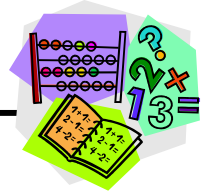


Adding and Subtracting Whole Numbers

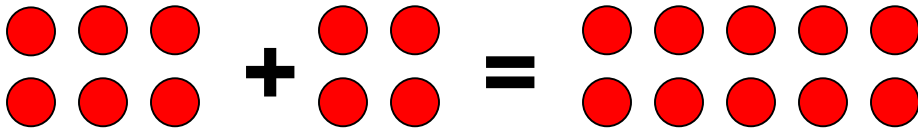


Adding Whole Numbers

Adding numbers and quantities are skills used in many workplace situations, such as warehouse work.



Many strategies can be used to add numbers, such as drawings, mind math, manipulatives, calculators or pencil and paper.



$$\boxed{6} + \boxed{4} = \boxed{10}$$

Whatever method you use, it is important to understand the process of addition.

Think About ...

In groups, think of different times you have used addition at home or in your community.

Discuss how your life would be different if you were not able to add whole numbers in your head.

The Process of Addition

When using the pencil and paper method to add two numbers, follow these steps.

1. Place the numbers so that one number is above the other and the numbers in the **ones place** align.

Example

$$\begin{array}{r} 128 \\ + 65 \\ \hline \end{array}$$

Think: Estimate
 $130 + 70 = \text{about } 200$

2. Starting at the right, add the values of the numbers in the ones place.

$$8 + 5 = 13$$

Each place can only have one digit, so the **3** is placed under the ones place.

$$\begin{array}{r} 128 \\ + 65 \\ \hline \end{array}$$

The **1** is carried over to become part of the value in the tens place.

Think: 13 is 1 ten and 3 ones. The 1 ten moves (gets carried over) to the tens place in the question

3. Next, add the values in the **tens place**.

Think: The numbers in the tens place should be thought of as:
 $10 + 20 + 60 = 90$
(9 is recorded in the tens place.)

$$\begin{array}{r} 128 \\ + 65 \\ \hline 93 \end{array}$$

$$1 + 2 + 6 = 9$$

Since there is only one digit in the answer, it is placed under the tens place and nothing will be carried over to the hundreds place.

4. Next, add the values in the **hundreds place**.

$$1 + 0 = 1$$

Since the second number, 65, does not have a digit in the hundreds place, we say that it has 0 in the hundreds place.

$$\begin{array}{r} 1 \\ 128 \\ + 65 \\ \hline 193 \end{array} \quad \Rightarrow \quad 128 + 65 = 193$$

Think: The numbers in the hundreds place should be thought of as:
 $100 + 0 = 100$
(1 is recorded in the hundreds place.)

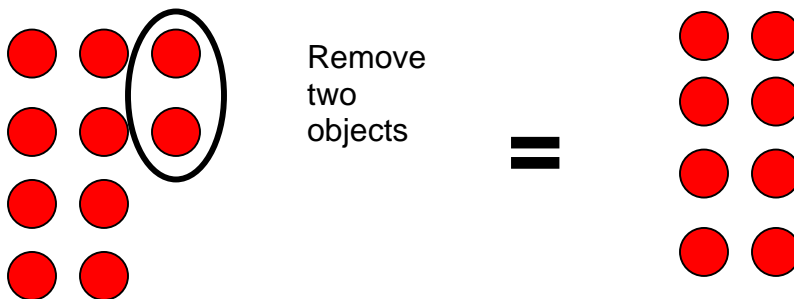
To add larger numbers, repeat the same steps for each additional place.
The process for [adding decimal numbers](#) is similar.

Subtracting Whole Numbers

As boxes are removed from inventory, a warehouse worker will subtract the number of boxes removed from the previous total to calculate the number of boxes left in inventory.



Many strategies can be used to subtract numbers, such as drawings, mind math, manipulatives, calculators or pencil and paper.



$$\boxed{1} \boxed{0} - \boxed{2} = \boxed{\quad} \quad \boxed{8}$$

Whatever method you use, it is important to understand the process of subtraction.

The Process of Subtraction

When using the pencil and paper method to subtract one number from another, follow these steps.

1. Place the numbers so that one number is above the other and the numbers in the **ones place** align.

Example

$$\begin{array}{r} 587 \\ - 92 \\ \hline \end{array}$$

Think: Estimate
 $590 - 90 = \text{about } 500$

2. Starting at the right, subtract the values of the numbers in the ones place.

$7 - 2 = 5$
 Each place can only have one digit, so the **5** is placed under the ones place.

$$\begin{array}{r} 58\boxed{7} \\ - 9\boxed{2} \\ \hline \end{array}$$

→ **5**

3. Next, subtract the values in the **tens place**.

$$8 - 9 = ?$$

If the second number (the number under the first number) is **LESS** than the value of the first number, you must borrow **1** from the place to the **LEFT**.

In the example, 1 is borrowed from 5, leaving **4** in the hundreds place.

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

Think: $80 - 90$ cannot be done so you need to borrow from the hundreds place. You borrow 1 from the hundreds so $80 + 100 = 180$. (1 is recorded in front of the 8 in the tens place to show 180.)

The 1 is placed in the tens place in front of 8, so that 8 becomes 18.

$$18 - 9 = 9$$

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

Think: $180 - 90 = 90$ (9 is recorded in the tens place.)

4. Next, subtract the values in the **hundreds place**.

$$4 - 0 = 4$$

Since the second number, 92, does not have a digit in the hundreds place, we say that it has 0 in the hundreds place.

$$\begin{array}{r} 4 \\ - \\ \hline 4 \end{array}$$

$$\Rightarrow 587 - 92 = 495$$

Think: $400 - 0 = 400$
(4 is recorded in the hundreds place.)

To subtract larger numbers, repeat the same steps for each additional place value. The process for subtracting decimal numbers is similar.

Fact Families

Remember that addition and subtraction are related operations.

Fact families show how addition and subtraction sentences are related. Addition sentences can be written two ways:

$$496 + 241 = 737$$

$$241 + 496 = 737$$

Subtraction sentences can be written two ways:

$$737 - 496 = 241$$

$$737 - 241 = 496$$

Together, these four mathematical sentences make a **fact family**.

$$496 + 241 = 737$$

$$241 + 496 = 737$$

$$737 - 496 = 241$$

$$737 - 241 = 496$$

The numbers in this fact family are: 241, 496 and 737.

Verifying Answers in Subtraction

When you subtract, you can verify whether your answers are right using a variety of methods, such as opposite operations, mental mathematics, calculator, manipulatives and diagrams.

Example

The grocery store has 90 000 units in stock.

If the store sells 47 000 units of the food product in stock, how many will they have remaining according to their computer?

The store manager calculated in his mind. The number 47 000 is close to 50 000. He thought $90\ 000 - 50\ 000$ equals 40 000.

The difference between the 50 000 rounded number and the 47 000 original number is 3 000. So, $40\ 000 + 3\ 000$ equals a remaining 43 000 units.

9	0	0	0	0	-	4	7	0	0	0
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He checked his answer on the computer calculator. It displayed a result of

43 000

His mental calculation was correct.



Practice: Addition and Subtraction

1. Fill in each of the blanks with numbers between 0 and 10 so that the addition equation is correct.

$$\begin{array}{r}
 6 \quad 5 \quad \square \\
 8 \quad \square \quad 5 \\
 + \quad \square \quad 7 \quad 3 \\
 \hline
 \square \quad 1 \quad 5 \quad 1
 \end{array}$$

2. Write the addition statements represented by the following diagrams in numbers and in words.

a)

$$\begin{array}{ccc}
 \bullet \bullet & + & \bullet \bullet \\
 \bullet \bullet & & \bullet \\
 \bullet \bullet & & \\
 \end{array}
 =
 \begin{array}{ccc}
 \bullet \bullet \bullet \\
 \bullet \bullet \bullet \\
 \bullet \bullet \bullet
 \end{array}$$

b)

$$\begin{array}{ccc}
 \bullet \bullet \bullet \bullet & + & \bullet \bullet \\
 \bullet \bullet \bullet \bullet & & \bullet \bullet \\
 \bullet \bullet \bullet \bullet & & \\
 \end{array}
 =
 \begin{array}{ccc}
 \bullet \bullet \bullet \bullet \bullet \\
 \bullet \bullet \bullet \bullet \bullet \\
 \bullet \bullet \bullet \bullet \bullet
 \end{array}$$

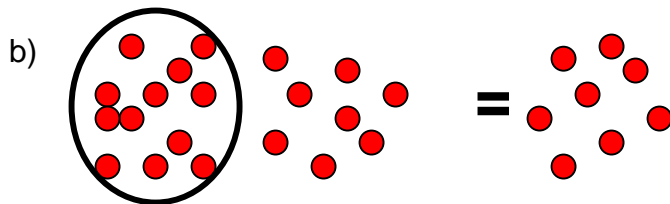
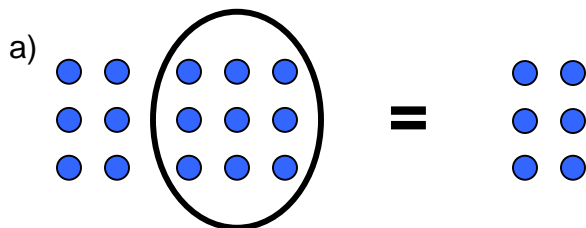
3. Write the following addition statements in words.

a) $19 + 50 = 69$

b) $1250 + 420 = 1670$

c) $635 + 472 = 1107$

4. Write the subtraction statements represented by the following diagrams in numbers and in words.



5. Write the following subtraction statements in words.

a) $456 - 250 = 206$

b) $3490 - 275 = 3215$

c) $12\,460 - 234 = 12\,226$

6. Complete these fact families:

a) $365 + \underline{\hspace{2cm}} = 706$
 $\underline{\hspace{2cm}} + 365 = 706$
 $706 - 341 = \underline{\hspace{2cm}}$
 $\underline{\hspace{2cm}} - 365 = 341$

b) $841 - 469 = \underline{\hspace{2cm}}$
 $841 - 372 = \underline{\hspace{2cm}}$
 $372 + \underline{\hspace{2cm}} = 841$
 $469 + 372 = \underline{\hspace{2cm}}$

7. For each of the following subtraction questions, prove that the answers are correct using one of the following methods: opposite operation, mental mathematics, calculator, manipulatives or diagrams. Be prepared to explain the strategy you used.

a) $25 - 20 = 5$

b) $40 - 10 = 30$

c) $100 - 65 = 35$

d) $450 - 150 = 300$

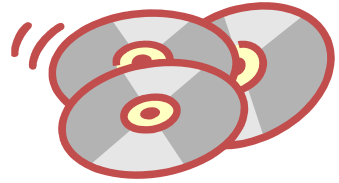
e) $347 - 207 = 140$

f) $96 - 84 = 12$

g) $151 - 69 = 82$

8. Yesterday's cafeteria sales totalled \$864.00. Rory has \$389.00 left after paying the food supply company. How much did he pay the company for the cafeteria foods? Verify your answer by writing the fact family for this problem.

9. Haley and Tasha have decided to become roommates. They are excited as, together, they will have an impressive CD collection. In total, they will have 237 CDs. If 114 of these CDs belong to Haley, how many CDs does Tasha have?



10. St. Albert, Stony Plain and Spruce Grove are close to the city of Edmonton. The combined population of these four centres is approximately 723 343. The population of Edmonton is 648 284, the population of Stony Plain is 8 274 and the population of Spruce Grove is 15 069. What is the population of St. Albert?

11. The local video store is having a contest. You can win three free DVD rentals if you can solve the gumball puzzle. Next to the container of gumballs, you see the following information.

There are 835 gumballs in the container.
There are 485 more red gumballs than blue gumballs.
Guess the correct number of red and blue gumballs and win a free DVD rental.



12. Michelle began to save the caps from the bottles of soda pop she drank. There were two kinds of caps: caps worth 5 points and caps worth 2 points. So far, Michelle has collected 21 caps, totalling 57 points. How many 5-point and 2-point caps does Michelle have?