

Mathematics Assessment

**Bands 2-4 Problem Solving – Test 1**



**Calculators not allowed**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Class: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Teacher: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Remember:

* The test is 1 hour long.
* You **must not** use a calculator for any question in this test.
* You will need: pen, pencil, rubber and a ruler.
* Try to answer all questions.
* Write all your answers and working in the spaces provided in this test paper – do not use any rough paper. Marks may be awarded for working.
* Check your work carefully.
* Don’t spend too long on one question. Leave it and try the next one.

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| --- | --- | --- |
| 1. | Rani has 160 DVDs.   * 35% of her DVDs are thrillers. * of her DVDs are comedies. * The rest of her DVDs are science fiction.   How many science fiction DVDs does Rani have?  \_\_\_\_\_\_\_\_\_ | / 4 |
| 2. | Here is a diagram of a wall.  Alison wants to cover all of the wall with tiles. The tiles are squares with sides of length 20 cm. The tiles are sold in packs. There are 10 tiles in each pack. Each pack of tiles costs £35. Alison only has £1000. Can she buy enough packs of tiles to cover the wall? | / 6 |
| 3. | Work out the value of y.  Give reasons for your answer. | / 4 |
| 4. | Samantha wants to buy a new pair of trainers. There are 3 shops that sell the trainers she wants.   |  |  |  | | --- | --- | --- | | **Sports ‘4’ All**  Trainers £5  **plus**  12 payments of £4.50 | **Edexcel Sports**  Trainers off usual price of £70 | **Keef’s Sports**  Trainers £50  **plus**  VAT at 20% |   From which shop should Samantha buy her trainers to get the best deal? You must show all of your working. | / 5 |
| 5. | Marc drives a truck. The truck pulls a container. The container is a cuboid 10 m by 4 m by 5 m.    Marc fills the container with boxes. Each box is a cuboid 50 cm by 40 cm by 20 cm. Show that Marc can put no more than 5000 boxes into the container. | / 4 |
| 6. | A hotel charges £50 for a room for a single person per night and then £10 extra for each additional person per night. A large family takes two rooms for a night and is charged £150 in total for the two rooms. How many people are there in the family?  \_\_\_\_\_\_\_\_\_ | / 3 |
| 7. | Two identical rectangular tiles are arranged to overlap each other by 8cm. The length of the whole arrangement is 30cm.    Work out the length of a tile.  \_\_\_\_\_\_\_ cm | / 3 |
| 8. | At a concert, the ratio of adults to children is 2 : 3. There are 786 children in the audience. An adult ticket costs twice as much as a child ticket. The total box office takings for the concert are £11921. Work out the cost of an adult ticket.  £ \_\_\_\_\_\_\_\_ | / 5 |
| 9. | Ann and Bob shared £240 in the ratio 3 : 5. Ann gave a half of her share to Colin. Bob gave a tenth of his share to Colin. What fraction of the £240 did Colin receive?  \_\_\_\_\_\_\_\_\_ | / 4 |
| 10. | The circumference of this circle is 24cm. Four of these circles are put together to make this shape. The centres of the circles are at the vertices of a square. What is the perimeter of the shape?  \_\_\_\_\_\_\_ cm | / 2 |
| 11. | Roger lives in the village of Hawkshaw. He wants to find out if cars break the speed limit through the village.  Roger times each car as it goes between four lampposts. The distance between each lamppost is 50 m. The speed limit through the village is 30 mph. The first car Roger times takes 12 seconds to go between the four lampposts. Is this car breaking the speed limit? You must show all of your working. | / 5 |
| 12. | A village fair has stalls to raise money for charity. On one stall there is a game where you roll a 6-sided dice and spin a 4-sided spinner.   * The dice is labelled 1, 2, 3, 4, 5, 6 * The spinner is labelled 1, 2, 3, 4   The score on the dice and the score on the spinner are added to get the total score. The table shows some of the possible total scores.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | **+** | **1** | **2** | **3** | **4** | **5** | **6** | | **1** | 2 | 3 | 4 | 5 | 6 | 7 | | **2** | 3 |  |  |  |  |  | | **3** | 4 |  |  |  |  |  | | **4** | 5 |  |  |  |  |  |   (a) Complete the table of possible total scores.  People pay 50p to play the game. The prizes are:   * £1 for a total score of 7 or 8 * £2 for a total score of 9 or 10   During one day of the fair, exactly 360 people played the game.  (b) Did the stall make a profit or a loss on this day? You must fully explain your answer. | / 7 |