



CLASS 8 MATHS · 2026-27

Linear equations in one variable

Linear equations

32

QUESTIONS

30

MINUTES

3

EXERCISES

This belongs to _____

Date _____

WHAT YOU'LL GET GOOD AT

- Solves an equation with the variable on both sides
- Clears fractions by multiplying through by the LCM
- Expands brackets correctly before collecting terms
- Forms an equation from a described situation
- Verifies an answer by substituting it back

Take your time, and have a go at every one. If you get stuck, look at the orange box — Ollie has already done one for you.

Linear equations in one variable

Linear equations · 32 questions · tick each box as you finish

Exercise 1 of 3 · 10 questions Solve. Show each step.



WRITE THE ANSWER

HERE'S ONE DONE FOR YOU

$7 - 3x = x - 5$ gives $x = 3$. Adding $3x$ to both sides rather than subtracting x is the easier route, because it leaves the x term positive $-7 = 4x - 5$. Both routes reach the same answer; one of them produces far fewer sign errors, and choosing it deliberately is a habit worth building now.

1) $5x - 3 = 12$

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

3) $3(x - 2) = 12$

4) $4x + 5 = 2x + 13$

5) $7 - 3x = x - 5$

6) $6x + 4 = 22$

7) $5x - 9 = 2x + 6$

8) $4(x + 3) = 20$

9) $9 - 2x = x + 3$

10) $7x - 5 = 4x + 10$

Exercise 2 of 3 · 10 questions Solve. Clear the fractions first.



WRITE THE ANSWER

HERE'S ONE DONE FOR YOU

$x/2 + x/3 = 5$ gives $x = 6$. Multiply every term by 6, the LCM of the denominators, and the fractions vanish: $3x + 2x = 30$. The word to insist on is *every* - multiplying the left side and forgetting the 5 on the right is the single commonest error in this exercise, and the answer it produces looks entirely reasonable.

1) $x/2 + x/3 = 5$

2) $(2x - 1)/3 = 5$

3) $x/4 - 2 = 1$

4) $(x + 1)/2 = (x - 1)/3$

5) $(3x + 2)/5 = (2x - 3)/3$

6) $x/3 + x/4 = 7$

7) $(3x - 2)/5 = 4$

8) $x/6 - 3 = 1$

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

10) $(2x + 1)/3 = (x + 4)/2$

Exercise 3 of 3 · 12 questions Form an equation and solve it. Check your answer against the question.

WRITE THE ANSWER

HERE'S ONE DONE FOR YOU

The ages: let the son be s , so the father is $3s$. In twelve years they are $s + 12$ and $3s + 12$, and the father is then twice the son: $3s + 12 = 2(s + 12)$. That gives $s = 12$, so the son is 12 and the father 36. Check it against the question - in twelve years they are 24 and 48, and 48 is twice 24. Age problems are where children most often solve correctly and answer the wrong question, so checking against the words rather than the equation is what secures the mark.

1) The sum of three consecutive whole numbers is 51. Find them.

2) The length of a rectangle is twice its breadth and its perimeter is 48 cm. Find both.

3) A number increased by 8 gives three times the original number. Find it.

4) A father is three times as old as his son. In 12 years he will be twice as old. Find both ages.

5) Two numbers are in the ratio 3 : 5 and add up to 64. Find them.

6) The denominator of a fraction is 4 more than the numerator. Adding 1 to both gives $\frac{3}{4}$. Find the fraction.

7) The sum of two consecutive odd numbers is 36. Find them.

8) The perimeter of a rectangle is 44 cm and the length is 4 cm more than the breadth. Find both.

9) A number decreased by 6 gives half the number. Find it.

10) A mother is four times as old as her son; in 6 years she will be three times as old. Find both ages.

11) Two numbers are in the ratio 2 : 7 and their sum is 63. Find them.

12) The numerator of a fraction is 3 less than the denominator, and the fraction equals $\frac{4}{5}$. Find it.

**All done? How did that feel?**

Colour in a star. Three stars means you could teach it to someone else.



Tricky · Getting there · Easy now



Answer key

For grown-ups

Linear equations in one variable · keep this page back until your child has finished.

1. Solve. Show each step.

- 1) $x = 3$. Add 3 to both sides to get $5x = 15$, then divide by 5.
- 2) $x = 11$. Subtract $2x$ from both sides to get $7 = x - 4$, then add 4.
- 3) $x = 6$. Divide both sides by 3 to get $x - 2 = 4$, then add 2.
- 4) $x = 4$. Subtract $2x$ to get $2x + 5 = 13$, subtract 5, then divide by 2.
- 5) $x = 3$. Add $3x$ to both sides to get $7 = 4x - 5$, add 5 to get $12 = 4x$.
- 6) $x = 3$. Subtract 4: $6x = 18$. Divide by 6.
- 7) $x = 5$. Subtract $2x$: $3x - 9 = 6$. Add 9: $3x = 15$. Divide by 3.
- 8) $x = 2$. Divide by 4: $x + 3 = 5$. Subtract 3.
- 9) $x = 2$. Add $2x$: $9 = 3x + 3$. Subtract 3: $3x = 6$. Divide by 3.
- 10) $x = 5$. Subtract $4x$: $3x - 5 = 10$. Add 5: $3x = 15$. Divide by 3.

2. Solve. Clear the fractions first.

- 1) $x = 6$. Multiply through by 6: $3x + 2x = 30$, so $5x = 30$.
- 2) $x = 8$. Multiply both sides by 3: $2x - 1 = 15$.
- 3) $x = 12$. Add 2 to get $x/4 = 3$, then multiply by 4.
- 4) $x = -5$. Cross-multiplying gives $3(x + 1) = 2(x - 1)$, so $3x + 3 = 2x - 2$.
- 5) $x = 21$. Cross-multiplying gives $3(3x + 2) = 5(2x - 3)$, so $9x + 6 = 10x - 15$.
- 6) $x = 12$. Multiply throughout by 12: $4x + 3x = 84$, so $7x = 84$.
- 7) $x = 22/3$. Multiply both sides by 5: $3x - 2 = 20$, so $3x = 22$.
- 8) $x = 24$. Add 3: $x/6 = 4$. Multiply by 6.
- 9) $x = -8$. Cross-multiply: $5(x + 2) = 3(x - 2)$, so $5x + 10 = 3x - 6$ and $2x = -16$.
- 10) $x = 10$. Cross-multiply: $2(2x + 1) = 3(x + 4)$, so $4x + 2 = 3x + 12$.

3. Form an equation and solve it. Check your answer against the question.

- 1) $n + (n + 1) + (n + 2) = 51$, so $3n + 3 = 51$ and $n = 16$. The numbers are 16, 17 and 18.
- 2) $2(2b + b) = 48$, so $6b = 48$ and $b = 8$. The breadth is 8 cm and the length is 16 cm.
- 3) $n + 8 = 3n$, so $2n = 8$ and $n = 4$.
- 4) Let the son be s . Then $3s + 12 = 2(s + 12)$, so $3s + 12 = 2s + 24$ and $s = 12$. The son is 12 and the father is 36.
- 5) $3x + 5x = 64$, so $8x = 64$ and $x = 8$. The numbers are 24 and 40.
- 6) Let the numerator be n . Then $(n + 1)/(n + 5) = 3/4$, so $4n + 4 = 3n + 15$ and $n = 11$. The fraction is $11/15$.
- 7) $n + (n + 2) = 36$, so $2n + 2 = 36$, $2n = 34$ and $n = 17$. The numbers are 17 and 19.
- 8) $2(b + 4 + b) = 44$, so $4b + 8 = 44$, $4b = 36$ and $b = 9$. The breadth is 9 cm and the length 13 cm.
- 9) $n - 6 = n/2$, so $2n - 12 = n$ and $n = 12$.
- 10) Let the son be s , so the mother is $4s$. Then $4s + 6 = 3(s + 6)$, giving $4s + 6 = 3s + 18$ and $s = 12$. The son is 12 and the mother 48.
- 11) $2k + 7k = 63$, so $9k = 63$ and $k = 7$. The numbers are 14 and 49.
- 12) Let the denominator be d , so the numerator is $d - 3$. Then $(d - 3)/d = 4/5$, giving $5d - 15 = 4d$ and $d = 15$. The fraction is $12/15$.

WHILE YOUR CHILD WORKS

- When fractions are cleared, check every term was multiplied - including the number on the right. That omission is the most frequent error here.
- Substituting the answer back takes ten seconds and catches nearly every slip.
- In word problems, check the answer against the question rather than against the equation. Age problems in particular are often solved correctly and reported wrongly.

**Spotted a gap while marking?**

A free assessment is one live class with a matched teacher - no card, nothing to cancel. Afterwards you get an honest note on what they noticed.

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