Year 4 maths: Symbol number puzzles (Hard)

Maths · Patterns and algebra
Level: Hard

Student: _____ Date: _____

Instructions
- There are 10 questions. Read each one carefully.
- Write your answers on this paper. Use the space under a question to work it out.
- A grown-up can read a question aloud — that's fine.
- The answers are at the end. Check them together when you have finished.

Questions

1. Each symbol stands for a whole number, and the same symbol always means the same number. ● + ● + ● is less than 30. ● + 15 is greater than 20. How many whole numbers can ● be?

Answer: ☐

Working:

2. Each symbol stands for a whole number, and the same symbol always means the same number. ▲ + ▲ = ● + 4, and ● = 10. What number is ▲?

Circle one answer.

○ **A** 3 ○ **B** 6 ○ **C** 14 ○ **D** 5 ○ **E** 7

3. Each symbol stands for a whole number, and the same symbol always means the same number. ▲ + ● = 16 and ▲ + ▲ + ● = 23. What number is ●?

Circle one answer.

○ **A** 7 ○ **B** 39 ○ **C** 8 ○ **D** 16 ○ **E** 9

4. □ − 14 + 6 = 23. What number goes in the box?

Circle one answer.

○ **A** 15 ○ **B** 31 ○ **C** 17 ○ **D** 3 ○ **E** 43

5. Omar had some stickers. He gave away 16, then got 9 more. Now he has 30. How many did he have at the start?

Circle one answer.

○ **A** 55 ○ **B** 37 ○ **C** 23 ○ **D** 21 ○ **E** 46

6. What number should go in the box to make this number sentence true? 24 + □ = 50 − 7

Circle one answer.

○ **A** 19 ○ **B** 43 ○ **C** 67 ○ **D** 33 ○ **E** 26

7. What number should go in the box to make this number sentence true? 35 − □ = 12 + 9

Circle one answer.

○ **A** 56 ○ **B** 14 ○ **C** 13 ○ **D** 21 ○ **E** 23

8. Mia is doing this puzzle. Write the same whole number in each circle to make the number sentences true. 16 − ● is more than 7. ● + ● is bigger than 8. Mia noticed that there is more than one correct answer. How many different correct answers are there?

Circle one answer.

○ **A** 2 ○ **B** 3 ○ **C** 4 ○ **D** 5 ○ **E** 6

9. Oscar is doing this puzzle. Write the same whole number in each triangle to make the number sentences true. 20 − ▲ is more than 13. ▲ + ▲ + ▲ is bigger than 9. Oscar noticed that there is more than one correct answer. How many different correct answers are there?

Circle one answer.

○ **A** 2 ○ **B** 3 ○ **C** 4 ○ **D** 5 ○ **E** 6

10. Kai writes the same whole number in each circle to make both sentences true. 20 − ● is bigger than 11. 3 × ● is bigger than 12. There is more than one answer. How many different whole numbers work?

Circle one answer.

○ **A** 4 ○ **B** 3 ○ **C** 5 ○ **D** 6 ○ **E** 9

Answer key

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1. 4

● + ● + ● < 30 means ● is 9 or less (10 × 3 = 30 is not less). ● + 15 > 20 means ● is 6 or more. ● can be 6, 7, 8 or 9: 4 numbers.

2. E — 7

● + 4 = 10 + 4 = 14. ▲ + ▲ = 14, so ▲ = 7.

3. E — 9

The second sentence has one more ▲: ▲ = 23 − 16 = 7. Then 7 + ● = 16, so ● = 9.

4. B — 31

Undo + 6: 23 − 6 = 17. Undo − 14: 17 + 14 = 31. Check: 31 − 14 + 6 = 23.

5. B — 37

Undo getting 9: 30 − 9 = 21. Undo giving away 16: 21 + 16 = 37. Check: 37 − 16 + 9 = 30.

6. A — 19

50 − 7 = 43. So 24 + □ = 43, and □ = 43 − 24 = 19. Check: 24 + 19 = 43.

7. B — 14

12 + 9 = 21. So 35 − □ = 21, and □ = 35 − 21 = 14. Check: 35 − 14 = 21.

8. C — 4

16 − ● > 7 means ● is 8 or less (16 − 9 = 7 is not more than 7). ● + ● > 8 means ● is 5 or more (4 + 4 = 8 is not bigger). 5, 6, 7, 8: 4 answers.

9. B — 3

20 − ▲ > 13 means ▲ is 6 or less (20 − 7 = 13 is not more). ▲ + ▲ + ▲ > 9 means ▲ is 4 or more (3 + 3 + 3 = 9 is not bigger). 4, 5, 6: 3 answers.

10. A — 4

20 − ● bigger than 11: ● is 8 or less (20 − 9 = 11 is not bigger). 3 × ● bigger than 12: ● is 5 or more (3 × 4 = 12 is not bigger). 5, 6, 7 and 8: 4 answers.