GCSE Maths: The unknown on both sides (Foundation): worksheet

GCSE Maths - Linear Equations - Foundation - Lesson 9.4

Name: _____ Date: _____ Score: _____

12 questions. Write your answers in the spaces. Answers and step-by-step help are free at **websink.site/gcse/maths/ch09-linear-equations/foundation/the-unknown-on-both-sides/**

Exercise 9D The unknown on both sides

Non-calculator

1 Solve these equations. There are no plain numbers to move.

(a) $5x = 3x + 8$

Answer:

(b) $4x = x + 12$

Answer:

(c) $7x = 4x + 15$

Answer:

(d) $6x = 2x + 20$

Answer:

(e) $9x = 5x + 28$

Answer:

(f) $8x = 3x + 35$

Answer:

2 Solve these equations.

(a) $3x + 5 = x + 11$

Answer:

(b) $5x + 2 = 2x + 14$

Answer:

(c) $4x + 1 = x + 16$

Answer:

(d) $6x + 3 = 4x + 11$

Answer:

(e) $7x + 4 = 3x + 20$

Answer:

(f) $8x + 1 = 5x + 19$

Answer:

3 Solve these equations. Each has a subtraction.

(a) $5x - 3 = 2x + 9$

Answer:

(b) $6x - 4 = 3x + 14$

Answer:

(c) $4x - 7 = x + 8$

Answer:

(d) $7x - 1 = 5x + 13$

Answer:

(e) $9x - 8 = 4x + 27$

Answer:

(f) $8x - 5 = 3x + 20$

Answer:

4 Solve these equations. The bigger x term is on the right-hand side.

(a) $x + 12 = 3x + 4$

Answer:

(b) $2x + 9 = 5x$

Answer:

(c) $3x + 8 = 5x - 4$

Answer:

(d) $4x + 3 = 7x - 18$

Answer:

(e) $2x + 15 = 6x - 13$

Answer:

(f) $3x + 7 = 8x - 23$

Answer:

5 Solve these equations. Each solution is a negative number.

(a) $2x + 9 = 5x + 15$

Answer:

(b) $3x + 14 = 7x + 22$

Answer:

(c) $5x + 4 = 8x + 13$

Answer:

(d) $2x - 3 = 4x + 7$

Answer:

(e) $x + 1 = 4x + 10$

Answer:

(f) $6x + 5 = 9x + 20$

Answer:

6 Taxi firm A charges £3 plus £2 per mile. Taxi firm B charges £1 plus £3 per mile. For how many miles do the two firms charge the same amount?

Answer:

7 Sam thinks of a number. He multiplies it by 5 and subtracts 6. If he had multiplied it by 3 and added 10 instead, he would have got the same answer. What is Sam's number?

Answer:

8 Lily solves $6x + 5 = 2x + 17$. Her first line is $8x + 5 = 17$. Explain her mistake and solve the equation correctly.

Answer:

9 Show that $x = 5$ is the solution of $7x - 9 = 3x + 11$.

Answer:

10 Ali has £5 and saves £4 each week. Ben has £21 and saves £2 each week. After how many weeks will they have the same amount?

Answer:

11 To solve $3x + 8 = 7x - 4$, Amy subtracts $7x$ from both sides and gets $-4x + 8 = -4$. Ben subtracts $3x$ from both sides and gets $8 = 4x - 4$. Show that they both get the same value of x.

Answer:

12 Solve these equations.

(a) $2x + 4 = x + 9$

Answer:

(b) $3x = x + 10$

Answer:

(c) $4x + 2 = 2x + 12$

Answer:

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