|  |  |  |  |
| --- | --- | --- | --- |
| Year  8 | | *Ratio 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) | | | 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.** | | | |
|  | Questions 1 – 5 refer to the diagram below of a group of relatives at a family barbeque. | | |
|  | What is the ratio of the female relatives to the male relatives in simplest form?  6 : 4 4 : 6 2 : 3 3 : 4 | | |
|  | What is the ratio of the male relatives to all of the relatives in simplest form?  6 : 4 6 : 10 3 : 5 3 : 2 | | |
|  | What fraction of the relatives are female? | | |
|  | Write the percentage of the relatives who are male. | | |
|  | Two more female relatives arrived late to the barbeque.  Write the new ratio of the female relatives to the male relatives in simplest form. | | |
|  | Brodie finds that  of his friends enjoy cycling and the rest don’t.  The ratio of those who enjoy cycling to those who don’t is:  3 : 5 5 : 8 5 : 3 8 : 5 | | |
|  | The ratio 18 : 24 when written in simplest form is:  3 : 4 9 : 12 6 : 8 4 : 3 | | |
|  | Alex has 40 DVDs, 15 of which are comedies and the rest are dramas. What is the ratio of comedies to dramas? | | |
|  | Which ratio is **not** equivalent to 2 : 3?  4 : 6 12 : 20 10 : 15 8 : 12 | | |
|  | Write the ratio 35 : 20 in simplest form. | | |
|  | Complete the statement below.  24 : 16 = 6 : | | |
|  | There are four pairs of ratios below.  Which pair has two ratios which are both equivalent to 24 : 30?  12 : 15 and 6 : 8. 6 : 8 and 8 : 10.  4 : 5 and 12 : 16. 12 : 15 and 4 : 5. | | |
|  | Write the ratio 2.4 : 0.9 in simplest form. | | |
|  | What is the ratio  in simplest form?  4 : 1 6 : 1 3 : 2 4 : 3 | | |
|  | What is the ratio **45 minutes : hours** in simplest form ?  3 : 4 3 : 5 1 : 5 45 : 75 | | |
|  | Divide 300 beads in the ratio 7 : 3. | | |
|  | Two kilograms of cherries is divided between Ken and Leo in the ratio 4 : 1. How many grams of cherries does Leo get?  1 000 g 500 g 400 g 200 g | | |
|  | Marcie mixes concrete which consists of sand, aggregate and cement in the ratio 5 : 3 : 1.  If she has 3 buckets of cement how many buckets of sand and aggregate will she need?  15 buckets of sand and 6 buckets of aggregate.  10 buckets of sand and 6 buckets of aggregate.  15 buckets of sand and 9 buckets of aggregate.  10 buckets of sand and 9 buckets of aggregate. | | |
|  | To mix a tonic you add 10 g of powder to 0.25 litres of water. What is this as a rate in g/L?  20 g/L 40 g/L 80 g/L 160 g/L | | |
|  | A tractor ploughs a 150 hectare paddock in 3 hours. What is this as a rate in hectares per hour?  ha/h. | | |
|  | Kirrily earns $8 /hour in her weekend job. How many hours must she work to earn $76 to pay for a concert ticket?  hours. | | |
|  | A paddle steamer uses coal in its engine at a rate of 25 kg/h.  How many hours could the engine run, if it has 0.5 tonnes of coal left in its supply bin?  2 hours 5 hours 20 hours 50 hours | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Year  8 | | *Ratio 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 the test paper.**  **Calculators are allowed for this section.** | | | |
|  | A tiling pattern is made up of triangles and dodecagons (12 sided figures).  What is the ratio of Dodecagons to Triangles? | | |
|  | If the pattern above was copied several times until there were 49 dodecagons, how many triangles would there be? | | |
|  | What is the ratio 2.4 : 0.12 in simplest form?  1 : 2 2 : 1 20 : 1 200 : 1 | | |
|  | Complete the statement below.  16 : 12 = 12 : | | |
|  | Which of these ratios is equivalent to 5 : 7? | | |
|  | Justin and Kristie buy a house together, and they contribute the money for the purchase in the ratio 5 : 4 respectively.  The house cost them $450 000.  How much did Kristie contribute? | | |
|  | Steph records how she spends 6 hours on a Saturday afternoon.  She finds that she spend the time doing homework, playing soccer and watching a video in the ratio 5 : 4 : 3.  How long did she spend playing soccer?  30 minutes 90 minutes 120 minutes 150 minutes | | |
|  | Karrie found that the amount of fuel she used in her car and in her motorbike was in the ratio 12 : 5 respectively.  She used 7.5 litres in the motorbike.  How many litres did she use in the car?  litres | | |
|  | Tony is a cricketer who has a run rate of 4.2 runs/over.  How many runs will he get at this rate if he bats for 15 overs?  runs | | |
|  | Lesley is painting her house and it takes her 5 hours to paint 120 m2 of her walls.  At what rate did she paint?  m2/hour | | |

|  |  |  |
| --- | --- | --- |
| Year  8 | *Ratio and Proportion* | Calculator Allowed  Longer Answer  Section |
|  | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Write all working and answers in the spaces provided on this test paper. | | |

|  | | **Marks** |
| --- | --- | --- |
|  | Susie spends 4 hours on Saturday working in her garden. Of this time, one and a half hours is spent mowing, half an hour spraying bugs and the remaining time weeding. |  |
|  | 1. What is the ratio of the time she spent mowing as to spraying as to weeding.   ……………………………………………………………………………………..  …………………………………………………………………………………….. | **1** |
|  | 1. If she spent 6 hours on Sunday allotted in the same ratio, how long would she have spent on each activity?   ……………………………………………………………………………………..  …………………………………………………………………………………….. | **2** |
|  | 1. On Saturday she mowed 7 200 m2 of her lawn. At what rate did she mow (in m2/minute)?   ……………………………………………………………………………………..  …………………………………………………………………………………….. | **1** |
|  | 1. What is this rate in hectares/hour?   (1 hectare = 10 000 m2)  ……………………………………………………………………………………..  …………………………………………………………………………………….. | **1** |

|  |  |  |
| --- | --- | --- |
|  | A scale drawing of a house is shown below. |  |
|  | 1. What is the length (in metres) of the actual house at ground level?   ……………………………………………………………………………………..  …………………………………………………………………………………….. | **1** |
|  | 1. What is the area of the actual window W2?   ……………………………………………………………………………………..  …………………………………………………………………………………….. | **1** |
|  | 1. What is the ratio of the areas of the windows W2 as to W3?   ……………………………………………………………………………………..  …………………………………………………………………………………….. | **1** |

*Ratio and Proportion*

ANSWERS

|  |
| --- |
| Non Calculator Section |

|  |  |
| --- | --- |
|  | 2 : 3 |
|  | 3 : 5 |
|  |  |
|  | 60% |
|  | 1 : 1 |
|  | 5 : 3 |
|  | 3 : 4 |
|  | 3 : 5 |
|  | 12 : 20 |
|  | 7 : 4 |
|  | 4 |
|  | 12 : 15 and 4 : 5. |
|  | 8 : 3 |
|  | 4 : 1 |
|  | 3 : 5 |
|  | 210 : 90 |
|  | 400 g |
|  | 15 of sand and 9 of aggregate. |
|  | 40 g/L |
|  | 50 ha/h |
|  |  |
|  | 20 hours |

|  |
| --- |
| Calculator Allowed Section |

|  |  |
| --- | --- |
|  | 7: 12 |
|  | 84 |
|  | 20 : 1 |
|  | 9 |
|  |  |
|  | $200 000 |
|  | 120 minutes |
|  | 18 litres |
|  | 63 runs |
|  | 24 m2/hr |

|  |  |  |
| --- | --- | --- |
| Calculator Allowed  Longer Answer Section | | |
|  | (a) | 1 |
|  | (b) Mowing is  of the time.    Spraying is  of the time.    Weedng is  of the time. | 2 |
|  | (c) | 1 |
|  | (d) Rate = | 1 |
|  | 1. Length of scale drawing is 135 mm.   Length of actual house is 135\*100 =13 500 mm = 13.5 m. | 1 |
|  | 1. Scale window measures 15 mm square so actual window is 1.5 m square.   Area = 1.52 = 2.25 m2. | 1 |
|  | 1. Using panes ratio is 6 : 8 = 3 : 4.   Using areas W3 is  Ratio is | 1 |