In what country does this scene happen ?

What is the aim of this problem ?

Let x be the weight of one bundle of cinnamon sticks. x is the **un<u>known</u>**, it's the value you have to find.

Write the equation corresponding to the situation :

Solve it.

Method for solving a linear equation of the form $ax+b=cx+d$

Transpose like-terms : $ax+b\textbf{-b-cx}=cx+d\textbf{-b-cx}$

Compute : $ax-cx=d-b$

     Thus $(a+c)\ x=d-b$

     Thus $x=\dfrac{d-b}{a-c}$

The solution of the equation is $\dfrac{d-b}{a-c}$.

Task 1 Solve the following equations

$$4u+5=5u-30$$
$$3r+10=2r+20$$

Task 2

Sales at the fishmonger's !

« Look at my fishes, they are so good ! A slice of tuna is worth two soles !...Four soles and two slices of tuna are 28 £ ! »

De<u>termine</u> the price of one sole.

Equations

Task 3

The aim of the exercise is to conjecture the solution of a problem using a mathematics software named « GEOGEBRA ». The situation of the problem is given below :

ABCD is a __rectangle__ such that AB=7 and AD=4. M is a point moving on the segment [CD].

1. Open Geogebra. Switch it to English.
2. Build ABCD and M. Build the **trapezium** ABMD and the triangle BCM. Build the segment [DM].
3. Their areas are displayed in the Algebra Window (*poly1* and *poly2*). Let's call *A* the double of *poly2*. Write it in the Input Field and display it in the Algebra Window.
4. Move the point M and find approximately the position for which the area of the trapezium is **twice** the area of the triangle.

Conjecture : When DM≈........, we have *A*=poly1. The area of the trapezium is twice the area of the triangle.

__Proof :__ Let x be the length of the segment [DM].

1. Find the expression of the area of ABMD in terms of x.
2. Find the expression of the area of BCM in terms of x.
3. Write the equation corresponding to the problem and solve it. Check the previous conjecture.

Task 4 : Four skirts and five ties cost 340£. Given the price of a shirt is three times the price of a tie, find the price of each.

Task 5 : ABCD is a square of side 20. Let M be a point of [AB]. We **de__note__** x=AM. P and N are such that P∈[AD] and AMNP is a square.
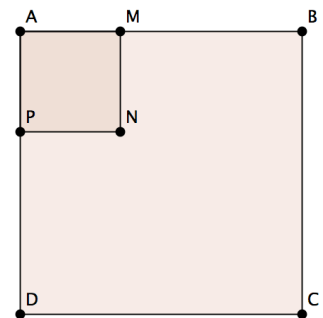
Let *f(x)* be the area of AMNP and *g(x)* be the area of the triangle DNC.

1. Express *f(x)* and *g(x)* in terms of x.
2. Find x such that *f(x) = g(x)* .

Task 6 Let $A(x) = 2(x+3)^2 + 6 + 2x$.

1. Factor *A(x)*.
2. Expand *A(x)*.
3. Compute *A(0), A(1), A($\sqrt{7}$)*.
4. Solve the equation *A(x)=0*.
5. Solve the inequation *A(x)>24*.

Equations

Task 7 Let $A(x) = (x-1)^2 - (3x-6)^2$.

1. Expand $A(x)$.
2. Factor $A(x)$.
3. Compute $A(0)$, $A(\dfrac{7}{4})$, $A(1-\sqrt{2})$.
4. Solve the equation $A(x)=0$.
5. Solve the inequation $A(x)>0$.

SPECIAL PRODUCTS

$$(a+b)^2 = a^2 + 2ab + b^2$$
$$(a-b)^2 = a^2 - 2ab + b^2$$
$$(a-b)(a+b) = a^2 - b^2$$

Equations