2.89 Missing Digit and Calculation Puzzles: Test Pack

GL ASSESSMENT GL-11PLUS-MATHS · Calculators not allowed · about 35 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Multi-part column puzzle. Use exact arithmetic and show steps in each part.

(a) Write the missing digit in the three-digit number _23 so that _23 + 479 = 802. **(2)**

.....

(b) Multiply the three-digit number you found in part (a) by 4. Write the product. **(3)**

.....

(c) In the product from part (b) the tens-hundreds place is shown as 1_92. Write the missing digit. **(3)**

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2 The blank stands for one missing digit: 787 - _23 = 264. What is the missing digit?

- ☐ A) 0
- ☐ B) 2
- ☐ C) 5
- ☐ D) 4
- ☐ E) 6

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3 The blank stands for one missing digit: 528 + 749 = 127_. What is the missing digit?

- [ ] A) 6
- [ ] B) 8
- [ ] C) 5
- [ ] D) 2
- [ ] E) 7

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4 The blank stands for one missing digit: 852 + 4_7 = 1329. What is the missing digit?

- [ ] A) 2
- [ ] B) 8
- [ ] C) 6
- [ ] D) 7
- [ ] E) 3

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5 The blank stands for one missing digit: 6_8 - 408 = 260. What is the missing digit?

- [ ] A) 3
- [ ] B) 1
- [ ] C) 6
- [ ] D) 7
- [ ] E) 5

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6 The blank stands for one missing digit: 716 - 33_ = 381. What is the missing digit?

- [ ] A) 5
- [ ] B) 6
- [ ] C) 0
- [ ] D) 1
- [ ] E) 4

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7 The blank stands for one missing digit: _31 - 620 = 11. What is the missing digit?

- [ ] A) 6
- [ ] B) 7
- [ ] C) 3
- [ ] D) 1
- [ ] E) 5

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8 The blank stands for one missing digit: 337 x 8 = 26_6. What is the missing digit?

- [ ] A) 4
- [ ] B) 8
- [ ] C) 9
- [ ] D) 3
- [ ] E) 0

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9 The blank stands for one missing digit: 554 - 168 = 38_. What is the missing digit?

- [ ] A) 7
- [ ] B) 1
- [ ] C) 3
- [ ] D) 5
- [ ] E) 6

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10 The blank stands for one missing digit: _69 - 245 = 524. What is the missing digit?

- [ ] A) 5
- [ ] B) 2
- [ ] C) 8
- [ ] D) 7
- [ ] E) 6

---

11 The blank stands for one missing digit: 458 - 238 = 2_0. What is the missing digit?

- [ ] A) 1
- [ ] B) 4
- [ ] C) 7
- [ ] D) 2
- [ ] E) 3

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12 The blank stands for one missing digit: 688 x 5 = 34_0. What is the missing digit?

- [ ] A) 9
- [ ] B) 3
- [ ] C) 5
- [ ] D) 6
- [ ] E) 4

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13 The blank stands for one missing digit: 32_ + 781 = 1107. What is the missing digit?

- [ ] A) 5
- [ ] B) 1
- [ ] C) 6
- [ ] D) 0
- [ ] E) 7

---

14 The blank stands for one missing digit: 985 x 9 = 88_5. What is the missing digit?

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

---

15 The blank stands for one missing digit: 762 - 3_1 = 431. What is the missing digit?

- [ ] A) 2
- [ ] B) 4
- [ ] C) 6
- [ ] D) 3
- [ ] E) 8

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16 The blank stands for one missing digit: 467 - 226 = _41. What is the missing digit?

- [ ] A) 3
- [ ] B) 1
- [ ] C) 7
- [ ] D) 2
- [ ] E) 4

---

17 Find the missing digit in the subtraction: 6_2 - 175 = 487

- [ ] A) 5
- [ ] B) 8
- [ ] C) 6
- [ ] D) 4
- [ ] E) 7

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18 The blank stands for one missing digit: 401 - 2_6 = 115. What is the missing digit?

- ☐ A) 7
- ☐ B) 8
- ☐ C) 3
- ☐ D) 9
- ☐ E) 1

---

19 The blank stands for one missing digit: 1_3 + 383 = 526. What is the missing digit?

- ☐ A) 5
- ☐ B) 9
- ☐ C) 4
- ☐ D) 2
- ☐ E) 3

---

20 The blank stands for one missing digit: _99 + 887 = 1386. What is the missing digit?

- ☐ A) 1
- ☐ B) 4
- ☐ C) 9
- ☐ D) 3
- ☐ E) 5

---

21 The blank stands for one missing digit: 871 + 190 = 10_1. What is the missing digit?

- ☐ A) 6
- ☐ B) 3
- ☐ C) 7
- ☐ D) 5
- ☐ E) 8

---

22 The blank stands for one missing digit: 880 - 532 = _48. What is the missing digit?

- ☐ A) 3
- ☐ B) 8
- ☐ C) 6
- ☐ D) 2
- ☐ E) 4

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23 The blank stands for one missing digit: 451 x 8 = _608. What is the missing digit?

- ☐ A) 4
- ☐ B) 2
- ☐ C) 6
- ☐ D) 3
- ☐ E) 8

---

24 The blank stands for one missing digit: 634 - 17_ = 464. What is the missing digit?

- ☐ A) 9
- ☐ B) 1
- ☐ C) 5
- ☐ D) 4
- ☐ E) 0

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25 Each digit d is the same in both places. d5 + 5d = 121. Find d. Show the steps.

(3)

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26 In the addition below a digit is blank: _47 + 538 = 985. Find the missing digit and show your steps.

(4)

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Mark scheme · 2.89 Missing Digit and Calculation Puzzles: Test Pack

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

Question 1

(a) set up subtraction 802 - 479 (= 323) or equivalent **M1**
(a) hundreds digit 3 cao **A1**
(a) Answer: 3
(b) correct method for multiplication seen (323 x 4) **M1**
(b) intermediate partial product correct or 323 x 2 = 646 seen **M1**
(b) final product 1292 cao **A1**
(b) Answer: 1292
(c) recognise product 1292 from part (b) or recalc 1292 **M1**
(c) identify the blank (the hundreds digit) correctly **M1**
(c) blank = 2 cao **A1**
(c) Answer: 2

Question 2

correct option C (5) cao **B1**
Answer: C) 5

Question 3

correct option E (7) cao **B1**
Answer: E) 7

Question 4

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

Question 5

correct option C (6) cao **B1**
Answer: C) 6

Question 6

correct option A (5) cao **B1**
Answer: A) 5

Question 7

correct option A (6) cao **B1**
Answer: A) 6

Question 8

correct option C (9) cao **B1**
Answer: C) 9

Question 9

correct option E (6) cao **B1**
Answer: E) 6

Question 10

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

Question 11

correct option D (2) cao **B1**
Answer: D) 2

Question 12

correct option E (4) cao **B1**
Answer: E) 4

Question 13

correct option C (6) cao **B1**
Answer: C) 6

Question 14

correct option A (6) cao **B1**
Answer: A) 6

Question 15

correct option D (3) cao **B1**
Answer: D) 3

Question 16

correct option D (2) cao **B1**
Answer: D) 2

Question 17

correct option C (6) cao **B1**
Answer: C) 6 (662 - 175 = 487).

Question 18

correct option B (8) cao **B1**
Answer: B) 8

Question 19

correct option C (4) cao **B1**
Answer: C) 4

Question 20

correct option B (4) cao **B1**
Answer: B) 4

Question 21

correct option A (6) cao **B1**
Answer: A) 6

Question 22

correct option A (3) cao **B1**
Answer: A) 3

Question 23

correct option D (3) cao **B1**
Answer: D) 3

Question 24

correct option E (0) cao **B1**
Answer: E) 0

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Question 25

form equation: (10d + 5) + (50 + d) = 121 seen	**M1**
simplify to 11d + 55 = 121 and 11d = 66 seen	**M1**
d = 6 cao	**A1**

Answer: d = 6 (since 65 + 56 = 121).

Question 26

set up subtraction 985 - 538 or equivalent method seen	**M1**
compute subtraction (= 447) seen	**M1**
identify hundreds digit 4 or show the filled number 447	**M1**
blank = 4 cao	**A1**

Answer: 4 (447 + 538 = 985).

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