2.110-4 Multi-Step Mixed Reasoning Challenge Set 4: 10-minute Pack

GL ASSESSMENT GL-11PLUS-MATHS · Calculators not allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A large cube is made from 5 x 5 x 5 small unit cubes and then the outside faces of the large cube are painted. The large cube is then cut back into the small unit cubes. How many of the small cubes have exactly two faces painted?

(4)

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2 Which of these is the largest number?

- ☐ A) 7/12
- ☐ B) 3/5
- ☐ C) 11/20
- ☐ D) 0.55
- ☐ E) 57%

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3 What is the units digit of $3^4 + 7^3$?

- ☐ A) 1
- ☐ B) 3
- ☐ C) 4
- ☐ D) 7
- ☐ E) 9

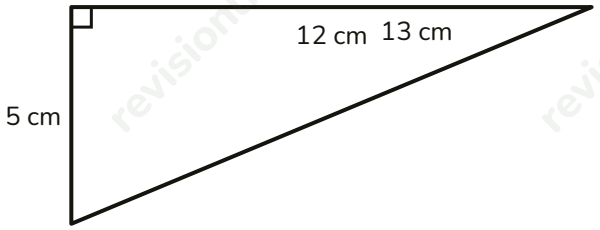
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4 Three friends share £420 in the ratio 3: 5: 7. How much does the friend with the middle share receive?

- ☐ A) £84
- ☐ B) £105
- ☐ C) £140
- ☐ D) £175
- ☐ E) £210

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5 A right-angled triangle has a base of 12 cm and a height of 5 cm. Its longest side is 13 cm. Find the area and the perimeter of the triangle.



(4)

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Mark scheme · 2.110-4 Multi-Step Mixed Reasoning Challenge Set 4: 10-minute Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

Question 1

method: identify that cubes with exactly two painted faces lie on edges but not corners; number per edge = n - 2 seen	**M1**
method: compute n - 2 = 5 - 2 = 3 seen	**M1**
method: number on all edges = 12 x (n - 2) = 12 x 3 seen	**M1**
final answer 36 cao	**A1**

Answer: 36

Question 2

correct option B (3/5 = 0.6) cao	**B1**

Answer: B) 3/5 (0.6 is the largest)

Question 3

correct option C (units digit 4) cao	**B1**

Answer: C) 4

Question 4

correct option C (£140) cao	**B1**

Answer: C) £140

Question 5

area of a triangle method: 1/2 x 12 x 5 seen	**M1**
area = 30 cm² seen	**M1**
perimeter method: 12 + 5 + 13 seen	**M1**
final values: area 30 cm² and perimeter 30 cm cao	**A1**

Answer: Area 30 cm^2; perimeter 30 cm

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