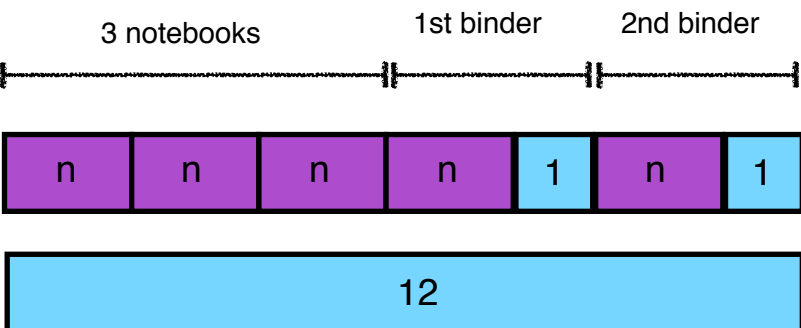
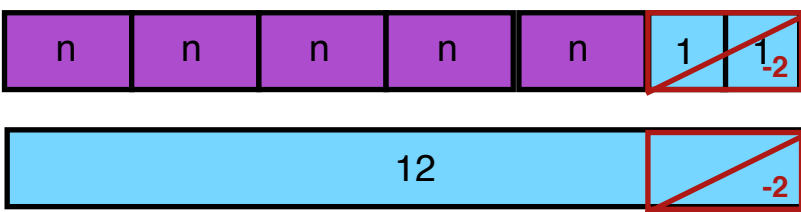


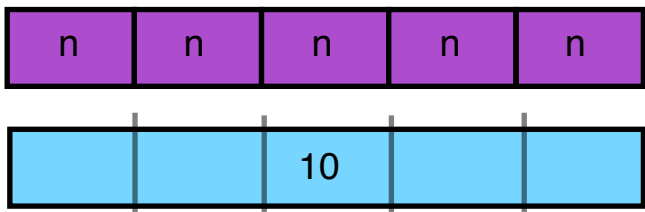
Problem: Alicia bought 3 notebooks and 2 binders, and her sister agreed to pay for the notebooks. Unfortunately, Alicia can't remember the cost of the notebooks! She does remember that each binder cost \$1 more than each notebook and that she spent \$12 total. How much does Alicia's sister need to pay Alicia?

3 notebooks
1st binder
2nd binder

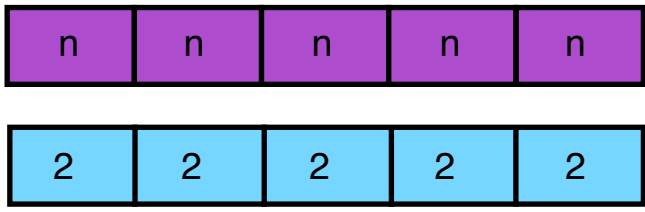


Variable:
n = cost of one notebook





Each notebook costs 2 dollars, but her sister is paying for 3 notebooks...



$2 \times 3 = 6$

Final Answer: 6 dollars

Problem: Philippe and Finn go to see a movie. Each buys a ticket for \$7 and a slushie, spending \$18 together. How much does one slushie cost?

Philippe's Ticket Philippe's Slushie Finn's Ticket Finn's Slushie

Variable:

s = cost of one slushie

20

20

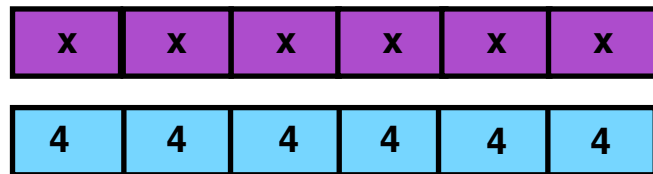
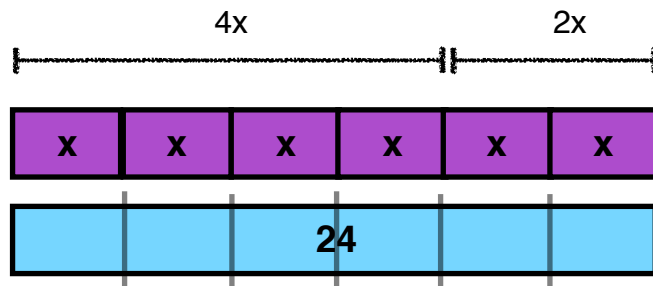
20

6

3 3

Final Answer: 3 dollars

Problem: $4x + 2x = 24$

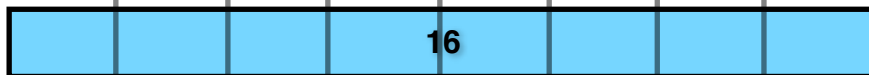
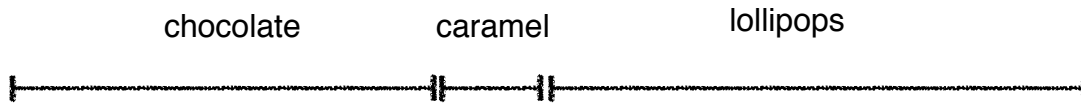


Final Answer: $x = 4$

Problem: Jordan goes to the grocery store and buys one bag of chocolate, one bag of caramel, and one bag of lollipops. A bag of chocolate costs two dollars more than three times as much as a bag of caramel, and a bag of lollipops costs as much as buying a bag of caramel and a bag of chocolate. If Jordan spends 20 dollars for the three bags, how much does a bag of chocolate cost?

Variable:

c = cost of one bag of caramel



Final Answer: 2 dollars

Problem: Kim is three years older than her sister Jess and half as old as her cousin Lexi. If they add their ages together, they get 37. How old is Jess?

Variable:
j = Jess' age

Jess Kim Lexi

Final Answer: 7 years old

Problem: $3(x+2) + 4x = 27$

The diagram illustrates the solution to the equation $3(x+2) + 4x = 27$ through several stages:

- Initial Equation:** A horizontal bar is divided into four segments labeled $x+2$, $x+2$, $x+2$, and $4x$. Below it, a row of blocks contains three pairs of purple blocks labeled 'x' and light blue blocks labeled '2', followed by four purple blocks labeled 'x'.
- Equation:** A light blue bar below contains the number 27.
- Step 1:** A row of blocks contains seven purple blocks labeled 'x' followed by three light blue blocks labeled '2'.
- Equation:** A light blue bar below contains the number 27.
- Step 2:** A row of blocks contains seven purple blocks labeled 'x' followed by a light blue bar with a red diagonal line. The top part of the bar is labeled '6' and the bottom part is labeled '-6'.
- Equation:** A light blue bar below contains the number 27, followed by a light blue bar with a red diagonal line labeled '-6'.
- Step 3:** A row of blocks contains seven purple blocks labeled 'x'.
- Equation:** A light blue bar below contains the number 21, with vertical lines extending up to the row of 'x' blocks.
- Step 4:** A row of blocks contains seven purple blocks labeled 'x'.
- Equation:** A row of blocks contains seven light blue blocks labeled '3'.

Final Answer: $x = 3$

Problem: Jeremiah had a busy Saturday morning! Starting at 9:00 am, he cleaned his bedroom for a while. Then he helped his mom clean the garage for four times as long as he had spent cleaning his room. Finally he cooked breakfast with his sister for ten minutes fewer than the time he had spent cleaning his room, until 9:56am. How many minutes did Jeremiah spend cleaning his room in the morning?

Variable:

t = time spent cleaning bedroom

Cleaning Bedroom
Cleaning Garage
Cooking Breakfast

Cleaning Bedroom
Cleaning Garage
Cooking Breakfast

Cleaning Bedroom
Cleaning Garage
Cooking Breakfast

Cleaning Bedroom
Cleaning Garage
Cooking Breakfast

Final Answer: 11 minutes

Problem: Izumi is running the mile (4 laps) at a track meet. She knows that she can run her first lap in 75 seconds. Izumi also knows that her second and third laps are the same speed, while her final lap is normally 9 seconds faster than her third lap. If she wants to finish in 6 minutes, how fast should her second lap be? (Note: there are 60 seconds in 1 minute)

First Lap
Second Lap
Third Lap
Fourth Lap

75	s	s	s	-9
----	---	---	---	---------------

Variable:

s = time it takes to run the second lap

360

6 x 60 = 360

s	s	s	75	-9
---	---	---	----	---------------

360

s	s	s	66	66
---	---	---	---------------	---------------

360	-66
-----	----------------

s	s	s
---	---	---

	294	
--	-----	--

s	s	s
---	---	---

98	98	98
----	----	----

Final Answer: 98 seconds

Problem: $5(x+5) - 2(2x+4) = 18$

The diagram illustrates the algebraic process in several stages:

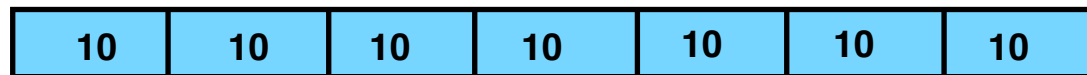
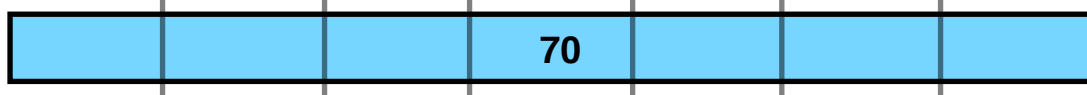
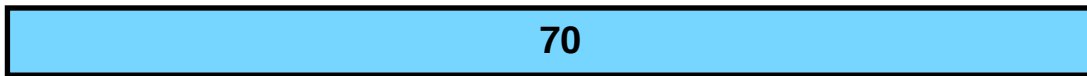
- Initial Equation:** $5(x+5) - 2(2x+4) = 18$. The $5(x+5)$ part is shown as five blocks of x and 5 . The $-2(2x+4)$ part is shown as two blocks of $-x$ and -4 .
- Expansion:** The equation is expanded to $x + 5 + 5 + 5 + 5 + 5 - x - x - 4 - 4 = 18$.
- Cancellation:** The x and $-x$ terms are cancelled out, leaving $5 + 5 + 5 + 5 + 5 - 4 - 4 = 18$.
- Simplification:** The equation is simplified to $17 = 18$.
- Final Answer:** The final result is $x = 1$.

Final Answer: $x = 1$

Problem: Jamal has three reading assignments to complete. In total he has to read 70 pages. Assignment 2 is twice as long as assignment 1, and assignment 3 is four times long as assignment 1. How many pages is his shortest assignment?

Variable:

s = Length of the shortest assignment (Assignment 1)




Final Answer: 10 pages

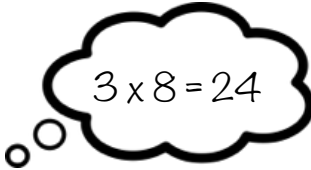
Problem: Malia and Megan ordered 3 pizzas and each pizza had 8 slices. Their friend Niver ate 4 slices of pizza, their friend Shayna ate twice as many pieces as Niver. Malia and Megan ate all of the remaining slices. How many slices did Malia and Megan eat?


Niver
Shayna
Malia and Megan


S


 = number of slices Malia and Megan ate

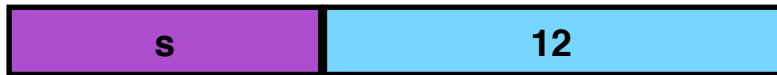





















s

12

Final Answer: 12 slices

Problem: $2(2x + 5 + x) + 10 - x = 60$

The diagram illustrates the simplification of the equation $2(2x + 5 + x) + 10 - x = 60$ through several steps:

- Step 1:** The equation is written as $2x + 5 + x + 2x + 5 + x + 10 - x = 60$. Brackets above the terms indicate the distribution of the 2 from the original equation.
- Step 2:** The terms are rearranged into blocks: two purple blocks labeled 'x', one light blue block labeled '5', another two purple blocks labeled 'x', another light blue block labeled '5', another purple block labeled 'x', and a light blue block labeled '10'. A red triangle with '-x' is shown being removed from the end.
- Step 3:** A light blue bar labeled '60' is shown below the blocks.
- Step 4:** The equation is simplified to $x + x + x + x + x + 5 + 5 + 10 - x = 60$. The blocks are rearranged to five purple 'x' blocks, two light blue '5' blocks, and one light blue '10' block. A red triangle with '-x' is shown being removed.
- Step 5:** The equation is further simplified to $x + x + x + x + x + 20 - 20 = 60$. The light blue blocks are combined into a single light blue bar labeled '20'. A red triangle with '-20' is shown being removed.
- Step 6:** The equation is simplified to $x + x + x + x + x = 40$. The light blue bar is now labeled '40'.
- Step 7:** The equation is simplified to $x + x + x + x + x = 8 + 8 + 8 + 8 + 8$. The five purple 'x' blocks are shown above five light blue blocks labeled '8'.

Final Answer: $x = 8$

Problem: Shailee and Sofia are on a roadtrip to see their grandparents. They drive for a while before stopping for lunch. After that, they drive again for 3 hours before getting gas. Before reaching their grandparents house, they drive 1 hour less than twice as long as they drove before the first stop. In total, they drove 14 hours on their trip. How long did they drive before the first stop, for lunch?

before first stop
before stopping for gas
before reaching their grandparent's house

Variable:

t = time spent driving before first

t

3

t

t

~~-1~~

14

t

t

t

3

~~-1~~

14

t

t

t

~~2-2~~

14

~~-2~~

t

t

t

12

t

t

t

4

4

4

Final Answer: 4 hours

Problem: Marcos picked up three books from the library. *The Uglies* is twice as long as *A Wrinkle In Time*, and *A Wrinkle In Time* is forty pages longer than *The BFG*. Altogether, the three books have 960 pages. How many pages long is *The BFG*?

The BFG
A Wrinkle In Time
The Uglies

p	p	40	p	40	p	40
---	---	----	---	----	---	----

960

p	p	p	p	40	40	40
---	---	---	---	----	----	----

960

p	p	p	p	120
---	---	---	---	----------------

960	-120
-----	-----------------

p	p	p	p
---	---	---	---

840

p	p	p	p
---	---	---	---

210	210	210	210
-----	-----	-----	-----

Final Answer: 210 pages

Variable:
p = number of pages in *The BFG*

Problem: $3(x + 8) + 2(x + 1) = 36$

The diagram illustrates the distributive property and simplification of the equation $3(x + 8) + 2(x + 1) = 36$. It is divided into several horizontal sections by dashed lines.

- Top Section:** A number line is shown with tick marks and labels $x + 8$, $x + 8$, $x + 8$, $x + 1$, and $x + 1$ above it. Below the number line is a row of ten boxes: three purple boxes labeled 'x', three light blue boxes labeled '8', one purple box labeled 'x', one light blue box labeled '1', and one purple box labeled 'x' followed by one light blue box labeled '1'.
- Second Section:** A single light blue bar labeled '36'.
- Third Section:** A row of ten boxes: five purple boxes labeled 'x', three light blue boxes labeled '8', and two light blue boxes labeled '1'.
- Fourth Section:** A single light blue bar labeled '36'.
- Fifth Section:** A row of ten boxes: five purple boxes labeled 'x' followed by a light blue bar labeled '26' and a light blue box labeled '-26'.
- Sixth Section:** A light blue bar labeled '36' followed by a light blue bar labeled '-26'.
- Seventh Section:** A row of five purple boxes labeled 'x'.
- Eighth Section:** A light blue bar divided into five equal segments, with the middle segment labeled '10'.
- Ninth Section:** A row of five purple boxes labeled 'x'.
- Tenth Section:** A row of five light blue boxes labeled '2'.
- Final Section:** A box containing the text "Final Answer: $x = 2$ ".