2.57-4 Number Puzzles and Logic Set D: Test Pack

GL ASSESSMENT GL · Calculators not allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 In a spelling test, Zainab scored higher than Tariq. Tariq scored higher than Yusuf. Write the three pupils in order from lowest score to highest score.

(2)

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2 Arjun and Ben have £71 between them. Arjun has £31 more than Ben. How much money does Ben have, in pounds?

- ☐ A) 51
- ☐ B) 20
- ☐ C) 25.5
- ☐ D) 102
- ☐ E) 35.5

---

3 Ethan and Callum have 46 marbles between them. Ethan has 6 more than Callum. How many does Callum have?

- ☐ A) 23
- ☐ B) 21
- ☐ C) 26
- ☐ D) 19
- ☐ E) 20

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4 The sum of 5 consecutive numbers is 150. What is the smallest of the 5 numbers?

- [ ] A) 28
- [ ] B) 30
- [ ] C) 37.5
- [ ] D) 32
- [ ] E) 29

---

5 Ffion and Imogen have 45 marbles between them. Ffion has 29 more than Imogen. How many does Imogen have?

- [ ] A) 8
- [ ] B) 37
- [ ] C) 9
- [ ] D) 22.5
- [ ] E) 7

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6 Jack and Esme have 27 points between them. Jack has 11 more than Esme. How many does Esme have?

- [ ] A) 8
- [ ] B) 9
- [ ] C) 11
- [ ] D) 19
- [ ] E) 13.5

---

7 The sum of 5 consecutive numbers is 235. What is the largest of the 5 numbers?

- [ ] A) 48
- [ ] B) 49
- [ ] C) 47
- [ ] D) 52
- [ ] E) 45

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8 The sum of 5 consecutive numbers is 25. What is the smallest of the 5 numbers?

- ☐ A) 2
- ☐ B) 3
- ☐ C) 4
- ☐ D) 5
- ☐ E) 7

---

9 Amara and Yusuf have 57 marbles between them. Amara has 27 more than Yusuf. How many does Amara have?

- ☐ A) 28.5
- ☐ B) 27
- ☐ C) 41
- ☐ D) 15
- ☐ E) 42

---

10 A machine exchanges coins at no extra cost: every 3 ten-pence coins can be swapped for 1 twenty-pence coin and 2 five-pence coins (the same total value). Priya has a bag containing only ten-pence coins, worth £5.00 in total. She exchanges as many groups of 3 ten-pence coins as she can. How many twenty-pence coins and how many five-pence coins does she receive, and what value is left over in ten-pence coins that could not be exchanged?

(4)

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11 The sum of 3 consecutive numbers is 99. What is the smallest of the 3 numbers?

- ☐ A) 33
- ☐ B) 34
- ☐ C) 32
- ☐ D) 31
- ☐ E) 36

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12 Tom and Chloe have 61 points between them. Tom has 23 more than Chloe. How many does Chloe have?

- [ ] A) 30.5
- [ ] B) 84
- [ ] C) 18
- [ ] D) 19
- [ ] E) 42

---

13 Arjun and Rhys have 80 marbles between them. Arjun has 18 more than Rhys. How many does Arjun have?

- [ ] A) 40
- [ ] B) 50
- [ ] C) 31
- [ ] D) 18
- [ ] E) 49

---

14 The sum of 4 consecutive odd numbers is 72. What is the smallest of the 4 numbers?

- [ ] A) 16
- [ ] B) 15
- [ ] C) 21
- [ ] D) 24
- [ ] E) 18

---

15 The sum of 3 consecutive numbers is 117. What is the largest of the 3 numbers?

- [ ] A) 39
- [ ] B) 40
- [ ] C) 38
- [ ] D) 42
- [ ] E) 41

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16 A sequence is formed using the rule: multiply by 2, then add 5. The first term is 4. Find the first four terms of the sequence.

(3)

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17 Ethan and Aisha have £36 between them. Ethan has £28 more than Aisha. How much money does Aisha have, in pounds?

- ☐ A) 16
- ☐ B) 18
- ☐ C) 64
- ☐ D) 4
- ☐ E) 32

---

18 Four friends - Aaron, Bella, Charlie and Deepa - each have a different favourite subject (Maths, Science, Art or History) and each travels to school a different way (car, bike, bus or on foot).

1. The friend who likes Science travels by bike.
2. Aaron does not like Art or History.
3. Charlie travels by bus.
4. Bella's favourite subject is History.
5. The friend who walks to school likes Art.
6. Deepa does not travel by bike.

Work out each friend's favourite subject and how they travel to school.

(4)

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19 The sum of 3 consecutive numbers is 141. What is the smallest of the 3 numbers?

- [ ] A) 47
- [ ] B) 46
- [ ] C) 50
- [ ] D) 45
- [ ] E) 48

---

20 In a family, the combined age of a grandmother, her daughter and her granddaughter is 100 years. The daughter's age is 4 more than 3 times the granddaughter's age. The grandmother's age is 2 less than twice the daughter's age. How old is each person?

(4)

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21 The sum of 5 consecutive numbers is 220. What is the smallest of the 5 numbers?

- [ ] A) 41
- [ ] B) 42
- [ ] C) 46
- [ ] D) 43
- [ ] E) 44

---

22 Kwame and Zainab have 77 points between them. Kwame has 5 more than Zainab. How many does Kwame have?

- [ ] A) 40
- [ ] B) 41
- [ ] C) 38.5
- [ ] D) 36
- [ ] E) 20.5

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23 Sana and Esme have 87 points between them. Sana has 31 more than Esme. How many does Sana have?

- [ ] A) 58
- [ ] B) 56
- [ ] C) 59
- [ ] D) 28
- [ ] E) 43.5

---

24 The sum of 3 consecutive numbers is 120. What is the largest of the 3 numbers?

- [ ] A) 39
- [ ] B) 41
- [ ] C) 40
- [ ] D) 60
- [ ] E) 42

---

25 The sum of 3 consecutive even numbers is 36. What is the largest of the 3 numbers?

- [ ] A) 10
- [ ] B) 15
- [ ] C) 12
- [ ] D) 13
- [ ] E) 14

---

26 Noah and Ffion have £43 between them. Noah has £37 more than Ffion. How much money does Noah have, in pounds?

- [ ] A) 21.5
- [ ] B) 20
- [ ] C) 40
- [ ] D) 39
- [ ] E) 3

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27 A sequence is generated by the rule: the nth term = $n^2 - n + 1$. Find the first four terms of the sequence, and find the value of n for which the nth term equals 91.

(5)

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28 The sum of 4 consecutive even numbers is 76. What is the largest of the 4 numbers?

- ☐ A) 16
- ☐ B) 24
- ☐ C) 22
- ☐ D) 19
- ☐ E) 23

---

29 The sum of 3 consecutive odd numbers is 69. What is the largest of the 3 numbers?

- ☐ A) 26
- ☐ B) 25
- ☐ C) 21
- ☐ D) 24
- ☐ E) 23

---

30 The sum of 3 consecutive numbers is 42. What is the largest of the 3 numbers?

- ☐ A) 13
- ☐ B) 15
- ☐ C) 16
- ☐ D) 14
- ☐ E) 17

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31 Imogen and Ffion have 62 stickers between them. Imogen has 14 more than Ffion. How many does Ffion have?

- ☐ A) 25
- ☐ B) 38
- ☐ C) 31
- ☐ D) 24
- ☐ E) 19

---

32 A fruit squash is made by mixing orange concentrate and water in the ratio 3:7. If 300 ml of orange concentrate is used, how much water is needed?

(2)

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33 The sum of 3 consecutive odd numbers is 15. What is the largest of the 3 numbers?

- ☐ A) 5
- ☐ B) 6
- ☐ C) 3
- ☐ D) 7
- ☐ E) 9

---

34 List all the two-digit numbers that can be made by choosing two different digits from 3, 6 and 9 (no digit repeated within a number).

(2)

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35 Yusuf and Isla have 34 points between them. Yusuf has 12 more than Isla. How many does Yusuf have?

- ☐ A) 11.5
- ☐ B) 11
- ☐ C) 23
- ☐ D) 22
- ☐ E) 17

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36 Rhys and Noah have 105 stickers between them. Rhys has 13 more than Noah. How many does Rhys have?

- [ ] A) 59
- [ ] B) 92
- [ ] C) 52.5
- [ ] D) 60
- [ ] E) 46

---

37 Maya and Declan have £43 between them. Maya has £5 more than Declan. How much money does Declan have, in pounds?

- [ ] A) 24
- [ ] B) 19
- [ ] C) 21.5
- [ ] D) 5
- [ ] E) 48

---

38 Look at this sequence: 2, 8, 14, 20, ... What is the next term?

(1)

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39 The sum of 4 consecutive numbers is 66. What is the largest of the 4 numbers?

- [ ] A) 16.5
- [ ] B) 15
- [ ] C) 22
- [ ] D) 20.5
- [ ] E) 18

---

40 Imogen and Declan have 73 stickers between them. Imogen has 5 more than Declan. How many does Declan have?

- [ ] A) 39
- [ ] B) 5
- [ ] C) 34
- [ ] D) 78
- [ ] E) 36.5

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41 In 5 years' time, Chidi will be twice as old as he was 3 years ago. How old is Chidi now?

(3)

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42 The sum of 3 consecutive odd numbers is 39. What is the largest of the 3 numbers?

- ☐ A) 11
- ☐ B) 16
- ☐ C) 19.5
- ☐ D) 13
- ☐ E) 15

---

43 Sienna and Fatima have £86 between them. Sienna has £28 more than Fatima. How much money does Sienna have, in pounds?

- ☐ A) 56
- ☐ B) 29
- ☐ C) 57
- ☐ D) 58
- ☐ E) 43

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Mark scheme · 2.57-4 Number Puzzles and Logic Set D: Test Pack

Question 1

correctly identifies Tariq is in the middle position oe **B1**

fully correct order: Yusuf, Tariq, Zainab cao **B1**

Answer: Yusuf, Tariq, Zainab

Question 2

correct option B (20) cao **B1**

Answer: B) 20

Question 3

correct option E (20) cao **B1**

Answer: E) 20

Question 4

correct option A (28) cao **B1**

Answer: A) 28

Question 5

correct option A (8) cao **B1**

Answer: A) 8

Question 6

correct option A (8) cao **B1**

Answer: A) 8

Question 7

correct option B (49) cao **B1**

Answer: B) 49

Question 8

correct option B (3) cao **B1**

Answer: B) 3

Question 9

correct option E (42) cao **B1**

Answer: E) 42

Question 10

£5.00 = 500p, so there are 500 / 10 = 50 ten-pence coins **M1**

50 divided by 3 gives 16 remainder 2, so 16 groups can be exchanged with 2 ten-pence coins left over **M1**

16 groups give 16 twenty-pence coins and 16 x 2 = 32 five-pence coins **M1**

16 twenty-pence coins, 32 five-pence coins, and 20p (2 ten-pence coins) left over cao **A1**

Answer: 16 twenty-pence coins, 32 five-pence coins; 20p (two 10p coins) left over

Question 11

correct option C (32) cao **B1**

Answer: C) 32

Question 12

correct option D (19) cao **B1**

Answer: D) 19

Question 13

correct option E (49) cao **B1**

Answer: E) 49

Question 14

correct option B (15) cao **B1**

Answer: B) 15

Question 15

correct option B (40) cao **B1**

Answer: B) 40

Question 16

term 2 = 4 x 2 + 5 = 13 oe **M1**

term 3 = 13 x 2 + 5 = 31 oe **M1**

term 4 = 31 x 2 + 5 = 67; full sequence 4, 13, 31, 67 cao **A1**

Answer: 4, 13, 31, 67

Question 17

correct option D (4) cao **B1**

Answer: D) 4

Question 18

Bella - History cao (given directly) **B1**

Aaron - Science, bike cao (deduced: Charlie and Deepa are both excluded from Science, so Aaron must like Science and therefore travels by bike) **B1**

Charlie - Maths, bus cao (deduced: the friend who walks likes Art, but Charlie travels by bus, so Charlie cannot like Art and must like Maths) **B1**

Deepa - Art, on foot cao (deduced by elimination, confirmed by clue 5) **B1**

Answer: Aaron - Science, bike; Bella - History, car; Charlie - Maths, bus; Deepa - Art, on foot

Question 19

correct option B (46) cao **B1**

Answer: B) 46

Question 20

sets up granddaughter = d, daughter = 3d + 4, grandmother = 2(3d + 4) - 2 = 6d + 6 **M1**

forms the equation d + (3d + 4) + (6d + 6) = 100, i.e. 10d + 10 = 100 oe **M1**

solves to d = 9 oe **M1**

granddaughter = 9, daughter = 31, grandmother = 60 cao **A1**

Answer: Granddaughter = 9, daughter = 31, grandmother = 60

Question 21

correct option B (42) cao **B1**

Answer: B) 42

Question 22

correct option B (41) cao **B1**

Answer: B) 41

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Question 23

correct option C (59) cao **B1**

Answer: C) 59

Question 24

correct option B (41) cao **B1**

Answer: B) 41

Question 25

correct option E (14) cao **B1**

Answer: E) 14

Question 26

correct option C (40) cao **B1**

Answer: C) 40

Question 27

substitutes n = 1, 2, 3, 4 into $n^2 - n + 1$ oe **M1**

first four terms: 1, 3, 7, 13 cao **A1**

sets up the equation $n^2 - n + 1 = 91$, i.e. $n^2 - n - 90 = 0$ oe **M1**

factorises to (n-10)(n+9) = 0, or solves the quadratic, giving n = 10 or n = -9 oe **dM1**

n = 10 cao (rejecting the negative solution as n must be a positive whole number) **A1**

Answer: First four terms: 1, 3, 7, 13. n = 10

Question 28

correct option C (22) cao **B1**

Answer: C) 22

Question 29

correct option B (25) cao **B1**

Answer: B) 25

Question 30

correct option B (15) cao **B1**

Answer: B) 15

Question 31

correct option D (24) cao **B1**

Answer: D) 24

Question 32

1 part = 300 / 3 = 100 ml oe **M1**

700 ml cao **A1**

Answer: 700 ml

Question 33

correct option D (7) cao **B1**

Answer: D) 7

Question 34

at least 4 of the 6 correct numbers listed, with no repeats or invalid digits **B1**

all six correct numbers listed: 36, 39, 63, 69, 93, 96 cao **B1**

Answer: 36, 39, 63, 69, 93, 96

Question 35

correct option C (23) cao **B1**

Answer: C) 23

Question 36

correct option A (59) cao **B1**

Answer: A) 59

Question 37

correct option B (19) cao **B1**

Answer: B) 19

Question 38

26 cao **B1**

Answer: 26

Question 39

correct option E (18) cao **B1**

Answer: E) 18

Question 40

correct option C (34) cao **B1**

Answer: C) 34

Question 41

sets up the equation x + 5 = 2(x - 3), where x is Chidi's age now; accept an equivalent route to the same value without algebra, such as trial and improvement **M1**

correctly expands and rearranges: x + 5 = 2x - 6, so 11 = x oe **M1**

11 cao **A1**

Answer: 11

Question 42

correct option E (15) cao **B1**

Answer: E) 15

Question 43

correct option C (57) cao **B1**

Answer: C) 57

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