Additional Assessment Materials
Summer 2021

Pearson Edexcel

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

Topic 3: Probability & Statistics (Test 1)

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Additional Assessment Materials, Summer 2021

General guidance to Additional Assessment Materials for use in 2021

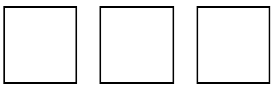
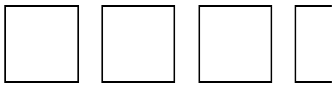
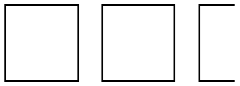
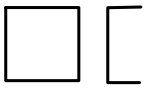
Context

- 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- Additional Assessment Materials have come from past papers both published (those materials available publicly) and unpublished (those currently under padlock to our centres) presented in a different format to allow teachers to adapt them for use with candidate.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 pictogram shows information about the number of pictures sold in an art shop in each of January, February and March.

January	
February	
March	
April	

Key:

 represents 8 pictures

(*a*) Write down the number of pictures sold in January.

24

(1)

12 pictures were sold in April.

(*b*) Show this information on the pictogram.

(1)

(*c*) What was the total number of pictures sold in these four months?

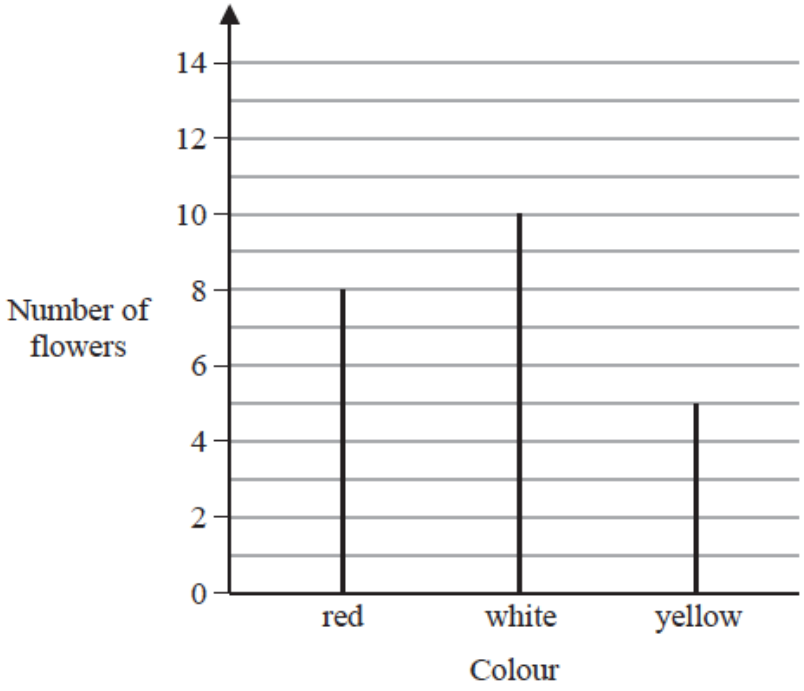
84

(2)

(Total for Question 1 is 4 marks)

2 In Adam's garden, the flowers are only red or white or yellow or blue.

The chart shows the number of red flowers, the number of white flowers and the number of yellow flowers.



The total number of flowers is 30

(*a*) Work out the number of blue flowers.

$30 - (8 + 10 + 5) = 7$

7

(2)

(*b*) Write down the mode.

white

(1)

(Total for Question 2 is 3 marks)

3 Here is a list of numbers.

6 4 8 9 4 3

(*a*) Work out the median.

3, 4, 4, 6, 8, 9

$\frac{4+6}{2} = 5$

5

(2)

Aisha picks at random one of the numbers.

(*b*) What is the probability that she picks an odd number?

$\frac{2}{6} = \frac{1}{3}$

$\frac{1}{3}$

(2)

Clara has five cards.
There is a number on each card.
Two of the numbers are hidden.

3	?	8	5	?

The mode of the five numbers is 3 = two number 3s
The mean of the five numbers is 5 mean = total ÷ n

$5 = \frac{3+?+8+5+?}{5}$

$\Rightarrow 25 = 16 + ? + ?$

$? + ? = 9$

$3 + 6 = 9$

(*c*) Work out the two numbers that are hidden.

$\Rightarrow$ 3 , 6

(3)

(Total for Question 3 is 6 marks)

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4 The probability that a new fridge has a fault is 0.015.

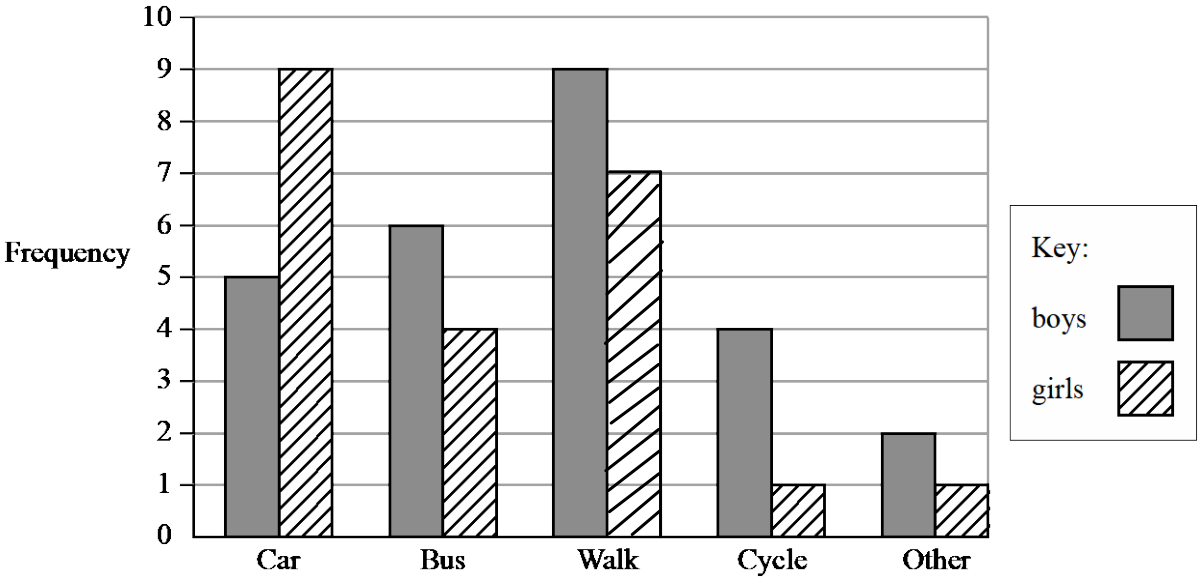
What is the probability that a new fridge does **not** have a fault?

$1 - 0.015 = 0.985$

0.985

(Total for Question 4 is 1 mark)

5 A teacher asks the students in Year 6 what type of transport they use to get to school.
The dual bar chart shows some of the results.



(*a*) What is the most popular type of transport used by the boys?

walk

(1)

7 girls walk to school.

(*b*) Show this information on the dual bar chart.

(1)

More of the students get to school by car than by bus.

(*c*) How many more?

5 more girls but one less boy → 4 more

(1)

The number of students in Year 5 is the same as the number of students in Year 6.

(*d*) What is the total number of students in Years 5 and 6?

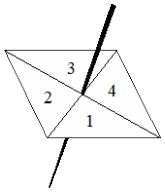
48 in year 6 → 48 + 48 = 96

96

(2)

(Total for Question 5 is 5 marks)

6 Here is a 4-sided spinner.



The table shows the probabilities that when the spinner is spun it will land on 1, on 3 and on 4

Number	1	2	3	4
Probability	0.2		0.4	0.1

The spinner is spun once.

(*a*) Work out the probability that the spinner will land on 2

$1-(0.2+0.4+0.1)=1-0.7=0.3$

0.3

(1)

(*b*) Which number is the spinner least likely to land on?

4

(1)

Jake is going to spin the spinner 60 times.

(*c*) Work out an estimate for the number of times the spinner will land on 1

$0.2 \times 60 = 12$

12

(2)

(Total for Question 6 is 4 marks)

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7 The stem and leaf diagram below gives information about the ages of people in a social club.

3	1	4	5			
4	0	2	2	5	6	
5	0	1	7	7	8	9
6	3	4	5	9		
7	0	4				

Key: 4|2 represents 42 years

$74-31=43$

Find the range of these ages.

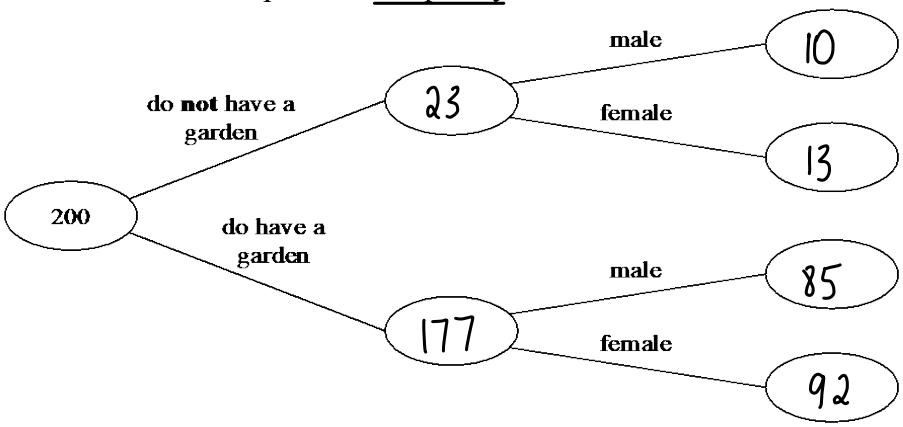
43 years

(Total for Question 7 is 2 marks)

8 200 people live in a village.

23 people do **not** have a garden.
10 males do **not** have a garden.
95 people are male.

(*a*) Use this information to complete the frequency tree.



(3)

One of the people who does **not** have a garden is chosen at random.

(*b*) Write down the probability that this person is female.

$\frac{13}{23}$

$\frac{13}{23}$

(2)

(Total for Question 8 is 5 marks)

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9 The table shows information about the numbers of points scored by 30 students in a quiz.

Number of points	Frequency	no. × f
0	4	0
1	3	3
2	7	14
3	5	15
4	6	24
5	5	25

(*a*) Find the modal number of points.

2 points

(1)

(*b*) Work out the total number of points scored.

81

(2)

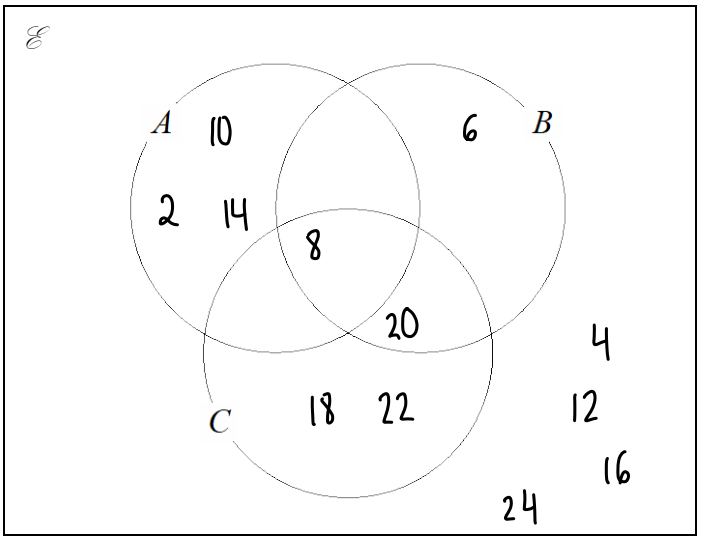
(Total for Question 9 is 3 marks)

2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24

10 $\mathscr{E}$ = {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 $A \cap B$.

$\frac{1}{12}$

(2)

(Total for Question 10 is 6 marks)

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11 The table gives information about the times taken, in seconds, by 18 students to run a race.

Time (t seconds)	Frequency	mp x f
$5 < t \leqslant 10$	1	7.5
$10 < t \leqslant 15$	2	25
$15 < t \leqslant 20$	7	122.5
$20 < t \leqslant 25$	8	180
total	18	335

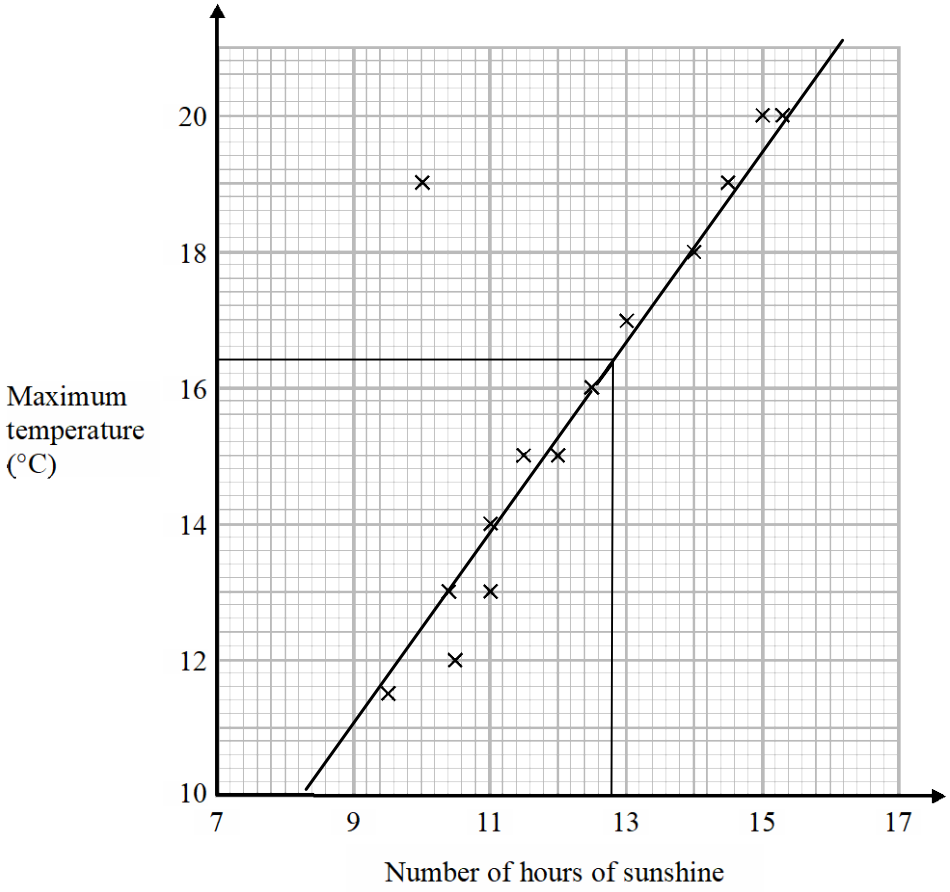
Work out an estimate for the mean time.
Give your answer correct to 3 significant figures.

335 ÷ 18 = 18.6111...

18.6 seconds

(Total for Question 11 is 3 marks)

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



One of the points is an outlier.

(*a*) Write down the coordinates of this point.

(10 , 19)

(1)

(*b*) For all the other points write down the type of correlation.

positive

(1)

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

(*c*) Estimate the number of hours of sunshine in this town on this day.

12.8 hours

(2)

A weatherman says, "Temperatures are higher on days when there is more sunshine."

(*d*) Does the scatter graph support what the weatherman says?
Give a reason for your answer.

yes, the scatter graph supports this statement because as the number of hours of sunshine increases, the maximum temperature also increases

(1)

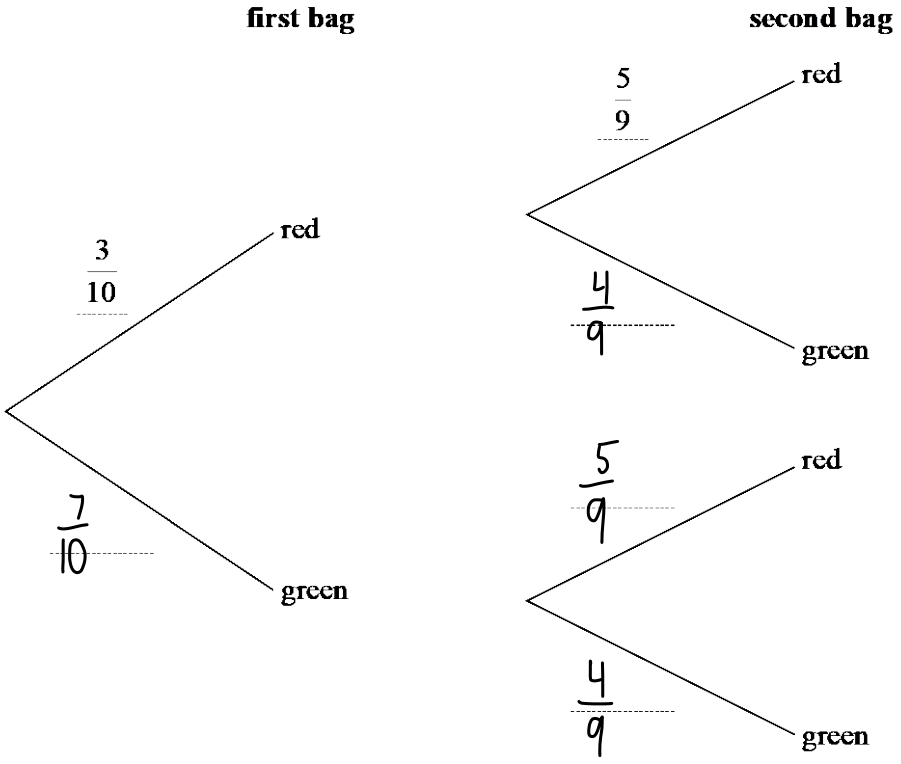
(Total for Question 12 is 5 marks)

13 Amina has two bags.

In the first bag there are 3 red balls and 7 green balls.
In the second bag there are 5 red balls and 4 green balls.

Amina takes at random a ball from the first bag.
She then takes at random a ball from the second bag.

(*a*) Complete the probability tree diagram.



(2)

(*b*) Work out the probability that Amina takes two red balls.

$\frac{3}{10} \times \frac{5}{9} = \frac{15}{90} = \frac{5}{30} = \frac{1}{6}$

$\frac{1}{6}$

(2)

(Total for Question 13 is 4 marks)

14 4 red bricks have a mean weight of 5 kg.
5 blue bricks have a mean weight of 9 kg.
1 green brick has a weight of 6 kg.

Donna says,

"The mean weight of the 10 bricks is less than 7 kg."

Is Donna correct?
You must show how you get your answer.

red : mean = total ÷ n → $5 = \frac{\text{total red}}{4}$ → total red brick weight = 20 kg

blue : $9 = \frac{\text{total weight}}{5}$ → total weight = 45 kg

mean weight (total bricks) = $\frac{20 + 45 + 6}{10}$ = 7.1 kg so Donna is not correct as 7.1 > 7

(Total for Question 14 is 3 marks)

TOTAL FOR PAPER IS 54 MARK