2.22 Multi-Step Reasoning Challenge: 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 Amina thinks of a number. She adds 12 to it, then multiplies the result by 3, giving 90. What number did Amina start with?

(2)

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2 The sum of the ages of a mother and her twin daughters is 57. In 5 years' time, the mother will be twice as old as one of the twins. How old is each twin now, and how old is the mother?

(4)

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3 Three consecutive even numbers have a sum equal to twice the largest number, plus 18. What is the smallest of the three numbers?

(3)

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4 A rectangular lawn is 3 times as long as it is wide. Its perimeter is 48 m. What is the area of the lawn?

(3)

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5 A number is multiplied by 5, then 8 is subtracted. This gives the same result as when the original number is multiplied by 3 and then increased by 20. What is the original number?

- ☐ A) 6
- ☐ B) 10
- ☐ C) 14
- ☐ D) 16
- ☐ E) 28

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

Question 1

reverses the operations: 90 / 3 = 30	**M1**
18, from 30 - 12	**A1**

Answer: 18

Question 2

lets each twin's age now be D and the mother's be M, forming M + 2D = 57	**M1**
forms M + 5 = 2(D + 5), i.e. M = 2D + 5	**M1**
solves simultaneously: 2D + 5 + 2D = 57, giving D = 13	**M1**
twins are 13 each, mother is 31, from M = 2 x 13 + 5	**A1**

Answer: Each twin is 13; the mother is 31

Question 3

lets the numbers be n, n + 2, n + 4 and forms their sum 3n + 6	**M1**
forms 3n + 6 = 2(n + 4) + 18 and simplifies to n = 20	**M1**
20	**A1**

Answer: 20

Question 4

forms 2(w + 3w) = 48, i.e. 8w = 48	**M1**
w = 6, so length = 18	**M1**
108 m², from 6 x 18	**A1**

Answer: 108 m^2

Question 5

forms 5x - 8 = 3x + 20 and collects terms to 2x = 28; accept an equivalent route to the same value without algebra, such as trial and improvement	**M1**
C) 14	**A1**

Answer: C) 14

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