Mathematics

Forming and Solving Inequalities (2)

Downloadable Resource

Mr Millar

Try this

What number could Yasmin be thinking of?

If I double my number and add three, I get less than if I triple my number and subtract 7.

Independent task

1. I think of a number, double it and then add 3. My answer is greater than 11. Show that $x > 4$.

2. I think of a whole number, triple it and then subtract 2. I call my answer A.

If I start with the same number, add 5 and then double it, I call this answer B

If I start with the same number, subtract it from 10, then triple it, I call this answer C

What values could my starting number have if:

- A < B

- B > C

- A < B AND B > C

Explore

Cala, Zaki and Yasmin are looking at the same positive number.

If I double the number and add 3, I get less than 23.
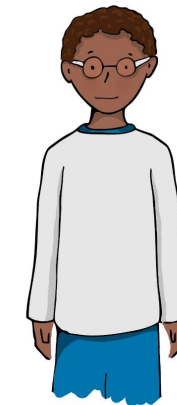
If I square the number I get more than 36.

If I subtract triple the number from 42, I get less than 6.

Hang on, something isn't quite right here ...

Cala

Zaki

Yasmin

Xavier

What could Xavier have noticed?

Answers

Try this

What number could Yasmin be thinking of?

If I double my number and add three, I get less than if I triple my number and subtract 7.

You could try different numbers and see if they work: eg, if you try 8, if you double it and add 3, you get 19, and it you triple it and subtract 7 you get 17, which won't work. But it will work for a number like 12.

We could set up an inequality, where x is the number we start with. We get:

$2x + 3 < 3x - 7$

Which solves to gives x > 10.

Try this

1. I think of a number, double it and then add 3. My answer is greater than 11. Show that $x > 4$.   Let the number be x. Then 2x + 3 > 11. Solve to get x > 4

2. I think of a whole number, triple it and then subtract 2. I call my answer A.   3x – 2

If I start with the same number, add 5 and then double it, I call this answer B   2(x + 5) = 2x + 10

If I start with the same number, subtract it from 10, then triple it, I call this answer C

   3(10 – x) = 30 – 3x

What values could my starting number have if:

- A < B   3x – 2 < 2x + 10; solve to get x < 12

- B > C   2x + 10 > 30 – 3x ; solve to get x > 8

- A < B AND B > C   x < 12 AND x > 8

Try this
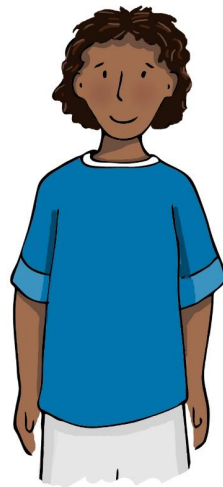
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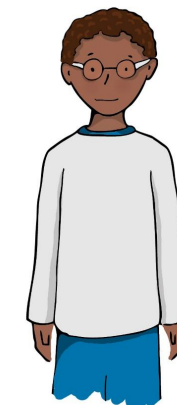
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Hang on, something isn't quite right here ...

Cala   Zaki   Yasmin   Xavier

$2x + 3 < 23$

$x^2 > 36$

$42 - 3x < 6$

$x < 10$

X > 6 since number is positive)

$x > 12$

What could Xavier have noticed?

x can't be less than 10 AND more than 12!