Name	Class

MATHS TEACHER HUB

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Recurring decimals

(9 – 1) Topic booklet

Higher

These questions have been collated from previous years GCSE Mathematics papers.

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.

Total Marks

Instructions

•Use **black** ink or ball-point pen.
•**Fill in the boxes** at the top of this page with your name, centre number and candidate number.
•Answer **all** questions.
•Answer the questions in the spaces provided
– *there may be more space than you need*.
•Diagrams are NOT accurately drawn, unless otherwise indicated.
•You must **show all your working out.**
•If the question is a **1H** question you are not allowed to use a calculator.
•If the question is a **2H** or a **3H** question, you may use a calculator to help you answer.

Information

•The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question*.

Advice

•Read each question carefully before you start to answer it.
•Keep an eye on the time.
•Try to answer every question.
•Check your answers if you have time at the end.

Answer ALL questions
Write your answers in the space provided.
You must write down all the stages in your working.

12 Express $0.1\dot{1}\dot{7}$ as a fraction.
You must show all your working.

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June 2022 – Paper 1H **(Total for Question 12 is 3 marks)**

13 Prove algebraically that $0.0\dot{7}2\dot{3}$ can be written as $\frac{241}{3330}$

November 2023 – Paper 2H **(Total for Question 13 is 3 marks)**

13 Ted is trying to change $0.\dot{4}\dot{3}$ to a fraction.

Here is the start of his method.

$$x = 0.\dot{4}\dot{3}$$

$$10x = 4.\dot{3}\dot{4}$$

$$10x - x = 4.\dot{3}\dot{4} - 0.\dot{4}\dot{3}$$

Evaluate Ted's method so far.

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November 2021 – Paper 1H **(Total for Question 13 is 1 mark)**

14 Using algebra, prove that $1.06\dot{2}$ can be written as $1\frac{14}{225}$

November 2022 – Paper 2H **(Total for Question 14 is 3 marks)**

15 Prove algebraically that $0.7\dot{3}$ can be written as $\frac{11}{15}$

November 2020 – Paper 3H **(Total for Question 15 is 2 marks)**

15 Express $0.4\dot{1}\dot{8}$ as a fraction.
You must show all your working.

November 2019 – Paper 1H **(Total for Question 15 is 3 marks)**

15 $x = 0.4\dot{3}\dot{6}$

Prove algebraically that x can be written as $\frac{24}{55}$

November 2017 – Paper 1H

(Total for Question 15 is 3 marks)

15 Prove algebraically that the recurring decimal $0.2\dot{5}$ has the value $\frac{23}{90}$

Sample 1 – Paper 2H

(Total for Question 15 is 2 marks)

16 Prove algebraically that $0.2\dot{5}\dot{6}$ can be written as $\frac{127}{495}$

November 2018 – Paper 1H **(Total for Question 16 is 3 marks)**

16 Using algebra, prove that $0.1\dot{3}\dot{6} \times 0.\dot{2}$ is equal in value to $\frac{1}{33}$

(Total for Question 16 is 3 marks)

18 Show that $0.\dot{1}\dot{5} + 0.2\dot{2}\dot{7}$ can be written in the form $\frac{m}{66}$ where m is an integer.

(Total for Question 18 is 3 marks)

19 Prove algebraically that the recurring decimal $0.3\dot{1}\dot{8}$ can be written as $\frac{7}{22}$

(Total for Question 19 is 2 marks)

20 Prove algebraically that $0.1\dot{2}\dot{3}$ can be written as $\frac{61}{495}$

(Total for Question 20 is 3 marks)