

ADDITION

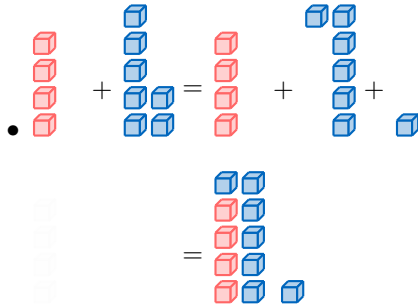
A WHAT IS ADDITION?

A.1 ADDING NUMBERS WITHIN 20

Ex 1:

$$4 + 7 = \boxed{11}$$

Answer:

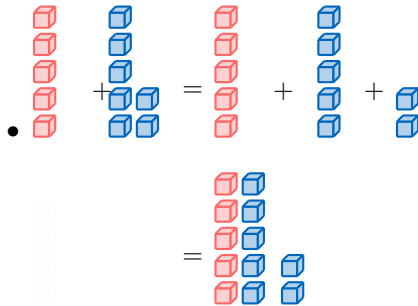


- $$\begin{aligned}
 4 + 7 &= 4 + 6 + 1 \\
 &= 10 + 1 \\
 &= 11
 \end{aligned}$$

Ex 2:

$$5 + 7 = \boxed{12}$$

Answer:

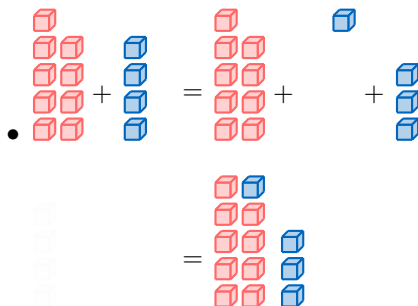


- $$\begin{aligned}
 5 + 7 &= 5 + 5 + 2 \\
 &= 10 + 2 \\
 &= 12
 \end{aligned}$$

Ex 3:

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

Answer:

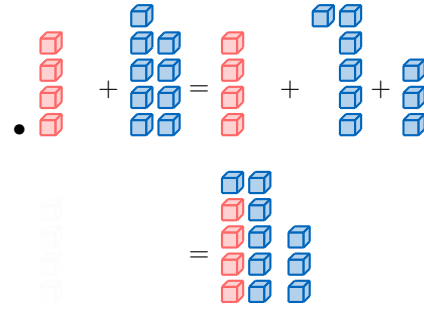


- $$\begin{aligned}
 9 + 4 &= 9 + 1 + 3 \\
 &= 10 + 3 \\
 &= 13
 \end{aligned}$$

Ex 4:

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

Answer:

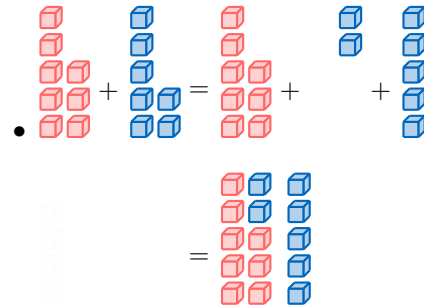


- $$\begin{aligned}
 4 + 9 &= 4 + 6 + 3 \\
 &= 10 + 3 \\
 &= 13
 \end{aligned}$$

Ex 5:

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

Answer:

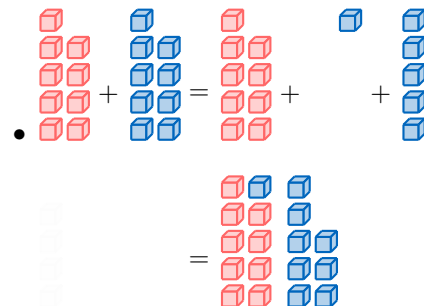


- $$\begin{aligned}
 8 + 7 &= 8 + 2 + 5 \\
 &= 10 + 5 \\
 &= 15
 \end{aligned}$$

Ex 6:

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

Answer:

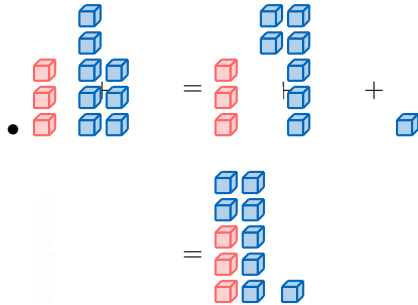


- $9 + 9 = 9 + 1 + 8$
 $= 10 + 8$
 $= 18$

Ex 7:

$$3 + 8 = \boxed{11}$$

Answer:

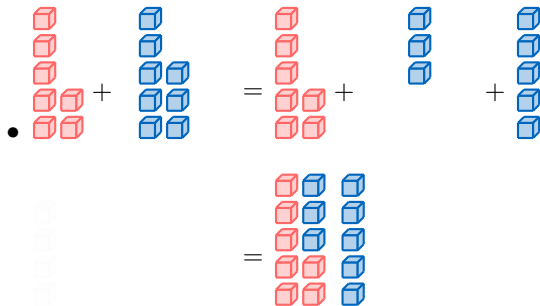


- $3 + 8 = 3 + 7 + 1$
 $= 10 + 1$
 $= 11$

Ex 8:

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

Answer:

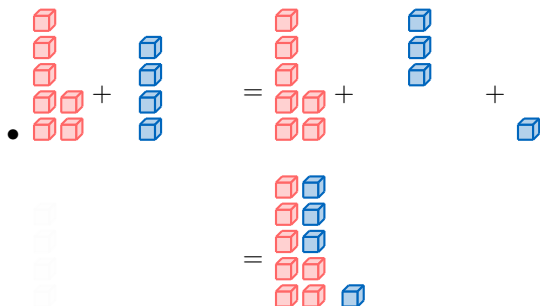


- $7 + 8 = 7 + 3 + 5$
 $= 10 + 5$
 $= 15$

Ex 9:

$$7 + 4 = \boxed{11}$$

Answer:



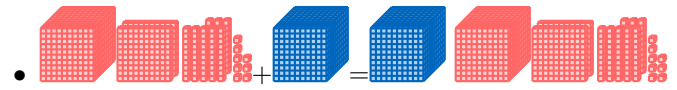
- $7 + 4 = 7 + 3 + 1$
 $= 10 + 1$
 $= 11$

A.2 ADDING 1 000

Ex 10:

$$1\,288 + 1\,000 = \boxed{2\,288}$$

Answer:

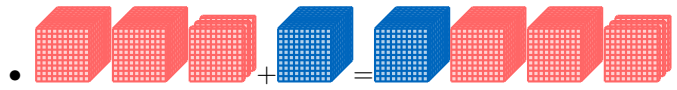


- $1\,288 + 1\,000 = 2\,288$

Ex 11:

$$2\,300 + 1\,000 = \boxed{3\,300}$$

Answer:

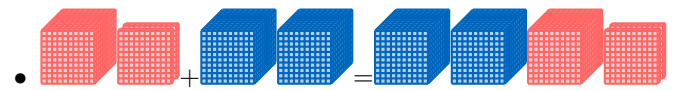


- $2\,300 + 1\,000 = 3\,300$

Ex 12:

$$1\,200 + 2\,000 = \boxed{3\,200}$$

Answer:



- $1\,200 + 2\,000 = 3\,200$

Ex 13:

$$520 + 1\,000 = \boxed{1\,520}$$

Answer:



- $520 + 1\,000 = 1\,520$

B ADDING IN COLUMNS

B.1 ADDING NUMBERS UP TO 10 000

Ex 14: On your paper, set up a column addition:

$$2\,146 + 3\,155 = \boxed{5\,301}$$

Answer:

- Set up the addition:

$$\begin{array}{r} 2\,146 \\ + 3\,155 \\ \hline \end{array}$$

- Add the ones: $6 + 5 = 11$ (1 carried to the tens column)

$$\begin{array}{r} \\ 2\ 1\ 4\ 6 \\ + 3\ 1\ 5\ 5 \\ \hline 1 \end{array}$$

- Add the tens: $1 + 4 + 5 = 10$ (1 carried to the hundreds column)

$$\begin{array}{r} \\ 2\ 1\ 4\ 6 \\ + 3\ 1\ 5\ 5 \\ \hline 0\ 1 \end{array}$$

- Add the hundreds: $1 + 1 + 1 = 3$

$$\begin{array}{r} \\ 2\ 1\ 4\ 6 \\ + 3\ 1\ 5\ 5 \\ \hline 3\ 0\ 1 \end{array}$$

- Add the thousands: $2 + 3 = 5$

$$\begin{array}{r} \\ 2\ 1\ 4\ 6 \\ + 3\ 1\ 5\ 5 \\ \hline 5\ 3\ 0\ 1 \end{array}$$

- So, $2146 + 3155 = 5301$

Ex 15: On your paper, set up a column addition:

$$1\ 299 + 6\ 975 = \boxed{8274}$$

Answer:

- Set up the addition:

$$\begin{array}{r} 1\ 2\ 9\ 9 \\ + 6\ 9\ 7\ 5 \\ \hline \end{array}$$

- Add the ones: $9 + 5 = 14$ (1 carried to the tens column)

$$\begin{array}{r} \\ 1\ 2\ 9\ 9 \\ + 6\ 9\ 7\ 5 \\ \hline 4 \end{array}$$

- Add the tens: $1 + 9 + 7 = 16$ (1 carried to the hundreds column)

$$\begin{array}{r} \\ 1\ 2\ 9\ 9 \\ + 6\ 9\ 7\ 5 \\ \hline 7\ 4 \end{array}$$

- Add the hundreds: $1 + 2 + 9 = 12$ (1 carried to the thousands column)

$$\begin{array}{r} \\ 1\ 2\ 9\ 9 \\ + 6\ 9\ 7\ 5 \\ \hline 2\ 7\ 4 \end{array}$$

- Add the thousands: $1 + 1 + 6 = 8$

$$\begin{array}{r} \\ 1\ 2\ 9\ 9 \\ + 6\ 9\ 7\ 5 \\ \hline 8\ 2\ 7\ 4 \end{array}$$

- So, $1299 + 6975 = 8274$

Ex 16: On your paper, set up a column addition:

$$2\ 305 + 407 = \boxed{2712}$$

Answer:

- Set up the addition:

$$\begin{array}{r} 2\ 3\ 0\ 5 \\ + 4\ 0\ 7 \\ \hline \end{array}$$

- Add the ones: $5 + 7 = 12$ (1 carried to the tens column)

$$\begin{array}{r} \\ 2\ 3\ 0\ 5 \\ + 4\ 0\ 7 \\ \hline 2 \end{array}$$

- Add the tens: $1 + 0 + 0 = 1$

$$\begin{array}{r} \\ 2\ 3\ 0\ 5 \\ + 4\ 0\ 7 \\ \hline 1\ 2 \end{array}$$

- Add the hundreds: $3 + 4 = 7$

$$\begin{array}{r} \\ 2\ 3\ 0\ 5 \\ + 4\ 0\ 7 \\ \hline 7\ 1\ 2 \end{array}$$

- Add the thousands: $2 + 0 = 2$

$$\begin{array}{r} \\ 2\ 3\ 0\ 5 \\ + 4\ 0\ 7 \\ \hline 2\ 7\ 1\ 2 \end{array}$$

- So, $2305 + 407 = 2712$

Ex 17: On your paper, set up a column addition:

$$4055 + 97 = \boxed{4152}$$

Answer:

- Set up the addition:

$$\begin{array}{r} 4055 \\ + 97 \\ \hline \end{array}$$

- Add the ones: $5 + 7 = 12$ (1 carried to the tens column)

$$\begin{array}{r} 1 \\ 405\textcolor{red}{5} \\ + 9\textcolor{red}{7} \\ \hline \textcolor{blue}{2} \end{array}$$

- Add the tens: $1 + 5 + 9 = 15$ (1 carried to the hundreds column)

$$\begin{array}{r} 1\textcolor{blue}{1} \\ 40\textcolor{red}{5}5 \\ + \textcolor{red}{9}7 \\ \hline \textcolor{blue}{5}2 \end{array}$$

- Add the hundreds: $1 + 0 + 0 = 1$

$$\begin{array}{r} 1\textcolor{blue}{1} \\ 4\textcolor{red}{0}55 \\ + 97 \\ \hline \textcolor{blue}{1}52 \end{array}$$

- Add the thousands: $4 + 0 = 4$

$$\begin{array}{r} 1\textcolor{blue}{1} \\ \textcolor{red}{4}055 \\ + 97 \\ \hline \textcolor{blue}{4}152 \end{array}$$

- So, $4055 + 97 = 4152$

B.2 ADDING NUMBERS UP TO 100 000

Ex 18: On your paper, set up a column addition:

$$33890 + 12180 = \boxed{46070}$$

Answer:

- Set up the addition:

$$\begin{array}{r} 33890 \\ + 12180 \\ \hline \end{array}$$

- Add the ones: $0 + 0 = 0$

$$\begin{array}{r} 3389\textcolor{red}{0} \\ + 1218\textcolor{red}{0} \\ \hline 0 \end{array}$$

- Add the tens: $9 + 8 = 17$ (1 carried to the hundreds column)

$$\begin{array}{r} 1 \\ 338\textcolor{red}{9}0 \\ + 1218\textcolor{red}{0} \\ \hline \textcolor{blue}{7}0 \end{array}$$

- Add the hundreds: $1 + 8 + 1 = 10$ (1 carried to the thousands column)

$$\begin{array}{r} 1\textcolor{blue}{1} \\ 338\textcolor{red}{9}0 \\ + 1218\textcolor{red}{0} \\ \hline 070 \end{array}$$

- Add the thousands: $1 + 3 + 2 = 6$

$$\begin{array}{r} 1\textcolor{blue}{1} \\ 338\textcolor{red}{9}0 \\ + 1218\textcolor{red}{0} \\ \hline \textcolor{blue}{6}070 \end{array}$$

- Add the ten thousands: $3 + 1 = 4$

$$\begin{array}{r} 1\textcolor{blue}{1} \\ \textcolor{red}{3}3890 \\ + \textcolor{red}{1}2180 \\ \hline \textcolor{blue}{4}6070 \end{array}$$

- So, $33890 + 12180 = 46070$

Ex 19: On your paper, set up a column addition:

$$42146 + 23155 = \boxed{65301}$$

Answer:

- Set up the addition:

$$\begin{array}{r} 42146 \\ + 23155 \\ \hline \end{array}$$

- Add the ones: $6 + 5 = 11$ (1 carried to the tens column)

$$\begin{array}{r} 1\textcolor{blue}{1} \\ 4214\textcolor{red}{6} \\ + 2315\textcolor{red}{5} \\ \hline 1 \end{array}$$

- Add the tens: $1 + 4 + 5 = 10$ (1 carried to the hundreds column)

$$\begin{array}{r} 11 \\ 42146 \\ + 23155 \\ \hline 01 \end{array}$$

- Add the hundreds: $1 + 1 + 1 = 3$

$$\begin{array}{r} 11 \\ 42146 \\ + 23155 \\ \hline 301 \end{array}$$

- Add the thousands: $2 + 3 = 5$

$$\begin{array}{r} 11 \\ 42146 \\ + 23155 \\ \hline 5301 \end{array}$$

- Add the ten thousands: $4 + 2 = 6$

$$\begin{array}{r} 11 \\ 42146 \\ + 23155 \\ \hline 65301 \end{array}$$

- So, $42\,146 + 23\,155 = 65\,301$

Ex 20: On your paper, set up a column addition:

$$8\,299 + 6\,975 = \boxed{15\,274}$$

Answer:

- Set up the addition:

$$\begin{array}{r} 8299 \\ + 6975 \\ \hline \end{array}$$

- Add the ones: $9 + 5 = 14$ (1 carried to the tens column)

$$\begin{array}{r} 1 \\ 8299 \\ + 6975 \\ \hline 4 \end{array}$$

- Add the tens: $1 + 9 + 7 = 16$ (1 carried to the hundreds column)

$$\begin{array}{r} 11 \\ 8299 \\ + 6975 \\ \hline 74 \end{array}$$

- Add the hundreds: $1 + 2 + 9 = 12$ (1 carried to the thousands column)

$$\begin{array}{r} 111 \\ 8299 \\ + 6975 \\ \hline 274 \end{array}$$

- Add the thousands: $1 + 8 + 6 = 15$

$$\begin{array}{r} 111 \\ 8299 \\ + 6975 \\ \hline 15274 \end{array}$$

- So, $8\,299 + 6\,975 = 15\,274$

Ex 21: On your paper, set up a column addition:

$$34\,055 + 97 = \boxed{34\,152}$$

Answer:

- Set up the addition:

$$\begin{array}{r} 34055 \\ + 97 \\ \hline \end{array}$$

- Add the ones: $5 + 7 = 12$ (1 carried to the tens column)

$$\begin{array}{r} 1 \\ 34055 \\ + 97 \\ \hline 2 \end{array}$$

- Add the tens: $1 + 5 + 9 = 15$ (1 carried to the hundreds column)

$$\begin{array}{r} 11 \\ 34055 \\ + 97 \\ \hline 52 \end{array}$$

- Add the hundreds: $1 + 0 + 0 = 1$

$$\begin{array}{r} 11 \\ 34055 \\ + 97 \\ \hline 152 \end{array}$$

- Add the thousands: $4 + 0 = 4$

$$\begin{array}{r} 11 \\ 34055 \\ + 97 \\ \hline 4152 \end{array}$$

- Add the ten thousands: $3 + 0 = 3$

$$\begin{array}{r} 11 \\ 34055 \\ + 97 \\ \hline 34152 \end{array}$$

- So, $34\,055 + 97 = 34\,152$

B.3 SOLVING REAL-WORLD PROBLEMS

Ex 22: Emma collected 3 112 postcards, and her sister gave her 2 458 more.

How many postcards does Emma have in total?

5570 postcards

Answer:

- To find the total number of postcards, add the postcards Emma collected and those her sister gave her.
- The column addition is:

$$\begin{array}{r} 1 \\ 3\ 1\ 1\ 2 \\ + 2\ 4\ 5\ 8 \\ \hline 5\ 5\ 7\ 0 \end{array}$$

- The total number of postcards Emma has is $3112 + 2458 = 5570$.

Ex 23: In a car race, Car A traveled 18 432 kilometers, and Car B traveled 22 516 kilometers.

How many kilometers did they travel in total?

40948 kilometers

Answer:

- To find the total distance traveled, add the kilometers traveled by Car A and Car B.
- The column addition is:

$$\begin{array}{r} 1 \\ 1\ 8\ 4\ 3\ 2 \\ + 2\ 2\ 5\ 1\ 6 \\ \hline 4\ 0\ 9\ 4\ 8 \end{array}$$

- The total distance traveled is $18432 + 22516 = 40948$.

Ex 24: A charity event collected 25 670 dollars on the first day and 34 859 dollars on the second day.

How much money was collected in total?

60529 dollars

Answer:

- To find the total amount collected, add the amounts from the first and second days.
- The column addition is:

$$\begin{array}{r} 1\ 1\ 1 \\ 2\ 5\ 6\ 7\ 0 \\ + 3\ 4\ 8\ 5\ 9 \\ \hline 6\ 0\ 5\ 2\ 9 \end{array}$$

- The total amount collected is $25670 + 34859 = 60529$ dollars.

Ex 25: An orchard produced 43 215 apples and 21 638 pears this season.

How many fruits were harvested in total?

64853 fruits

Answer:

- To find the total number of fruits harvested, add the apples and pears produced.
- The column addition is:

$$\begin{array}{r} 1 \\ 4\ 3\ 2\ 1\ 5 \\ + 2\ 1\ 6\ 3\ 8 \\ \hline 6\ 4\ 8\ 5\ 3 \end{array}$$

- The total number of fruits harvested is $43215 + 21638 = 64853$ fruits.