1 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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(Total for Question 1 is 1 mark)

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

(Total for Question 2 is 2 marks)

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3 Use algebra to show that the recurring decimal $0.2\dot{5}\dot{4} = \frac{14}{55}$

(Total for Question 3 is 2 marks)

4

Use algebra to show that the recurring decimal $0.28\dot{1}\dot{3} = \frac{557}{1980}$

(Total for Question 4 is 2 marks)

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

.....

(Total for Question 5 is 3 marks)

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

(Total for Question 6 is 3 marks)

7 $x = 0.4\dot{3}\dot{6}$

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

(Total for Question 7 is 3 marks)

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

(Total for Question 8 is 3 marks)

9

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

.....

(Total for Question 9 is 3 marks)

10 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 10 is 3 marks)

11

$0.4\dot{x}$ is a recurring decimal.
x is a whole number such that $1 \leqslant x \leqslant 9$

Find, in terms of x, the recurring decimal $0.4\dot{x}$ as a fraction.
Give your fraction in its simplest form.
Show clear algebraic working.

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(Total for Question 11 is 3 marks)