

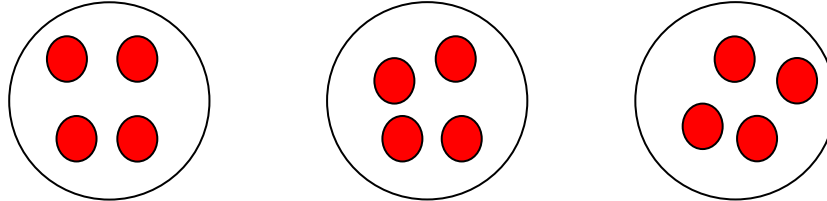
Third Grade: Mathematics

Unit 2: Math Strategies

Math Strategies for Multiplication

Draw a Picture or Use of Tools

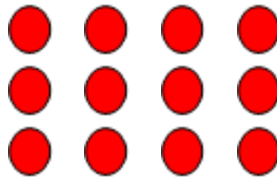
The picture below shows 3×4 modeled as 3 groups of 4 objects.



Use of Arrays

The picture below shows an array model for 3×4 .

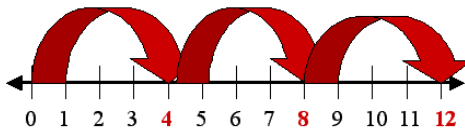
$$3 \times 4 = 3 \text{ rows of } 4$$



Number Line

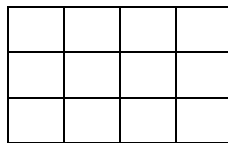
The example below shows the number line model for 3×4 . Multiplication can be thought of as "jumps" on a number line. The first factor of the multiplication corresponds to the number of jumps. The second factor corresponds to the length of each jump.

$$3 \times 4 = 3 \text{ jumps of } 4 \text{ units}$$



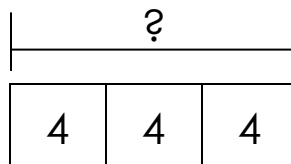
Area Model

The example below shows area model for 3×4 .



Bar Diagram (Sometimes referred as Tape Diagram)

The example below shows the bar diagram for 3×4 .



Repeated Addition

The example below shows repeated addition for 3×4 .

$$4 + 4 + 4 = 12$$

Multiplication Equation

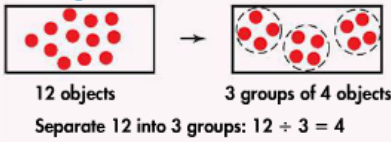
The example below shows the multiplication equation for 3×4 .

$$3 \times 4 = 12$$

Math Strategies for Division

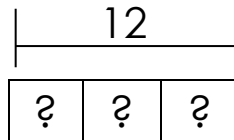
Draw a Picture or Use of Tools

The picture below shows $12 \div 3$ modeled as taking apart 12 objects into 3 equal groups.



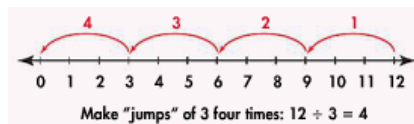
Bar Diagram (Sometimes referred as Tape Diagram)

The example below shows the bar diagram for $12 \div 3$.



Number Line

The example below shows the number line model for $12 \div 3$.



Repeated Subtraction

In the repeated subtraction interpretation, you are given a total amount and the amount in each group. The goal is to find the number of groups. The example below shows repeated addition for $12 \div 3$.

$$\begin{array}{r} 12 \\ -3 \\ \hline 9 \\ -3 \\ \hline 6 \\ -3 \\ \hline 3 \\ -3 \\ \hline 0 \end{array} \left. \begin{array}{l} \text{Subtract} \\ 3 \text{ from } 12 \text{ four times} \\ \text{to reach } 0. \end{array} \right\} 12 \div 3 = 4$$

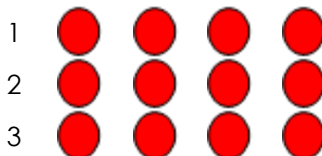
Think Multiplication

The example below shows how students can think multiplication for $12 \div 3$. They can create a missing factor problem to think multiplication. Ask, "3 times what number gives me 12?"

$$3 \times \square = 12$$

"I know that 3×4 is 12, so $12 \div 3$ is 4."

They can also use arrays to think multiplication for $12 \div 3$. "I know there are three rows. I have to figure out how many are in each row. I will take 12 counters and put them in 3 equal rows."



Division Equation

The example below shows the division equation for $12 \div 3$.

$$12 \div 3 = 4$$

