

Mathematics Assessment

**Bands 1-3 Problem Solving – Test 2**



**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. | Four numbers are equally spaced on a number line.    Find the numbers represented by P and Q  P = \_\_\_\_\_\_\_ Q = \_\_\_\_\_\_\_ | / 2 |
| 2. | Here is a block of squares.  Find the length of the thick line that goes from A to B.  \_\_\_\_\_\_\_ cm | / 2 |
| 3. | A length of paper is 20cm long.  It has a 1.5 cm sticky strip at each end. Four strips are stuck together, with the sticky parts overlapping exactly, to make a loop of paper. What is the circumference of the loop?  \_\_\_\_\_\_\_\_ cm | / 4 |
| 4. | Here are some fractions.      (a) Which two of the fractions are not equivalent to  You must show your working.  \_\_\_\_\_\_\_ and \_\_\_\_\_\_\_  (b) Here are two fractions.    Explain which is the larger fraction.   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | | / 6 |
| 5. | Explain why the 1st of April is always on the same day of the week as the 1st of July. | / 5 |
| 6. | Spinner A has 6 equal sections and spinner B has 8 equal sections. Each section of the spinners contains the number 1, 2 or 3. All three numbers appear on each spinner.  Write numbers in the spinner sections so that:   * a score of 1 is more likely on spinner A than spinner B, * a score of 2 is more likely on spinner B than spinner A, * a score of 3 is equally likely on either spinner. | / 3 |

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| 7. | Daniel wants to buy a laptop.  Two shops sell the same make of laptop.    Daniel wants to pay the least amount of money for his laptop.  Which of the two shops should Daniel buy the laptop from?  You must show all of your working. | / 4 |
| 8. | Last year Kerry’s take home pay was £15 000  She spent 40% of her take home pay on rent.  She used the rest of her take home pay for living expenses, clothes and entertainment in the ratio 3 : 1 : 2  How much did Kerry spend on entertainment last year?  £\_\_\_\_\_\_\_\_\_\_ | / 4 |
| 9. | Robert is in hospital. He takes a pill every 6 hours. He has some medicine every 8 hours. He has an injection every 12 hours. At 08 00 on 10th July, Robert took a pill, had some medicine and an injection. At what date and time will Robert again have all three together? You must show your working.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | / 3 |
| 10. | Angela earns £35 240 a year. She has to pay income tax. She is allowed to earn £6475 before paying tax. She pays 20% tax on the rest. Her employer deducts the income tax each month. Work out how much income tax Angela gets deducted each month. | / 4 |
| 11. | Lottie has a bag of apples. She gives half of them to Fred. Fred eats two and then has four left. Use algebra to determine how many apples Lottie had at the start.  \_\_\_\_\_\_\_\_ | / 3 |
| 12. | A customer who cancels a holiday with Funtours has to pay a cancellation charge. The cancellation charge depends on the number of days before the departure date the customer cancels the holiday.  The cancellation charge is a percentage of the cost of the holiday. The table shows the percentages.   |  |  | | --- | --- | | **Number of days before the**  **departure date the customer**  **cancels the holiday** | **Percentage of the**  **cost of the**  **holiday** | | 29–55 | 40% | | 22–28 | 60% | | 15–21 | 80% | | 4–14 | 90% | | 3 or less | 100% |   The cost of Amy’s holiday was £840. She cancelled her holiday 25 days before the departure date.  (a) Work out the cancellation charge she had to pay.  £\_\_\_\_\_\_\_\_\_\_\_\_  The cost of Carol’s holiday was £600. She cancelled her holiday and had to pay a cancellation charge of £480.  (b) Give the range of the number of days in which Carol cancelled her holiday.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | / 5 |

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| 13. | Viv is training to keep fit. One part of Viv’s training session is a  40 second run followed by a 2 minute walk. She repeats this run and walk 5 times. Before doing this, she does some warm-up exercises for 10 minutes. Afterwards she does a 10 minute cooling down exercise.  Viv started this training session at 12 30  (a) At what time, to the nearest minute, did Viv finish her training session?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  To help her training, Viv has energy drinks. She buys a pack of 12 energy drinks for £9.18  (b) Work out the cost of one energy drink. Give your answer correct to the nearest penny.  £\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | / 7 |