

Mathematics Assessment

**Bands 2-4 Problem Solving – Test 3**

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**Calculators allowed on questions with this symbol:**

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

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

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

Remember:

* The test is 1 hour long.
* 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. | The table gives information about the costs of posting parcels.

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| --- | --- |
| **Maximum weight of parcel** | **Cost** |
| 2 kg | £4.40 |
| 4 kg | £7.60 |
| 6 kg | £9.50 |
| 8 kg | £11.70 |
| 10 kg | £12.60 |
| 20 kg | £14.50 |

Alex has to post some parcels. He has to post:* 1 parcel with a weight of 5.8 kg
* 1 parcel with a weight of 9.5 kg
* 1 parcel with a weight of 3.25 kg
* 1 parcel with a weight of 16.5 kg

Alex has £45 to spend on posting the four parcels. Can he post all the parcels? | / 4 |
| 2. | Angel Ltd manufacture components for washing machines. The probability that a component will be made within a tolerance of one tenth of a millimetre is 0.995. Angel Ltd. manufacture 10 000 components each day. Work out an estimate for the number of components that will not be within the tolerance of one tenth of a millimetre each day.\_\_\_\_\_\_\_\_\_\_\_ | / 3 |
| 3. | Harry has a bowl of flakes for breakfast each morning. In each bowl he has on average 35 g of flakes. A box contains 500 g of flakes.(a) Will one box last more than two weeks? You must show all of your working.Harry is on a diet. He is allowed to eat food containing no more than 2000 calories per day. In one bowl of flakes, there are 130 calories.(b) What percentage is one bowl of flakes of his daily allowance?\_\_\_\_\_\_\_\_\_\_\_ % Each box of flakes is in the shape of a cuboid. The dimensions of a box are 23 cm by 7 cm by 30 cm.(c) Work out the volume of each box.\_\_\_\_\_\_\_\_\_\_\_ | / 8 |
| 4. | Georgina needs 94 carpet tiles to carpet her bedroom floor. Carpet tiles are sold in boxes of 8 at £16.95 per box. A single carpet tile can be bought for £2.99. Georgina bought the carpet tiles for her bedroom spending the least amount of money. Show how Georgina did this. | / 5 |
| 5. | Ashley wants to buy some tins of tile paint. He finds out the costs of paint at two shops. Ashley needs 6 tins of tile paint. Ashley wants to get all the tins of paint from the same shop. He wants to pay the cheapest possible total price. Which of the two shops should Ashley buy the tile paint from?

|  |  |
| --- | --- |
| **Paints R Us** | **Deco Mart** |
| Normal price£2.40 per tinSpecial offerBuy 2 tins and get 3rd tin free! | Normal price£2 per tinSpecial offer15% off normal price |

 | / 6 |
| 6. | Debra and Mark are planning to go on a cruise. They can travel with one of two companies, Caribbean Calypso or Royal European. The table shows the cost per person to travel with each company.

|  |  |  |
| --- | --- | --- |
|  |  | **Type of cabin** |
|  |  | Inside  | Outside | Balcony | Suite |
| **Cost per person** | Caribbean Calypso | £1136 | £1319 | £1529 | £2329 |
| Royal European | £1043 | £1263 | £1484 | £2147 |

Caribbean Calypso has a discount of 10% if you book online. Royal European has a discount of 5% if you book online. Debra and Mark are going to book a suite for their cruise. They are going to book online. Debra and Mark want to pay the lowest possible cost. Which company should they choose? You must show all your working. | / 5 |
| 7. | Harry is thinking about having a water meter. These are the two ways he can pay for the water he uses. Harry uses an average of 160 litres of water each day. Harry wants to pay as little as possible for the water he uses. Should Harry have a water meter? | / 5 |
| 8. | Tim is travelling home from holiday by plane. He buys some food and drink on the plane. Tim buys two cheese rolls, a coffee and an orange juice. He pays part of the cost with a 10 euro note. He pays the rest of the cost in pounds (£). How much does Tim pay in pounds?£ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ | / 4 |
| 9. | Petra and Stephan share out £240 so that Petra gets one third of what Stephan gets. How much do they each get?Petra: £ \_\_\_\_\_\_\_\_\_\_Stephen: £ \_\_\_\_\_\_\_\_\_\_ | / 3 |
| 10. | Melissa has a bag of marbles. She shares them with her friends.She gives $\frac{1}{3}$ of the marbles to Jessica.She gives $\frac{2}{9}$ of the marbles to Samantha.She has 32 marbles left. How many marbles did she give to Samantha? | / 4 |
| 11. | The cost of a trip on a low-cost airline is given by this formula:**C = N (O + R + 2T)*** C is the overall cost;
* N is the number of people travelling;
* O is the price of the outgoing flight, per person;
* R is the price of the return flight (the flight back), per person;
* T is the price of airport taxes for one flight, per person.

Susan and her two friends went to Paris. The return flight was £10 less than the outgoing flight, and the airport taxes were£21 for each flight for each person. The overall cost was £294.What was the price of the outgoing flight for each person?£ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ | / 4 |