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Addition and Subtraction

Lesson 1-1

Addition Facts and Subtraction Facts

Rinaldo's goal for this year is to read 12 books. So far, he has read 5 books. How many books must Rinaldo read to reach his goal?

We want to know the number of books Rinaldo must still read to reach his goal.

Rinaldo's goal is to read _____ books.

He has read _____ books so far this year.

To find the number of books he needs to read, we subtract _____ from _____.

$$\begin{array}{r} 12 \\ \uparrow \\ \text{minuend} \end{array} - \begin{array}{r} 5 \\ \uparrow \\ \text{subtrahend} \end{array} = \begin{array}{r} \\ \uparrow \\ \text{difference} \end{array}$$

$$\begin{array}{r} 12 \leftarrow \text{minuend} \\ - 5 \leftarrow \text{subtrahend} \\ \hline \leftarrow \text{difference} \end{array}$$

Rinaldo needs to read _____ more books this year.

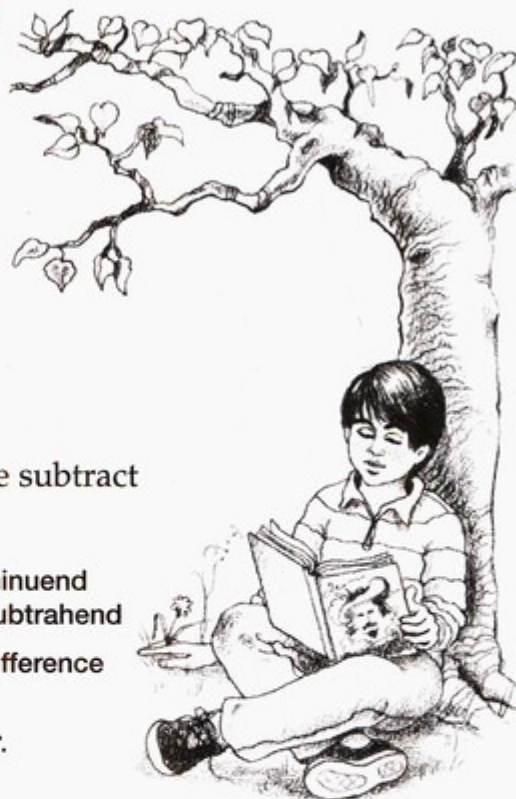
To check the subtraction, add _____ and _____.

$$\begin{array}{r} 7 \\ \uparrow \\ \text{addend} \end{array} + \begin{array}{r} 5 \\ \uparrow \\ \text{addend} \end{array} = \begin{array}{r} \\ \uparrow \\ \text{sum} \end{array}$$

$$\begin{array}{r} 7 \leftarrow \text{addend} \\ + 5 \leftarrow \text{addend} \\ \hline \leftarrow \text{sum} \end{array}$$

The subtraction is correct because $7 + 5 = \underline{\hspace{1cm}}$.

$7 + 5 = 12$ and $12 - 5 = 7$ are called **number sentences**.



Getting Started

Complete each number sentence. Check your answer.

1. $4 + 2 = \underline{\hspace{1cm}}$
2. $7 + 9 = \underline{\hspace{1cm}}$
3. $8 + 8 = \underline{\hspace{1cm}}$
4. $10 - 8 = \underline{\hspace{1cm}}$
5. $11 - 3 = \underline{\hspace{1cm}}$
6. $13 - 4 = \underline{\hspace{1cm}}$
7. $5 + 6 = \underline{\hspace{1cm}}$
8. $9 - 5 = \underline{\hspace{1cm}}$

Practice

Complete each number sentence. Check your answer.

1. $7 + 1 = \underline{\quad}$ 2. $4 + 6 = \underline{\quad}$ 3. $7 + 4 = \underline{\quad}$ 4. $5 + 9 = \underline{\quad}$

5. $6 + 8 = \underline{\quad}$ 6. $8 + 9 = \underline{\quad}$ 7. $2 + 4 = \underline{\quad}$ 8. $7 + 6 = \underline{\quad}$

9. $9 - 2 = \underline{\quad}$ 10. $13 - 9 = \underline{\quad}$ 11. $15 - 6 = \underline{\quad}$ 12. $7 - 3 = \underline{\quad}$

13. $12 - 3 = \underline{\quad}$ 14. $14 - 8 = \underline{\quad}$ 15. $10 - 5 = \underline{\quad}$ 16. $8 - 1 = \underline{\quad}$

Add or subtract.

17. $\begin{array}{r} 8 \\ + 7 \\ \hline \end{array}$ 18. $\begin{array}{r} 6 \\ + 5 \\ \hline \end{array}$ 19. $\begin{array}{r} 4 \\ + 3 \\ \hline \end{array}$ 20. $\begin{array}{r} 9 \\ + 1 \\ \hline \end{array}$ 21. $\begin{array}{r} 5 \\ + 8 \\ \hline \end{array}$ 22. $\begin{array}{r} 2 \\ + 7 \\ \hline \end{array}$

23. $\begin{array}{r} 14 \\ - 7 \\ \hline \end{array}$ 24. $\begin{array}{r} 8 \\ - 3 \\ \hline \end{array}$ 25. $\begin{array}{r} 12 \\ - 9 \\ \hline \end{array}$ 26. $\begin{array}{r} 10 \\ - 7 \\ \hline \end{array}$ 27. $\begin{array}{r} 11 \\ - 6 \\ \hline \end{array}$ 28. $\begin{array}{r} 16 \\ - 7 \\ \hline \end{array}$

29. $\begin{array}{r} 4 \\ + 5 \\ \hline \end{array}$ 30. $\begin{array}{r} 7 \\ + 9 \\ \hline \end{array}$ 31. $\begin{array}{r} 6 \\ + 6 \\ \hline \end{array}$ 32. $\begin{array}{r} 5 \\ + 2 \\ \hline \end{array}$ 33. $\begin{array}{r} 1 \\ + 6 \\ \hline \end{array}$ 34. $\begin{array}{r} 5 \\ + 5 \\ \hline \end{array}$

35. $\begin{array}{r} 13 \\ - 8 \\ \hline \end{array}$ 36. $\begin{array}{r} 5 \\ - 3 \\ \hline \end{array}$ 37. $\begin{array}{r} 7 \\ - 6 \\ \hline \end{array}$ 38. $\begin{array}{r} 12 \\ - 8 \\ \hline \end{array}$ 39. $\begin{array}{r} 9 \\ - 2 \\ \hline \end{array}$ 40. $\begin{array}{r} 17 \\ - 8 \\ \hline \end{array}$

41. $\begin{array}{r} 6 \\ + 9 \\ \hline \end{array}$ 42. $\begin{array}{r} 3 \\ + 7 \\ \hline \end{array}$ 43. $\begin{array}{r} 8 \\ + 9 \\ \hline \end{array}$ 44. $\begin{array}{r} 11 \\ - 9 \\ \hline \end{array}$ 45. $\begin{array}{r} 10 \\ - 4 \\ \hline \end{array}$ 46. $\begin{array}{r} 7 \\ - 2 \\ \hline \end{array}$

Problem Solving

Solve each problem.

47. Megan bought a wool scarf for \$7 and a pair of mittens for \$6. How much did she spend?

48. Butch made 9 sandwiches. His brother ate 7 of them for lunch. How many sandwiches does Butch have left to eat?

Column Addition

The first U.S. astronauts orbited Earth in 1962. How many orbits did these Americans complete in that year?

We want to find the total number of orbits all the astronauts made in 1962.

Orbits by U.S. Astronauts in 1962		
Date	Astronaut	Orbits
February 20	John Glenn	3
May 24	Scott Carpenter	3
October 3	Wally Schirra	6

We know that Glenn orbited _____ times; Carpenter, _____ times; and Schirra, _____ times.

To find this **total** or **sum**, we add _____, _____, and _____.

We can add only two numbers at a time.

Add down.

$$\begin{array}{r} 3 \\ 3 \\ + 6 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ 3 \\ + 6 \\ \hline \end{array}$$

Add up to check.

American astronauts completed _____ orbits in 1962.

Getting Started

Add down. Add up to check.

1.
$$\begin{array}{r} 1 \\ 3 \\ + 5 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 2 \\ 6 \\ + 3 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 3 \\ 4 \\ + 2 \\ \hline \end{array}$$

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

5.
$$\begin{array}{r} 7 \\ 1 \\ + 7 \\ \hline \end{array}$$

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

7.
$$\begin{array}{r} 3 \\ 2 \\ 4 \\ + 9 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 5 \\ 4 \\ 5 \\ + 3 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 7 \\ 2 \\ 3 \\ 5 \\ + 1 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 8 \\ 1 \\ 6 \\ 2 \\ + 2 \\ \hline \end{array}$$

Practice

Add down. Add up to check.

$$\begin{array}{r} 1. \quad 6 \\ 3 \\ + 6 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 2 \\ 3 \\ + 4 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 2 \\ 7 \\ + 2 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 8 \\ 1 \\ + 4 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 6 \\ 3 \\ + 2 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 4 \\ 5 \\ + 3 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 1 \\ 6 \\ + 3 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 5 \\ 2 \\ + 5 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 5 \\ 2 \\ + 1 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 7 \\ 2 \\ + 6 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 2 \\ 5 \\ + 3 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 6 \\ 2 \\ + 3 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 4 \\ 2 \\ + 7 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 3 \\ 1 \\ + 6 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 9 \\ 1 \\ + 5 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 8 \\ 1 \\ 5 \\ 1 \\ + 4 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 1 \\ 6 \\ 3 \\ + 7 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 5 \\ 3 \\ 4 \\ + 1 \\ \hline \end{array}$$

$$\begin{array}{r} 19. \quad 5 \\ 1 \\ 6 \\ + 2 \\ \hline \end{array}$$

$$\begin{array}{r} 20. \quad 6 \\ 1 \\ 3 \\ 5 \\ + 3 \\ \hline \end{array}$$

Now Try This!

Complete the boxes by adding each number at the top to each number on the left. Look for patterns.

It's Algebra!

1.

+	5	3	7
8			
18			
28			
38			
48			
58			

2.

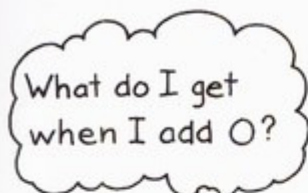
+	2	6	4
9			
19			
29			
39			
49			
59			

3.

+	9	7	5
7			
27			
47			
67			
87			
107			

Basic Properties, Addition**It's Algebra!**

Finding sums is easy if we remember some important rules.

**Order or Commutative Property**

We can add in any order.

$$3 + 4 = \underline{\quad} \quad 4 + 3 = \underline{\quad}$$

Grouping or Associative Property

We can change the grouping.
Remember to add the numbers in the parentheses first.

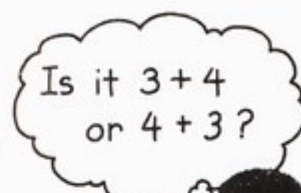
$$(5 + 3) + 6 = \blacksquare \quad 5 + (3 + 6) = \blacksquare$$

$$\underline{\quad} + 6 = \underline{\quad} \quad 5 + \underline{\quad} = \underline{\quad}$$

Zero or Identity Property

Adding zero does not affect the answer.

$$6 + 0 = \underline{\quad} \quad 0 + 3 = \underline{\quad}$$

**Getting Started**

Complete each number sentence.

1. $5 + 0 = \underline{\quad}$
2. $(6 + 3) + 2 = \underline{\quad}$
3. $0 + 9 = \underline{\quad}$
4. $4 + (0 + 6) = \underline{\quad}$
5. $(2 + 7) + 0 = \underline{\quad}$
6. $5 + (3 + 5) = \underline{\quad}$

Add down. Add up to check.

$$\begin{array}{r} 7. \quad 6 \\ \quad 2 \\ + 4 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 3 \\ \quad 9 \\ + 4 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 9 \\ \quad 3 \\ \quad 0 \\ + 2 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 1 \\ \quad 4 \\ \quad 5 \\ \quad 3 \\ + 4 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 7 \\ \quad 5 \\ \quad 0 \\ \quad 3 \\ + 2 \\ \hline \end{array}$$