2.22-2 Multi-Step Reasoning Challenge Set 2: Test Pack

GL ASSESSMENT GL-11PLUS-MATHS · Calculators not allowed · about 15 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 The first term of a sequence is 5. Each term after the first is found by doubling the previous term and then subtracting 3. Find the fourth term of the sequence.

(3)

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2 A number is multiplied by 4, then 8 is subtracted. The result is divided by 4, and then 5 is added, giving a final answer of 12. What was the original number?

(3)

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3 A gardener has 12 litres of plant feed made from concentrate and water mixed in the ratio 1:5 (concentrate:water). She wants to strengthen the mixture to a ratio of 1:2 by adding more concentrate, without adding any more water. How many litres of concentrate must she add?

(3)

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4 A padlock code uses three different digits chosen from 1, 2, 3 and 4, with no digit repeated.
How many different codes are possible if the code must end in an odd digit?

(3)

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5 At a school fete, three stalls - Cakes, Books and Games - each raised a different amount of money: £15, £30 and £45, though not necessarily in that order.
- The Games stall raised exactly twice as much as the Cakes stall.
- The Books stall did not raise the least amount.

Work out how much money each stall raised.

(4)

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Mark scheme · 2.22-2 Multi-Step Reasoning Challenge Set 2: Test Pack

Question 1

finds the second term: 2x5-3=7 (oe)	**M1**
finds the third term: 2x7-3=11 (oe)	**M1**
19 cao, from 2x11-3	**A1**

Answer: 19

Question 2

undoes the final '+5' step: 12-5=7 (oe)	**M1**
undoes the '/4' and '-8' steps: 7x4=28, then 28+8=36 (oe)	**M1**
9 cao, from 36/4	**A1**

Answer: 9

Question 3

finds the current amounts: concentrate=2 litres, water=10 litres, from the ratio 1:5 of 12 litres (oe)	**M1**
forms the equation (2+x):10=1:2, where x is the concentrate added (oe)	**M1**
3 litres cao	**A1**

Answer: 3 litres

Question 4

identifies 2 choices for the units digit, 1 or 3 (oe)	**M1**
finds the remaining two digits can be arranged in the first two positions in 3x2=6 ways (oe)	**M1**
12 cao	**A1**

Answer: 12

Question 5

tests each pair of the three values for a doubling relationship and finds only 15 and 30 work, since 30=2x15 (oe)	**M1**
Cakes=£15 and Games=£30 cao	**A1**
Books must be the remaining value, £45, cao	**B1**
checks Books (£45) is not the least amount, since the least is Cakes (£15), so the clue is satisfied (oe)	**B1**

Answer: Cakes £15, Games £30, Books £45

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