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| Year 8 | | *Ratio Rates and Proportion* | Non Calculator  Section |
| **Skills and Knowledge Assessed:**   * Recognise and solve problems involving simple ratios (ACMNA173) * Solve a range of problems involving rates and ratios, with and without digital technologies  (ACMNA188) * Investigate, interpret and analyse graphs from authentic data (ACMNA180 ) | | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Answer all questions in the spaces provided on this test paper by:  *Writing the answer in the box provided.*  or  *Shading in the bubble for the correct answer from the four choices provided.*  Show any working out on the test paper.Calculators are **not** allowed. | | | |
|  | **Questions 1 – 3 refer to the set of dominos shown below.** | | |
|  | Some dominos are called *Doubles* because they have the same number of dots on both halves. The *Doubles* range from *Double Blank* to *Double Six.*  What is the ratio of *Double* dominos to *Non-Double* dominos? | | |
|  | What is the ratio of *Double* dominos to the full set dominos? | | |
|  | What is the ratio ofdominos with only one *Blank* to dominos with only one *Six*? | | |
|  | There are 45 channels available on Jamie’s TV.  There are 34 entertainment channels and the rest are shopping channels.  What is the ratio of shopping channels to entertainment channels?  11 : 34 11 : 45 34 : 45 34 : 79 | | |
|  | The ratio 16 : 10 when written in simplest form is:  2 : 5 4 : 5 8 : 5 12 : 5 | | |
|  | A painter can coat a wall that measures 48 m2 in 3 hours.  What is this as a rate in m2/ hour? | | |
|  | A car travels at 90 km/h. How many hours would be needed to travel 540 km? | | |
|  | Petra owns 80 movies. There are 55 comedies and the rest are dramas.  What is the ratio of comedies to dramas? (answer in simplest form) | | |
|  | Which ratio is equivalent to 2 : 5?  10 : 20 10 : 25 12 : 25 25 : 100 | | |
|  | Write the ratio 60 : 42 in simplest form. | | |
|  | Complete the statement below.  48 : 36 = 8 : | | |
|  | What is the ratio 40 cm : 1 metre when written in simplest form.  1 : 25 1 : 40 1 : 250 2 : 5 | | |
|  | Divide 600 kg in the ratio 2 : 1. | | |
|  | Water runs from a tank which holds 2 000 litres at a rate of 40 litres/ minute.  How long would it take for the tank to empty?  5 minutes. 20 minutes. 50 minutes. 80 minutes. | | |
|  | Michelle plays a musical piece at 40 beats per minute. If the piece goes for 3 minutes and 15 seconds, how many beats are there in the piece? | | |
|  | What is the ratio  in simplest form?  2 : 3 2 : 30 10 : 3 20 : 3 | | |
|  | What is the ratio *18 hours : 2½ days* in simplest form ?  3 : 10 3 : 20 9 : 25 18 : 25 | | |
|  | Divide 300 marbles in the ratio 2 : 5 : 8. | | |
|  | A bricklayer lays 552 bricks in 6 hours of work.  How many hours of work would it take to lay 920 bricks? | | |
|  | In a recipe, Hannah uses flour, water and milk (measured in cups) in the ratio 4 : 2 : 1.  If she uses 12 cups of liquid (milk and water), how many cups of flour will she need?  8 cups.  16 cups.  24 cups.  48 cups. | | |

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| Year 8 | | *Ratio Rates and Proportion* | Calculator Allowed  Short Answer  Section |
|  | | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Answer all questions in the spaces provided on this test paper by:  *Writing the answer in the box provided.*  or  *Shading in the bubble for the correct answer from the four choices provided.*  Show any working out on this test paper. Calculators are allowed. | | | |
|  | The Mountains Pet Resort is currently boarding 45 dogs and 30 cats.  What is the ratio of dogs to cats in simplest form? | | |
|  | Simplify the ratio 60 : 75. | | |
|  | What is the ratio 2.5 : 10 in simplest form?  1 : 2 1 : 4 1 : 5 5 : 2 | | |
|  | The ratio of swimmers to surfers at a beach is 25 : 9.  Altogether there are 340 swimmers and surfers on the beach.  How many of them are surfers? | | |
|  | To make a paint, Jose mixes 150g of ochre with 20 ml of water.  What is the rate of the mixture in g/ml?  7.5 g/ml 15 g/ml 22.5 g/ml 30 g/ml | | |
|  | The new garden beds at Hillsborough College have native plants and exotic plants in the ratio 15 : 4.  There are 36 exotic plants..  How many native plants are there? | | |
|  | A plan of a house is drawn at a scale of 1 : 50.  Liza measures the width of the house on the plan to be 410 mm.  What is the actual width of the house?  8.2 m 16.8 m 20.5 m 2 500 m | | |
|  | The ratio 36 minutes : 2½ hours in simplest form, without using units, is;  1 : 3 1 : 25 3 : 50 6 : 25 | | |
|  | Alex is a cricketer who has a batting strike rate of 6.4 runs/over.  How many runs could he be expected to get in 2.5 overs? | | |
|  | The ratio of black tiles to grey tiles in a pattern is 13 : 2.  There are 300 tiles needed altogether.  How many black tiles are needed? | | |
|  | Liam is training for a triathlon.  Each week he trains for 6 hours on swimming, 15 hours on running and 18 hours on cycling.  What is the ratio, in simplest terms, of time spent on Swimming : Running : Cycling. | | |
|  | Which of these ratios is equivalent to 5 : 6? | | |
|  | A farm can support 5 head of cattle per hectare in good times and 2 head of cattle per hectare during drought.  A farm has had 6 000 head of cattle during a drought. How many *extra* cattle could it support when the drought ends? | | |
|  | On a trip, Meghan drives her car for 5 hours at an average speed of 80 km/h.  Her car uses fuel at a rate of 8 litres/100km.  How many litres of fuel will she use on the trip? | | |
|  | The payment for a job is divided between Judy, Kathy and Louise in the ratio 1 : 2 : 4.  If the total payment was $490, how much did Kathy receive?  $ 70.00 $122.50 $140.00 $245.00 | | |
|  | **Questions 16 - 18 refer to the following.**  The distance-time graph represents Tegan’s journey from her home in Perth to Bunbury for a meeting and then back home. | | |
|  | After Tegan left home she had to turn back when she realised she had forgotten her phone.  At what time did she turn back?  8:30 am 9:00 am 11:00 am 12:00 pm | | |
|  | At what average speed (in km/h) did Tegan travel when she resumed her trip to Bunbury? | | |
|  | On her journey home, she had a good run, until heavy traffic slowed her journey.  By how much was her speed lowered by the heavy traffic?  The speed dropped from 90 km/h to 20 km/h.  The speed dropped from 100 km/h to 20 km/h.  The speed dropped from 100 km/h to 40 km/h.  The speed dropped from 120 km/h to 40 km/h. | | |

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| Year 8 | | *Ratio Rates and Proportion* | Non Calculator  Section |
| ANSWERS | | | |
| No. | WORKING | | ANSWER |
|  | *Double* dominos : *Non-Double* dominos = 7 : 21 = 1 : 3 | | 7 : 21 = 1 : 3 |
|  | *Double* dominos : *Full set* dominos = 7 : 28 = 1 : 4 | | 7 : 28 = 1 : 4 |
|  | One Blank : One Six = 6 : 6 = 1 : 1 | | 6 : 6 = 1 : 1 |
|  | Number of shopping channels = 45 – 34 = 11  shopping channels : entertainment channels 11 : 34 | | 1st answer |
|  | 16 : 10 = 8 : 5 | | 3rd answer |
|  |  | | 16 m2/ hour |
|  |  | | 6 hours |
|  |  | | 11 : 5 |
|  | 10 : 25 = 2 : 5 ( dividing both by 5) | | 2nd answer |
|  | 60 : 42 = 10 : 7 ( dividing both by 6) | | 10 : 7 |
|  | 48 : 36 = 8 : □ ( dividing by 6)  So □ = 36 ÷ 6 = 6 | | 6 |
|  | 40 cm : 1 m = 40 cm : 100 cm = 4 : 10 = 2 : 5 | | 4th answer |
|  | In ratio of 2 : 1 is into 3 parts. | | 400 : 200 |
|  |  | | 3rd answer |
|  |  | | 130 |
|  |  | | 4th answer |
|  | *18 hours : 2½ days = 18 hours : 60 hours*  *= 3 : 10* | | 1st answer |
|  |  | | 400 : 100 : 160 |
|  |  | | 10 hours |
|  |  | | 2nd answer |

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| Year 8 | | *Ratio Rates and Proportion* | Calculator Allowed  Short Answer  Section | |
| ANSWERS | | | | |
| No. | WORKING | | | ANSWER |
|  |  | | | 3 : 2 |
|  | 60 : 72 = 5 : 6 | | | 5 : 6 |
|  | 2.5 : 10 = 25 : 100 = 1 : 4 | | | 2nd answer |
|  | 25 + 9 = 34 parts  340 ÷ 34 parts = 10 for each part | | | 90 |
|  |  | | | 1st answer |
|  | or | | | 135 |
|  | or | | | 3rd answer |
|  |  | | | 4th answer |
|  |  | | | 16 |
|  | Ratio of Grey : Black = 13 : 2 so 15 tiles in total in one pattern . | | | 260 |
|  |  | | | 2 : 5 : 6 |
|  |  | | | 2nd Answer |
|  | In drought it has 6000 head at 2 per hectare, so there are 3000 ha.  After drought can manage 5 per ha so 5× 3000 = 15000  Extra cattle = 15000 – 6000 = 9 000 | | | 9000 |
|  |  | | | 32 |
|  |  | | | 3rd answer |
|  | Where graph goes up then back down again, at 8:30 am | | | 1st answer |
|  | Travelled between 9am and 11 am, so 2 hours.  Distance = 170 km | | | 85 km/h |
|  | First part of return trip, travelled between 1:00 pm and 2:30 pm, so 1½ hours.  Distance = 170 -20 = 150 km    Second part of return trip, travelled between 2:30 pm and 3:00 pm, so ½ hour.  Distance = 20 km    The speed dropped from 100 km/h to 40 km/h. | | | 3rd answer |