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| Name:  Teacher: | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | Date:\_\_\_\_\_\_\_\_\_ |
|  | **Year 11 Mathematics Essentials**  /47  **Test**  **Topic – Rates and Ratios**  ***Full working out MUST be shown to get full marks for each question.*** | | |
| **Total Time:** | 20 minutes Non-calculator  30 minutes Calculator allowed | Section One - /17  Section Two - /30 | |
| **Weighting:** | 10 % |
| **Equipment:** | To be provided by the student: Pens and Pencils, scientific calculator, A4 page of notes. | | |

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| **Question 1** **1,1,1,2 marks** |

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Simplify the following ratios:

**i)** 4 : 8 **ii)** 1.5 : 3.5 **iii)** 3cm : 6cm **iv)** 1cm : 1m

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| **Question 2**  **1 mark** |

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A bread recipe uses 250 g of flour to 500 ml of water. If I use 100 g of flour, what volume of water would I need to use?

a) 500 ml

b) 250 ml

c) 200 ml

d) 850 ml

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| **Question 3** **1 mark** |

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Maria can touch type 150 words in 3 minutes. How many words can she type in 1 minutes?

a) 50 words

b) 20 words

c) 30 words

d) 150 words

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| **Question 4** **1 mark** |

If Francis travels at 80km/h on his moped for 4hrs, what distance is covered?

a) 20km

b) 80km

c) 240km

d) 320km

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| **Question 5** **4** **marks** |

A concrete mix is to be made of cement, sand, and gravel in the ratio of 1 : 2 : 3.

If the concrete mixer can take 30 shovels before it overflows, how many shovels of sand is should be used when making a full batch of concrete?

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| **Question 6** **3, 2 marks** |

Use leading digit approximation to estimate the cost of the following.

**a)** A mobile phone contract offers 43c per 30 seconds for phone calls, what would be the charge for a 3 min call?

**b)** Explain using mathematical reasoning why your answer in Part a) is less than or greater than the actual cost of the call.

**END OF SECTION ONE**

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| Name:  Teacher: | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | Date:\_\_\_\_\_\_\_\_\_ |
|  | **Year 11 Mathematics Essentials**  /30  **Test**  **Topic – Ratios and Rates**  ***Full working out MUST be shown to get full marks for each question.*** | | |
| **Total Time:** | 30 minutes Calculator |  | |
| **Weighting:** | 10 % |
| **Equipment:** | To be provided by the student: Pens and Pencils, scientific calculator, A4 page of notes. | | |

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| **Question 1  *3 marks*** |

A piece of rope is cut into three lengths in the ratio of 9:11:17. If the smallest length is 108 cm, find the total length of the original rope.

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| **Question 2**  ***3 marks*** |

After a run, Dave measured his pulse rate as 11 beats per 8 seconds. What is Dave’s pulse rate in beats per minute?

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| **Question 3** ***(*1,2,3) *6 marks*** |

1. Sara works 15 hours in one week at her job. When she receives her pay, she earned $310.25. Calculate Sara’s hourly rate.
2. Sara would like 30% of her pay to be saved for a new car. How much money does she save from her paycheck?
3. Jayden earns $18.50 per hour and works 25 hours. He wants to save 25% of his pay. Who will save the most money? Justify your answer.

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| **Question 4**  ***5 marks*** |

A cyclist believes that she can ride her bike faster than Usain Bolt can run; if the cyclist timed herself over 1km and it took 2.5 minutes, and Usain Bolt’s 200m record is 20 seconds who travels the fastest?

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| **Question 5**  ***2, 3 marks*** |

Three friends bought a lottery ticket for $30; Jasmine put in $15, Tony paid $9 and Kayla paid $6. They agreed that if they won any money, they would split it in the ratio of the money they each put in.

1. What is the simplified ratio of the amount each person paid?
2. If they won $1000 how much would each person get?

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| **Question 6** ***1, 1, 2 marks*** |

A large 2.8kg pack of sausages is marked for sale at $13.86.

1. What is the price per kilogram of sausages in this pack?

A pack of the same sausages weighing 5.6kg was marked at $23.80.

1. What is the price per kilogram of sausages in this pack?
2. Would it be cheaper to buy two 2.8kg packs or one 5.6kg pack? What is the difference in cost, (if any)?

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| **Question 7  *2, 2 marks*** |

Monza racetrack for the Italian Grand Prix in Formula 1 is 3.6 miles.

1. If 1 mile is equal to 1.6 km. How long is the racetrack in kilometres?
2. Lewis Hamilton set his fastest lap on this track with an average speed of 264.362km/hr. How long to the nearest minute did it take Hamilton to complete his fastest lap?

**End of Assessment**