Your notes

KS3 Maths: revision notes

Solving equations

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Solving equations

- Solving an **equation** means finding the value of the letter that makes it true. Do the same to both sides, using **inverse operations**.
- One step: $x + 7 = 12$, so $x = 5$. $4x = 20$, so $x = 5$. $x \div 3 = 6$, so $x = 18$.
- Two steps: $3x + 5 = 20$. Subtract 5: $3x = 15$. Divide by 3: $x = 5$.
- Brackets: $2(x - 3) = 10$. Divide by 2: $x - 3 = 5$, so $x = 8$ (or expand the bracket first).

Letters on both sides

- Get the letters on one side: $5x + 2 = 3x + 10$. Subtract $3x$: $2x + 2 = 10$. Subtract 2: $2x = 8$, so $x = 4$.
- Check an answer by substituting it back: $5 \times 4 + 2 = 22$ and $3 \times 4 + 10 = 22$.

Forming equations

- Write the words as an **equation**: "I think of a number, multiply it by 4 and subtract 3. The answer is 25." gives $4n - 3 = 25$, so $n = 7$.
- Use facts you know: the angles in a triangle add up to 180°, and the perimeter is the sum of the sides.

Inequalities

- An **inequality** shows a range of values: $x + 3 > 7$ means x is greater than 4.
- **Solve** them like **equations**, but if you multiply or divide by a negative number, reverse the sign.

Key terms

Equation	A statement that two expressions are equal.

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Solve	Find the value of the unknown letter.
Unknown	The letter whose value you need to find.
Inverse operation	The opposite operation, such as subtracting to undo adding.
Solution	The value that makes an equation true.
Inequality	A statement that one quantity is greater or less than another.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. Solve $x + 7 = 12$. What is x?
2. Solve $4x = 20$. What is x?
3. Solve $x \div 3 = 6$. What is x?
4. Solve $3x + 5 = 20$. What is x?
5. Solve $2(x - 3) = 10$. What is x?
6. Solve $5x + 2 = 3x + 10$. What is x?
7. Solve $7 - x = 3$. What is x?
8. I think of a number, multiply it by 4 and subtract 3. The answer is 25. What was my number?

Answers

1. 5
2. 5
3. 18
4. 5
5. 8
6. 4
7. 4
8. 7

What to do next

Practise 13 questions on this topic

Try 4 exam questions, with mark schemes

Read the lesson, one step at a time

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