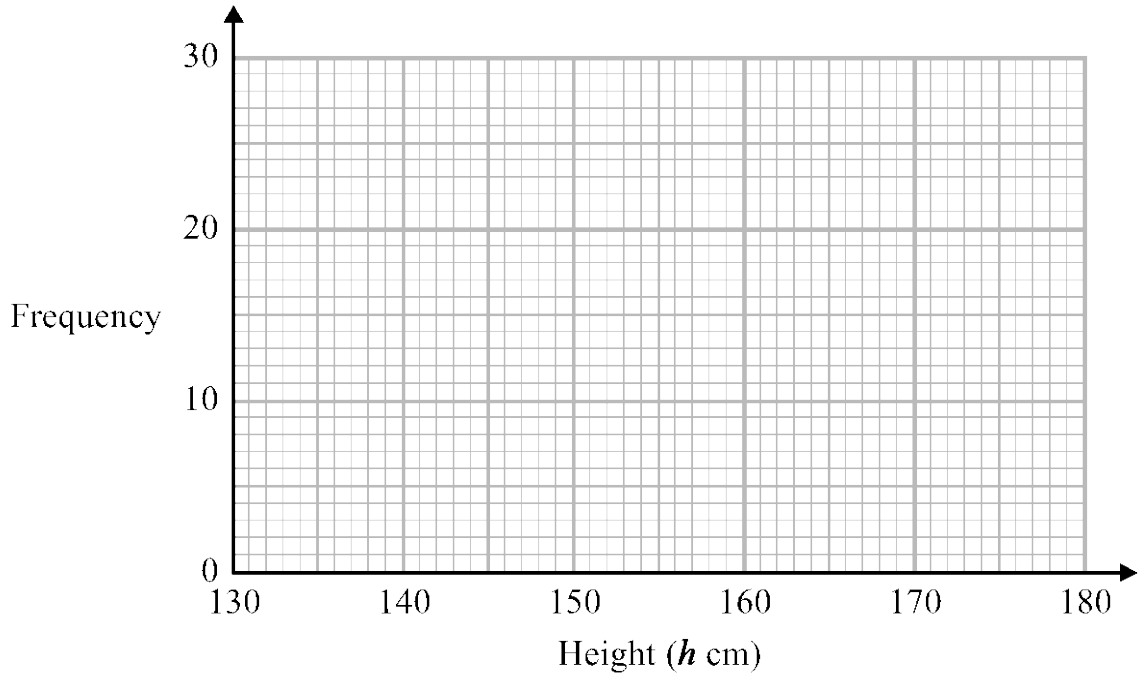
Height (h cm)	**Frequency**
$130 < h \leqslant 140$	4
$140 < h \leqslant 150$	11
$150 < h \leqslant 160$	24
$160 < h \leqslant 170$	22
$170 < h \leqslant 180$	19

(a) Find the class interval that contains the median.

.....

(1)

(b) Draw a frequency polygon for the information in the table.



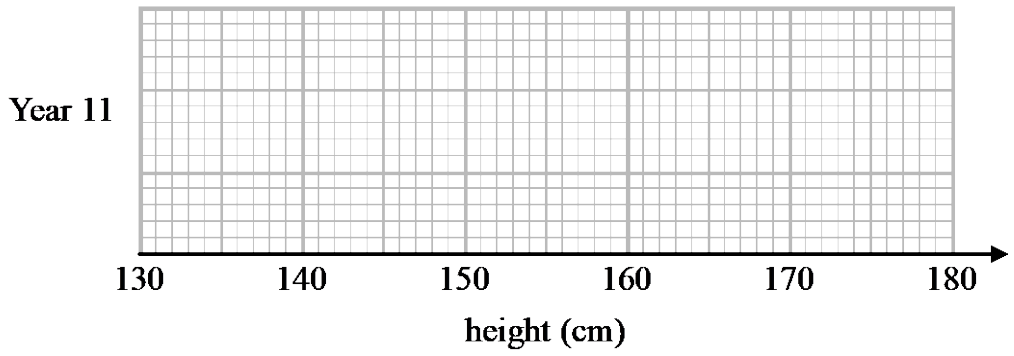
(2)

(Total for Question 6 is 3 marks)

7 The table shows information about the heights, in cm, of a group of Year 11 girls.

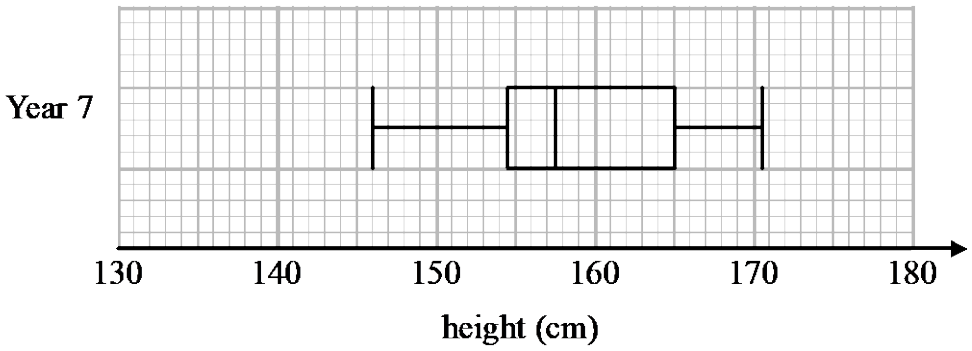
	height (cm)
least height	154
median	165
lower quartile	161
interquartile range	7
range	20

(*a*) Draw a box plot for this information.



(3)

The box plot below shows information about the heights, in cm, of a group of Year 7 girls.



(b) Compare the distribution of heights of the Year 7 girls with the distribution of heights of the Year 11 girls.

……

……

……

……

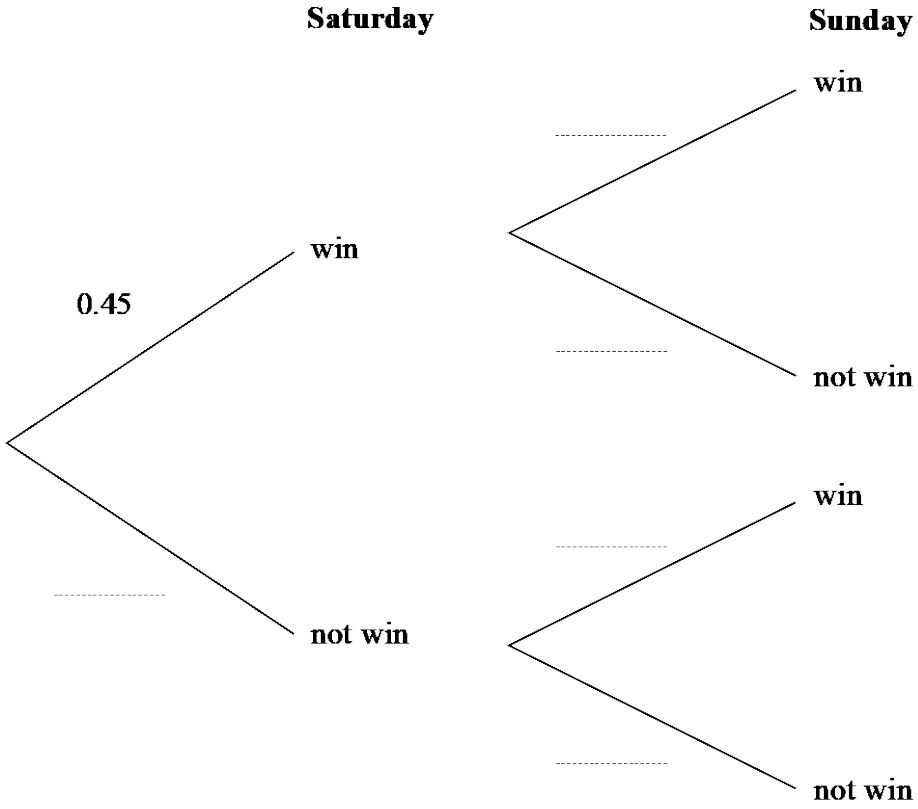
(2)

(Total for Question 7 is 5 marks)

8 A darts team is going to play a match on Saturday and on Sunday.
The probability that the team will win on Saturday is 0.45

If they win on Saturday, the probability that they will win on Sunday is 0.67
If they do **not** win on Saturday, the probability that they will win on Sunday is 0.35

(*a*) Complete the probability tree diagram.



(2)

(*b*) Find the probability that the team will win exactly one of the two matches.

.....

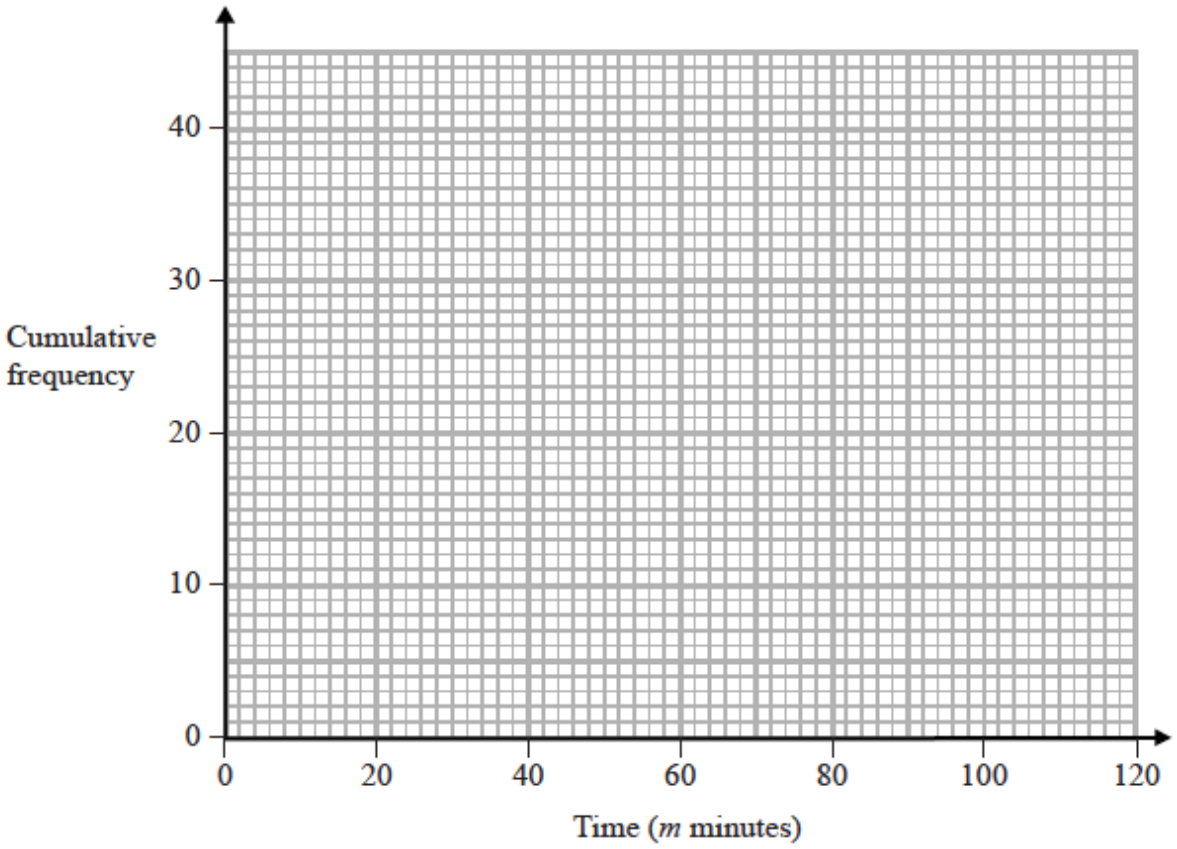
(3)

(Total for Question 8 is 5 marks)

9 The cumulative frequency table shows information about the times, in minutes, taken by 40 people to complete a puzzle.

Time (m minutes)	Cumulative frequency
$20 < m \leqslant 40$	5
$20 < m \leqslant 60$	25
$20 < m \leqslant 80$	35
$20 < m \leqslant 100$	38
$20 < m \leqslant 120$	40

(a) On the grid below, draw a cumulative frequency graph for this information.



(2

(b) Use your graph to find an estimate for the interquartile range.

..... minutes

(2)

One of the 40 people is chosen at random.

(*c*) Use your graph to find an estimate for the probability that this person took between 50 minutes and 90 minutes to complete the puzzle.

.....

(2)

(Total for Question 9 is 6 marks)

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10 There are only *r* red counters and *g* green counters in a bag.
A counter is taken at random from the bag.

The probability that the counter is green is $\frac{3}{7}$

The counter is put back in the bag.

2 more red counters and 3 more green counters are put in the bag.
A counter is taken at random from the bag.

The probability that the counter is green is $\frac{6}{13}$

Find the number of red counters and the number of green counters that were in the bag originally.

red counters.....

green counters.....

(Total for Question 10 is 4 marks)

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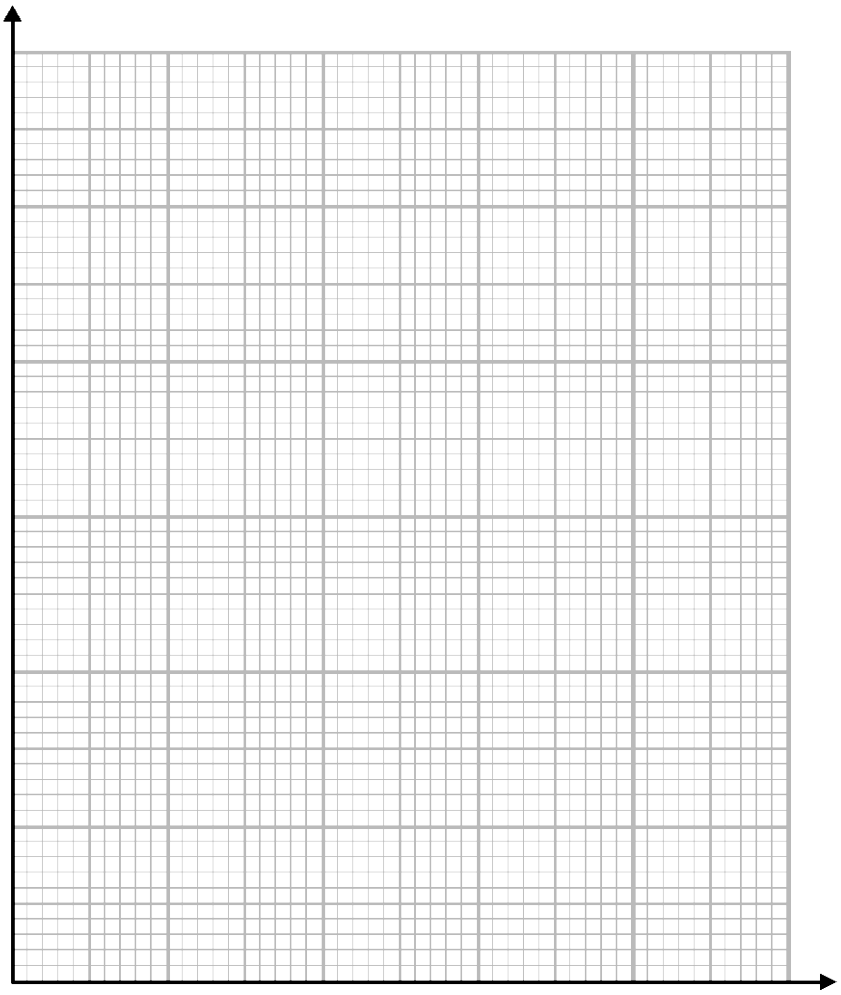
11 The table gives information about the heights of 150 students.

Height (h cm)	**Frequency**
$140 < h \leqslant 150$	15
$150 < h \leqslant 155$	30
$155 < h \leqslant 160$	51
$160 < h \leqslant 165$	36
$165 < h \leqslant 180$	18

(*a*) On the grid, draw a histogram for this information.



(3)

(c) Work out an estimate for the fraction of the students who have a height between 150 cm and 170 cm.

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(2)

(Total for Question 11 is 5 marks)

TOTAL FOR PAPER IS 51 MARKS