SUBTRACTION

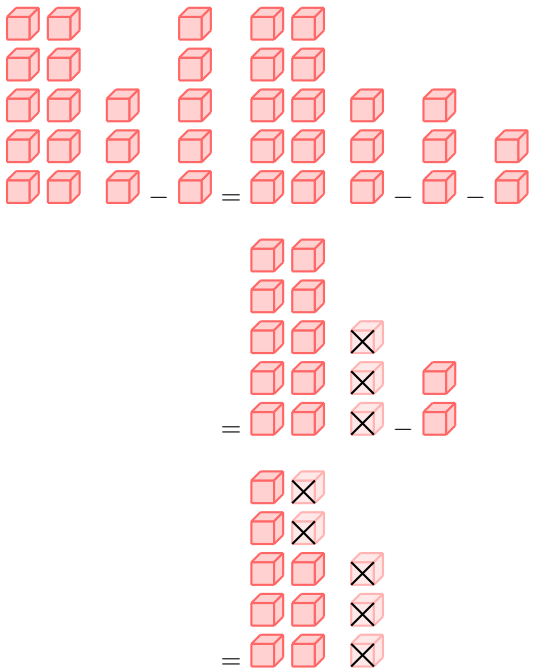
A DEFINITIONS

A.1 SUBTRACTING NUMBER WITHIN 20

Ex 1:

$$13 - 5 = \boxed{8}$$

Answer:

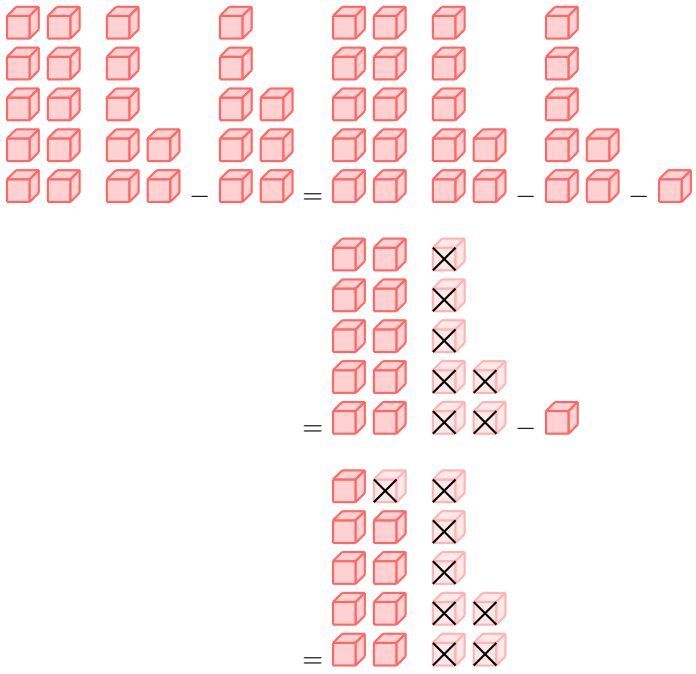


- $13 - 5 = 13 - 3 - 2$
  $= 10 - 2$
  $= 8$

Ex 2:

$$17 - 8 = \boxed{9}$$

Answer:

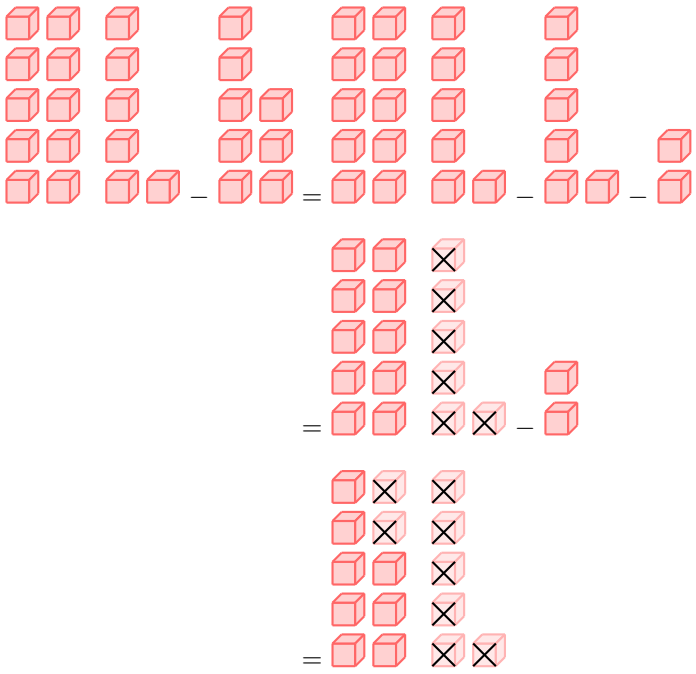


- $17 - 8 = 17 - 7 - 1$
  $= 10 - 1$
  $= 9$

Ex 3:

$$16 - 8 = \boxed{8}$$

Answer:

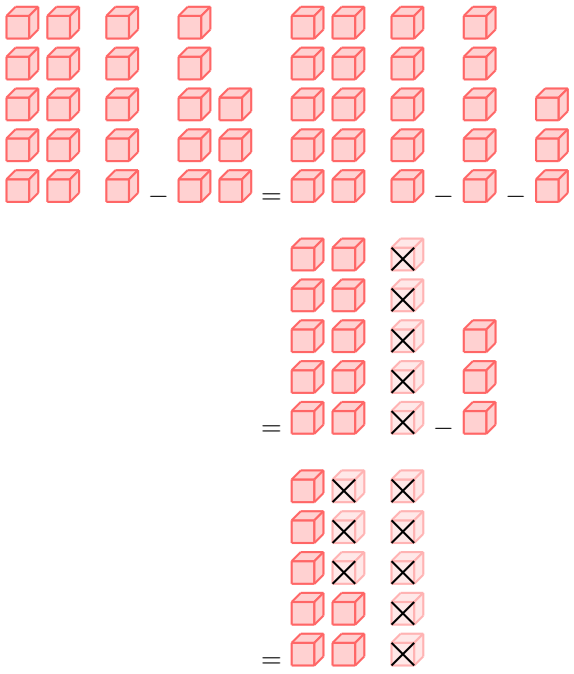


- $16 - 8 = 16 - 6 - 2$
  $= 10 - 2$
  $= 8$

Ex 4:

$$15 - 8 = \boxed{7}$$

Answer:

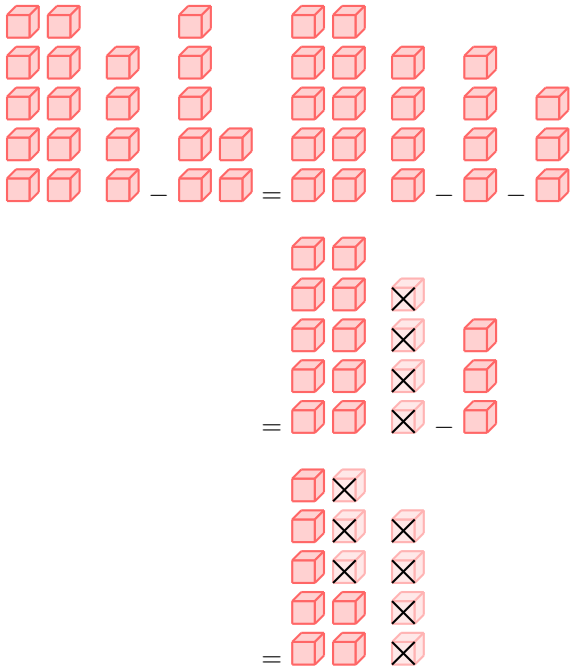


- $15 - 8 = 15 - 5 - 3$
  $= 10 - 3$
  $= 7$

Ex 5:

$$14 - 7 = \boxed{7}$$

Answer:

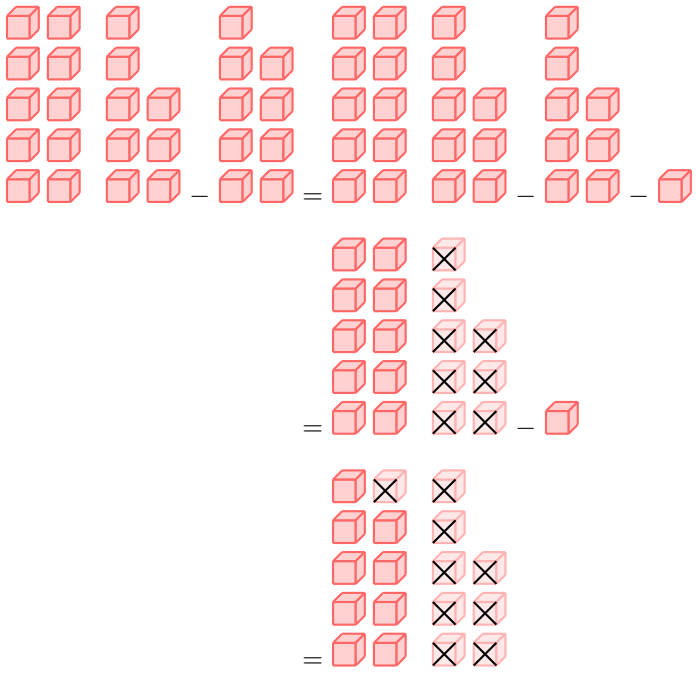


- $14 - 7 = 14 - 4 - 3$
  $= 10 - 3$
  $= 7$

Ex 6:

$$18 - 9 = \boxed{9}$$

Answer:

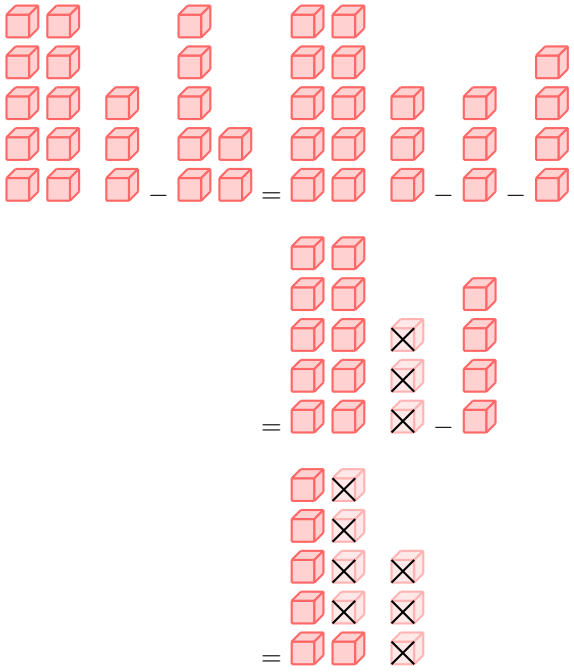


- $18 - 9 = 18 - 8 - 1$
  $= 10 - 1$
  $= 9$

Ex 7:

$$13 - 7 = \boxed{6}$$

Answer:

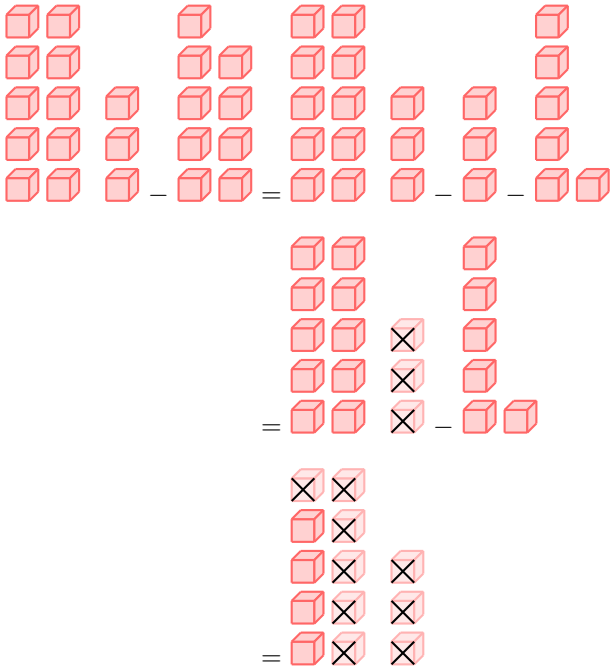


- $13 - 7 = 13 - 3 - 4$
  $= 10 - 4$
  $= 6$

Ex 8:

$$13 - 9 = \boxed{4}$$

Answer:

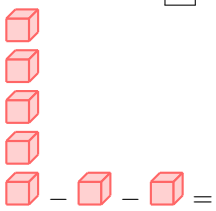


- $13 - 9 = 13 - 3 - 6$
  $= 10 - 6$
  $= 4$

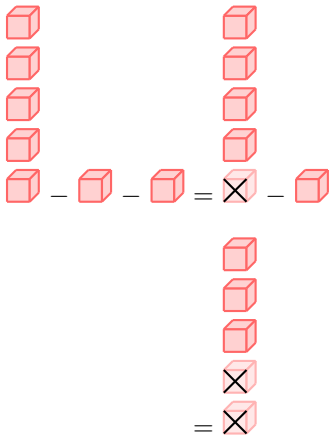
A.2 SUBTRACTING MULTIPLE NUMBERS

Ex 9:

$5 - 1 - 1 = \boxed{3}$



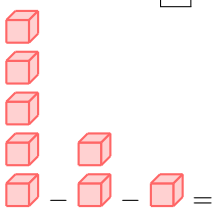
Answer:

- 

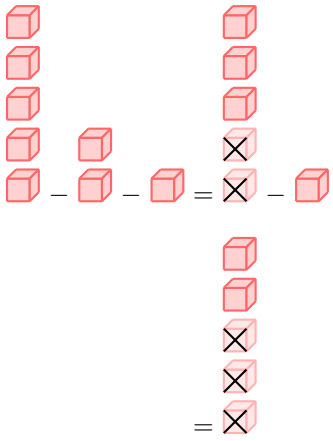
  $5 - 1 - 1 = 4 - 1$
  $= 3$

Ex 10:

$5 - 2 - 1 = \boxed{1}$



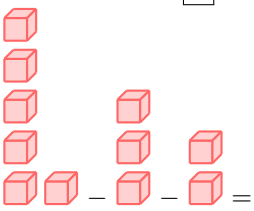
Answer:

- 

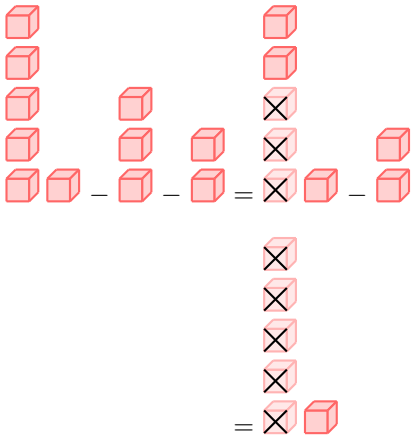
  $5 - 2 - 1 = 3 - 1$
  $= 2$

Ex 11:

$6 - 3 - 2 = \boxed{1}$



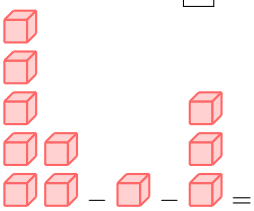
Answer:

- 

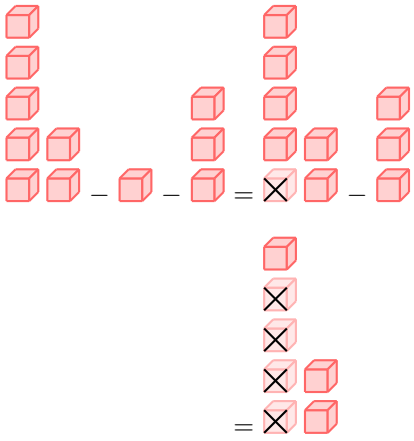
  $6 - 3 - 2 = 3 - 2$
  $= 1$

Ex 12:

$7 - 1 - 3 = \boxed{3}$



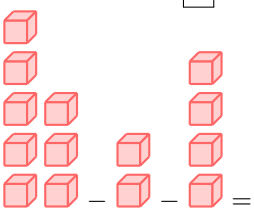
Answer:

- 

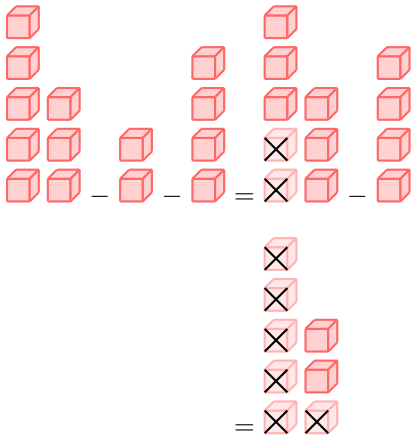
  $7 - 1 - 3 = 6 - 3$
  $= 3$

Ex 13:

$8 - 2 - 4 = \boxed{2}$

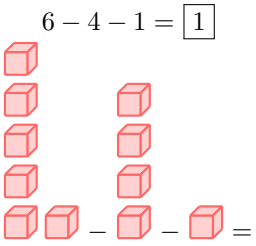


Answer:

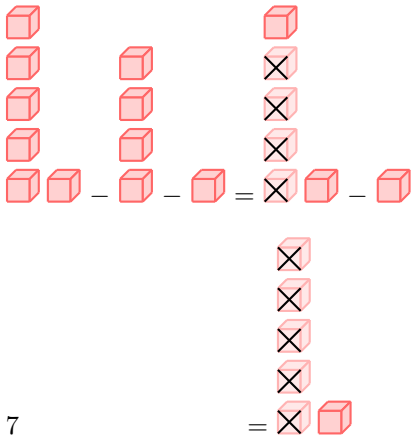


- $8-2-4=6-4$
  $=2$

Ex 14:

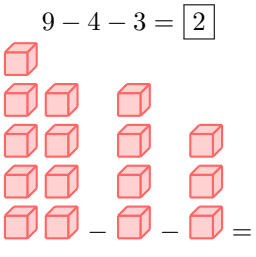


Answer:

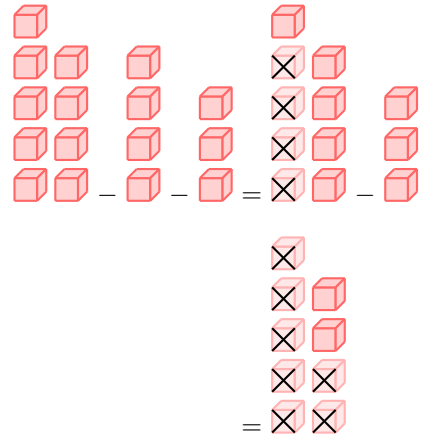


- $6-4-1=2-1$
  $=1$

Ex 15:



Answer:



- $9-4-3=5-3$
  $=2$

B SUBTRACTION USING COLUMNS

B.1 SUBTRACTING USING COLUMNS

Ex 16:

$$\begin{array}{r} 1\,3\,6\,4 \\ -\,1\,1\,4\,2 \\ \hline \boxed{222} \end{array}$$

Answer:

- Set up column subtraction:

$$\begin{array}{r} 1\,3\,6\,4 \\ -\,1\,1\,4\,2 \\ \hline \end{array}$$

- Subtract the ones: $4-2=2$

$$\begin{array}{r} 1\,3\,6\,4 \\ -\,1\,1\,4\,2 \\ \hline 2 \end{array}$$

- Subtract the tens: $6-4=2$

$$\begin{array}{r} 1\,3\,6\,4 \\ -\,1\,1\,4\,2 \\ \hline 2\,2 \end{array}$$

- Subtract the hundreds: $3-1=2$

$$\begin{array}{r} 1\,3\,6\,4 \\ -\,1\,1\,4\,2 \\ \hline 2\,2\,2 \end{array}$$

- Subtract the thousands: $1-1=0$

$$\begin{array}{r} 1\,3\,6\,4 \\ -\,1\,1\,4\,2 \\ \hline 2\,2\,2 \end{array}$$

- So $1364 - 1142 = 222$

Ex 17:

$$\begin{array}{r} 3\,4\,6\,0 \\ -\,1\,2\,8\,1 \\ \hline \boxed{179} \end{array}$$

Answer:

- Set up column subtraction:

$$\begin{array}{r} 3\,4\,6\,0 \\ -\,1\,2\,8\,1 \\ \hline \end{array}$$

- Subtract the one digits: $0 - 1$. There are not enough ones. You regroup 1 ten into 10 ones, making 10 ones.

$$\begin{array}{r} 3\,4\,6\,{}^{1}\!\not{0} \\ -\,1\,2\,{}^{1}\!\not{8}\,1 \\ \hline \end{array}$$

- Subtract the one digits: $10 - 1 = 9$

$$\begin{array}{r} 3\,4\,6\,{}^{1}\!\not{0} \\ -\,1\,2\,{}^{1}\!\not{8}\,1 \\ \hline 9 \end{array}$$

- Subtract the ten digits: $6 - 1(\text{carried}) - 8$. There are not enough tens. You regroup 1 hundred into 10 tens, making 16 tens.

$$\begin{array}{r} 3\,4\,{}^{1}\!\not{6}\,{}^{1}\!\not{0} \\ -\,1\,{}^{1}\!\not{2}\,{}^{1}\!\not{8}\,1 \\ \hline 9 \end{array}$$

- Subtract the ten digits: $16 - 1(\text{carried}) - 8 = 7$

$$\begin{array}{r} 3\,4\,{}^{1}\!\not{6}\,{}^{1}\!\not{0} \\ -\,1\,{}^{1}\!\not{2}\,{}^{1}\!\not{8}\,1 \\ \hline 7\,9 \end{array}$$

- Subtract the hundred digits: $4 - 1(\text{carried}) - 2 = 1$

$$\begin{array}{r} 3\,{}^{1}\!\not{4}\,{}^{1}\!\not{6}\,{}^{1}\!\not{0} \\ -\,1\,{}^{1}\!\not{2}\,{}^{1}\!\not{8}\,1 \\ \hline 1\,7\,9 \end{array}$$

- Subtract the thousand digits: $3 - 1 = 2$

$$\begin{array}{r} 3\,{}^{1}\!\not{4}\,{}^{1}\!\not{6}\,{}^{1}\!\not{0} \\ -\,1\,{}^{1}\!\not{2}\,{}^{1}\!\not{8}\,1 \\ \hline 2\,1\,7\,9 \end{array}$$

- So, $3460 - 1281 = 2179$

Ex 18:

$$\begin{array}{r} 9\,8\,3\,7 \\ -\,2\,2\,4\,6 \\ \hline \boxed{591} \end{array}$$

Answer:

- Set up column subtraction:

$$\begin{array}{r} 9\,8\,3\,7 \\ -\,2\,2\,4\,6 \\ \hline \end{array}$$

- Subtract the one digits: $7 - 6 = 1$

$$\begin{array}{r} 9\,8\,3\,7 \\ -\,2\,2\,4\,6 \\ \hline 1 \end{array}$$

- Subtract the ten digits: $3 - 4$. There are not enough tens. You regroup 1 hundred into 10 tens, making 13 tens.

$$\begin{array}{r} 9\,8\,{}^{1}\!\not{3}\,7 \\ -\,2\,{}^{1}\!\not{2}\,4\,6 \\ \hline 1 \end{array}$$

- Subtract the ten digits: $13 - 4 = 9$

$$\begin{array}{r} 9\,8\,{}^{1}\!\not{3}\,7 \\ -\,2\,{}^{1}\!\not{2}\,4\,6 \\ \hline 9\,1 \end{array}$$

- Subtract the hundred digits: $8 - 1(\text{carried}) - 2 = 5$

$$\begin{array}{r} 9\,8\,{}^{1}\!\not{3}\,7 \\ -\,2\,{}^{1}\!\not{2}\,4\,6 \\ \hline 5\,9\,1 \end{array}$$

- Subtract the thousand digits: $9 - 2 = 7$

$$\begin{array}{r} 9\,8\,{}^{1}\!\not{3}\,7 \\ -\,2\,{}^{1}\!\not{2}\,4\,6 \\ \hline 7\,5\,9\,1 \end{array}$$

- So, $9\,837 - 2\,246 = 7\,591$

Ex 19:

$$\begin{array}{r} 6\,3\,2\,2 \\ -\quad 1\,4\,5 \\ \hline \boxed{177} \end{array}$$

Answer:

- Set up column subtraction:

$$\begin{array}{r} 6\,3\,2\,2 \\ -\quad 1\,4\,5 \\ \hline \end{array}$$

- Subtract the one digits: $2 - 5$. There are not enough ones. You regroup 1 ten into 10 ones, making 12 ones.

$$\begin{array}{r} 6\,3\,2\,{}^{1}\!2 \\ -\quad 1\,{}^{1}\!4\,5 \\ \hline \end{array}$$

- Subtract the one digits: $12 - 5 = 7$

$$\begin{array}{r} 6\,3\,2\,{}^{1}\!2 \\ -\quad 1\,{}^{1}\!4\,5 \\ \hline 7 \end{array}$$

- Subtract the ten digits: $2 - 1(\text{carried}) - 4$. There are not enough tens. You regroup 1 hundred into 10 tens, making 12 tens.

$$\begin{array}{r} 6\,{}^{1}\!3\,{}^{1}\!2\,{}^{1}\!2 \\ -\quad {}^{1}\!1\,{}^{1}\!4\,5 \\ \hline 7 \end{array}$$

- Subtract the ten digits: $12 - 1(\text{carried}) - 4 = 7$

$$\begin{array}{r} 6\,{}^{1}\!3\,{}^{1}\!2\,{}^{1}\!2 \\ -\quad {}^{1}\!1\,{}^{1}\!4\,5 \\ \hline 7\,7 \end{array}$$

- Subtract the hundred digits: $3 - 1(\text{carried}) - 1 = 1$

$$\begin{array}{r} 6\,{}^{1}\!3\,{}^{1}\!2\,{}^{1}\!2 \\ -\quad {}^{1}\!1\,{}^{1}\!4\,5 \\ \hline 1\,7\,7 \end{array}$$

- Subtract the thousand digits: $6 - 0 = 6$

$$\begin{array}{r} 6\,{}^{1}\!3\,{}^{1}\!2\,{}^{1}\!2 \\ -\quad {}^{1}\!1\,{}^{1}\!4\,5 \\ \hline 6\,1\,7\,7 \end{array}$$

- So, $6\,322 - 145 = 6\,177$

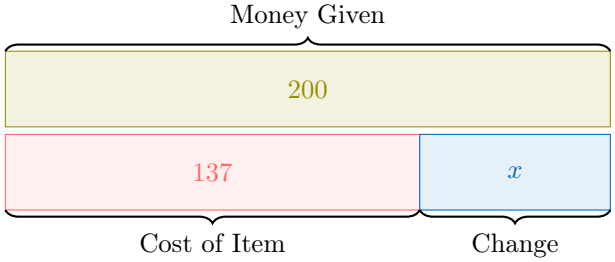
B.2 SOLVING REAL-WORLD PROBLEMS

Ex 20: You buy an article for 137 dollars. You give the seller a 200 dollar bill.
How much change will you get back?

$\boxed{63}$ dollars

Answer:

- To find out how much change you'll get back, start with the amount you gave the seller and subtract the cost of the item.



- $$\begin{array}{r} 2\,{}^{1}\!0\,{}^{1}\!0 \\ -\,{}^{1}\!1\,{}^{1}\!3\,7 \\ \hline 6\,3 \end{array}$$

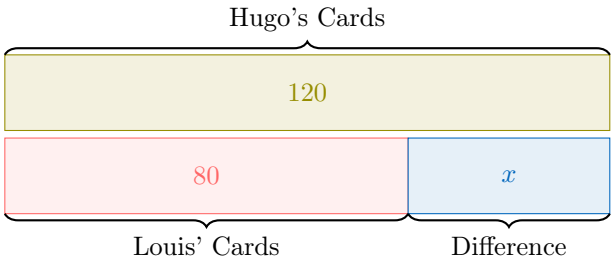
- So, the change you'll get back is $200 - 137 = 63$ dollars.

Ex 21: Hugo has 120 Pokémon cards, and Louis has 80 Pokémon cards.
What is the difference in the number of cards they have?

$\boxed{40}$ cards

Answer:

- To find the difference, subtract the number of cards Louis has from the number of cards Hugo has.



- $$\begin{array}{r} 1\,{}^{1}\!2\,0 \\ -\,1\quad 8\,0 \\ \hline 4\,0 \end{array}$$

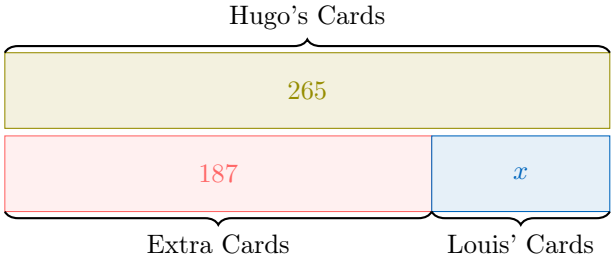
- The difference in the number of cards is $120 - 80 = 40$ cards.

Ex 22: Hugo has 265 Pokémon cards. He has 187 more cards than Louis.
How many cards does Louis have?

$\boxed{78}$ cards

Answer:

- To find the number of cards Louis has, subtract the extra cards Hugo has from his total.



- $$\begin{array}{r} 2\,{}^{1}\!6\,{}^{1}\!5 \\ -\,{}^{1}\!1\,{}^{1}\!8\,7 \\ \hline 7\,8 \end{array}$$

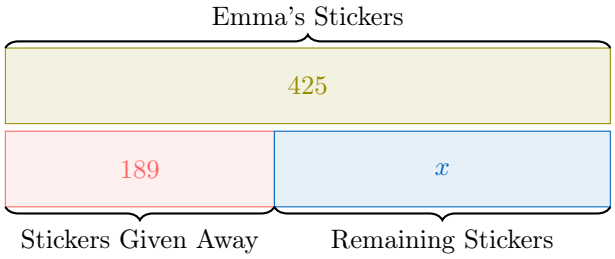
- Louis has $265 - 187 = 78$ cards.

Ex 23: Emma has 425 stickers. She gives 189 stickers to her friend.
How many stickers does Emma have left?

$\boxed{236}$ stickers

Answer:

- To find out how many stickers Emma has left, subtract the number of stickers she gave away from her initial total.



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$$\begin{array}{r} {}^{4}\cancel{1}{}^{12}\cancel{5} \\ -\,{}^{1}\cancel{1}\,{}^{1}\cancel{8}\;\;9 \\ \hline 2\;3\;6 \end{array}$$

- So, Emma has $425 - 189 = 236$ stickers left.