|  |  |  |
| --- | --- | --- |
| Year  8 | Mathematics Test  Ratio and Rates | **Calculator Allowed**  **Test** |
|  | 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 – 4 refer to the buttons show below, that Sally found in a bottle. |
| 1. | What is the ratio of the square buttons to the round buttons?  7 : 4 4 : 7 7 : 11 11 : 7 |
| 2. | What is the ratio of the round buttons to all of the buttons?  7 : 4 4 : 7 4 : 11 11 : 4 |
| 3. | What fraction of the buttons are round? |
| 4. | Write the fraction of the buttons which are square. |
| 5. | Sally found two more round buttons. Write the new ratio of the square buttons to the round buttons. |
| 6. | Kayla has 20 books, 13 of which are novels and the rest are biographies. What is the ratio of novels to biographies? |
| 7. | Mitchell asks his friends about his favourite movie “The Verminator”. He finds that that  of his friends like the movie and the rest don’t. The ratio of those who like the movie to those who don’t is:  3 : 10 7 : 10 7 : 3 3 : 7 |
| 8. | The ratio 12 : 15 simplifies to:  7 : 10 24 : 30 6 : 7 4 : 5 |
| 9. | Write the ratio 16 : 20 in simplest form. |
| 10. | Which ratio is **not** equivalent to 3 : 4?  8 : 6 9 : 12 15 : 20 24 : 32 |
| 11. | Complete the statement below to form two equivalent ratios.  8 : 3 = 32 : |
| 12. | Complete the statement below to form two equivalent ratios.  12 : 9 = 36 : |
| 13. | What is the ratio  in simplest form?  3 : 2 5 : 1 7 : 2 5 : 2 |
| 14. | Write  in simplest form using only whole numbers. |
| 15. | Write the ratio 0.6 : 1 in its simplest equivalent form. |
| 16. | The ratio 800 mL : 1.2 L in simplest form, without using units, is;  800 : 1200 8 : 12 4 : 6 2 : 3 |
| 17. | When 200 is divided in the ratio 4 : 1, the result is:  200 : 100 150 : 50 160 : 40 175 : 25 |
| 18. | Divide 120 pens in the ratio 7 : 3. |
| 19. | Two kilograms of fruit is divided between Ken and Leo in the ratio 4 : 1. How many grams of fruit does Leo get?  1 000 g 500 g 400 g 200 g |
| 20. | The ratio  :  in simplest form, using only whole numbers, is;  5 : 1 5 : 2 10 : 1 2 : 1 |
| 21. | The ratio of white to black to blue tiles in a pattern is 4 : 3 : 2.  What fraction of the tiles are whte? |
| 22. | The ratio of blonde hair to dark hair to red hair in a group of friends is 2 : 3 : 1.  If there are 12 people with blonde hair, how many have dark hair?  people. |
| 23. | A cake mix has dry ingredients of chocolate : sugar : flour in the ratio 4 : 6 : 15 by weight. To make a cake whose dry ingredients weigh a total of 1000 g, how much flour would be needed?  g of flour. |
| 24. | A plough can till a 20 hectare paddock in 8 hours. What is this as a rate in hectares per hour?  hectares/ hour. |
| 25. | To mix a liquid fertiliser, the label says to mix 40 g of fertiliser with 500 millilitres of water. What is this as a rate in g/L?  80 g/L 120 g/L 125 g/L 160 g/L |
| 26. | A car used fuel at a rate of 12 mL/km. How much fuel would it use in a trip of 50 km?  42 mL 60 mL 420 mL 600 mL |
| 27. | A child has been growing a steady rate of 250 grams/month. By how many kilograms will its mass increase in six months?  kg. |
| 28. | Shannon has scored at a rate of 24 points/game for his footy team. If he has scored 264 points, how many games has he played?  games. |
| 29. | A trenching machine can complete a 600 m trench in 8 hours. How long would it take the machine to complete a 450 m trench?  2 hours 5 hours 6 hours 9 hours |
| 30. | Jason works in a hotel. It takes him an hour and a half to fold 120 towels. How long would it take him to fold 400 towels?  hours. |
|  | Questions 31 to 35 refer to the graph below. |
| 31. | Complete the following;  When Tayla left home she walked to the station and waited for minutes till the train arrived. |
| 32. | She caught the train at 9 am. How long did it take the train to get to the Gosford station?  minutes. |
| 33. | Tayla waited at Gosford station for half an hour before her friend arrived to meet her. They then walked to her friend’s house.  At what speed did they walk?  1 km/h 2 km/h 4 km/h 8 km/h |
| 34. | How long did Tayla stay at her friend’s house?  hours. |
| 35. | Tayla rode a pushbike home from her friend’s house. What was her average speed when riding home?  km/h. |
|  | DISTRICT  Scale 1cm:15 km |
| 36. | The distance in a straight line from Bathurst to Orange is closest to:  6 km 60 km 120 km 240 km |
| 37. | Which town is approximately 100 km in a straight line from Richmond?  Katoomba Oberon Portland Wallerawang |
| 38. | What is the distance in a straight line from Lithgow to Blayney?  km. |
| 39. | Which town is approximately 100 km in a straight line from Blayney? |
| 40. | Estimate the distance by road from Blayney to Oberon.  km. |

|  |  |  |
| --- | --- | --- |
| Year  8 | Mathematics Test  Ratio and Rates | **Calculator Allowed**  **Test** |
|  | ANSWERS |  |

|  |  |
| --- | --- |
| **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 – 4 refer to the buttons show below, that Sally found in a bottle. |
| 1. | What is the ratio of the square buttons to the round buttons?  7 : 4 4 : 7 7 : 11 11 : 7 |
| 2. | What is the ratio of the round buttons to all of the buttons?  7 : 4 4 : 7 4 : 11 11 : 4 |
| 3. | What fraction of the buttons are round? |
| 4. | Write the fraction of the buttons which are square. |
| 5. | Sally found two more round buttons. Write the new ratio of the square buttons to the round buttons. |
| 6. | Kayla has 20 books, 13 of which are novels and the rest are biographies. What is the ratio of novels to biographies? |
| 7. | Mitchell asks his friends about his favourite movie “The Verminator”. He finds that that  of his friends like the movie and the rest don’t. The ratio of those who like the movie to those who don’t is:  3 : 10 7 : 10 7 : 3 3 : 7 |
| 8. | The ratio 12 : 15 simplifies to:  7 : 10 24 : 30 6 : 7 4 : 5 |
| 9. | Write the ratio 16 : 20 in simplest form. |
| 10. | Which ratio is **not** equivalent to 3 : 4?  8 : 6 9 : 12 15 : 20 24 : 32 |
| 11. | Complete the statement below to form two equivalent ratios.    8 : 3 = 32 : |
| 12. | Complete the statement below to form two equivalent ratios.    12 : 9 = 36 : |
| 13. | What is the ratio  in simplest form?  3 : 2 5 : 1 7 : 2 5 : 2 |
| 14. | Write  in simplest form using only whole numbers. |
| 15. | Write the ratio 0.6 : 1 in its simplest equivalent form. |
| 16. | The ratio 800 mL : 1.2 L in simplest form, without using units, is;  800 : 1200 8 : 12 4 : 6 2 : 3 |
| 17. | When 200 is divided in the ratio 4 : 1, the result is:  200 : 100 150 : 50 160 : 40 175 : 25 |
| 18. | Divide 120 pens in the ratio 7 : 3. |
| 19. | Two kilograms of fruit is divided between Ken and Leo in the ratio 4 : 1. How many grams of fruit does Leo get?  1 000 g 500 g 400 g 200 g |
| 20. | The ratio  :  in simplest form, using only whole numbers, is;  5 : 1 5 : 2 10 : 1 2 : 1 |
| 21. | The ratio of white to black to blue tiles in a pattern is 4 : 3 : 2.  What fraction of the tiles are whte? |
| 22. | The ratio of blonde hair to dark hair to red hair in a group of friends is 2 : 3 : 1.  If there are 12 people with blonde hair, how many have dark hair?    people. |
| 23. | A cake mix has dry ingredients of chocolate : sugar : flour in the ratio 4 : 6 : 15 by weight. To make a cake whose dry ingredients weigh a total of 1000 g, how much flour would be needed?    g of flour. |
| 24. | A plough can till a 20 hectare paddock in 8 hours. What is this as a rate in hectares per hour?    hectares/ hour. |
| 25. | To mix a liquid fertiliser, the label says to mix 40 g of fertiliser with 500 millilitres of water. What is this as a rate in g/L?  80 g/L 120 g/L 125 g/L 160 g/L |
| 26. | A car used fuel at a rate of 12 mL/km. How much fuel would it use in a trip of 50 km?  42 mL 60 mL 420 mL 600 mL |
| 27. | A child has been growing a steady rate of 250 grams/month. By how many kilograms will its mass increase in six months?    kg. |
| 28. | Shannon has scored at a rate of 24 points/game for his footy team. If he has scored 264 points, how many games has he played?    games. |
| 29. | A trenching machine can complete a 600 m trench in 8 hours. How long would it take the machine to complete a 450 m trench?  2 hours 5 hours 6 hours 9 hours |
| 30. | Jason works in a hotel. It takes him an hour and a half to fold 120 towels. How long would it take him to fold 400 towels?    hours. |
|  | Questions 31 to 35 refer to the graph below. |
| 31. | Complete the following;    When Tayla left home she walked to the station and waited for minutes till the train arrived. |
| 32. | She caught the train at 9 am. How long did it take the train to get to the Gosford station?    minutes. |
| 33. | Tayla waited at Gosford station for half an hour before her friend arrived to meet her. They then walked to her friend’s house.  At what speed did they walk?  1 km/h 2 km/h 4 km/h 8 km/h |
| 34. | How long did Tayla stay at her friend’s house?    hours. |
| 35. | Tayla rode a pushbike home from her friend’s house. What was her average speed when riding home?    km/h. |
|  | DISTRICT  Scale 1cm:15 km |
| 36. | The distance in a straight line from Bathurst to Orange is closest to:  6 km 60 km 120 km 240 km |
| 37. | Which town is approximately 100 km in a straight line from Richmond?  Katoomba Oberon Portland Wallerawang |
| 38. | What is the distance in a straight line from Lithgow to Blayney?    km. |
| 39. | Which town is approximately 100 km in a straight line from Blayney?  Portland |
| 40. | Estimate the distance by road from Blayney to Oberon.    km. |