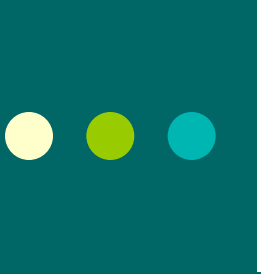




LCM Problem Solving

How can you tell if a word problem can be solved using the Least Common Multiple?



We can ask ourselves the following questions to help determine if a problem can be solved using LCM

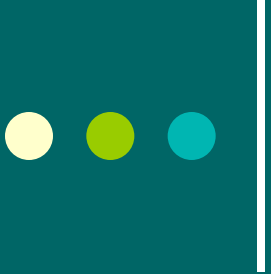
Questions to ask yourself to determine if a problem can be solved using LCM:

- ★ Do we have an event that is or will be repeating over and over?
- ★ Will we have to purchase or get multiple items in order to have enough?
- ★ Are we trying to figure out when something will happen again at the same time?



LCM Problem Solving Example

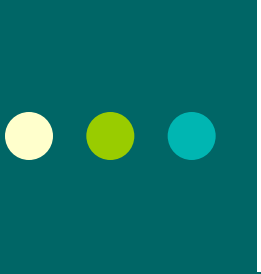
- ★ Ben exercises every 12 days and Isabel every 8 days. Ben and Isabel both exercised today. How many days will it be until they exercise together again?



Ben exercises every 12 days and Isabel every 8 days. Ben and Isabel both exercised today. How many days will it be until they exercise together again?

What do we know and what is the question asking?

- * We know Ben exercises every 12 days and Isabel every 8 days and they both exercised today.
- * The question is asking how many days is it until they will both exercise on the same day again.



Ben exercises every 12 days and Isabel every 8 days. Ben and Isabel both exercised today. How many days will it be until they exercise together again?

This problem can be solved using Least Common Multiple because we can answer the question:

“Are we trying to figure out when something will happen again at the same time?”

We are trying to figure out when Ben and Isabel will exercise again at the same time.

Find the LCM of 12 and 8.



LCM Word Problem Solution

$$\begin{array}{r} 2 \overline{) 12} \quad 8 \\ 2 \overline{) 6} \quad 4 \\ \quad 3 \quad 2 \end{array}$$

$$\text{LCM} = 2 \times 2 \times 3 \times 2 = 24$$

Ben and Isabel would exercise together again in 24 days.



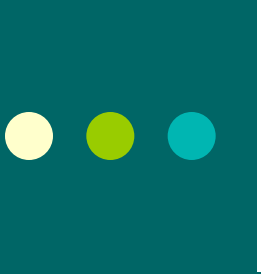
TEST YOUR KNOWLEDGE

- ★ On a sheet of paper, solve each word problem using LCM...
- ★ What question does the word problem answer that tells you it can be solved using LCM?



Question #1

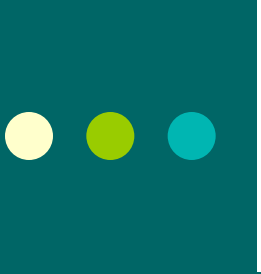
- * Radio station Z100 gave away a Z \$100 bill for every 100th caller. Every 30th caller received free concert tickets. How many callers must get through before one of them receives *both* a coupon and a concert ticket?



Radio station Z100 gave away a Z \$100 bill for every 100th caller. Every 30th caller received free concert tickets. How many callers must get through before one of them receives *both* a coupon and a concert ticket?

This problem answers the question:
“When will something happen at the same time?”

We need to find the LCM of 100 and 30



Radio station Z100 gave away a Z \$100 bill for every 100th caller. Every 30th caller received free concert tickets. How many callers must get through before one of them receives *both* a coupon and a concert ticket?

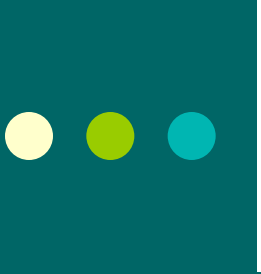
The LCM of 100 and 30 is: 300

300 callers must get through before one of them receives both a Z100 Z \$100 bill and a concert ticket



Question #2

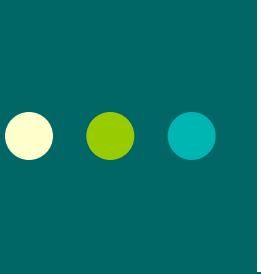
- ★ Two bikers are riding a circular path. The first rider completes a round in 12 minutes. The second rider completes a round in 18 minutes. If they both started at the same place and time and go in the same direction, after how many minutes will they meet again at the starting point?



Two bikers are riding a circular path. The first rider completes a round in 12 minutes. The second rider completes a round in 18 minutes. If they both started at the same place and time and go in the same direction, after how many minutes will they meet again at the starting point?

This problem answers the question:
Do we have an event that is or will be repeating over and over?

We need to find the LCM of 12 and 18



Two bikers are riding a circular path. The first rider completes a round in 12 minutes. The second rider completes a round in 18 minutes. If they both started at the same place and time and go in the same direction, after how many minutes will they meet again at the starting point?

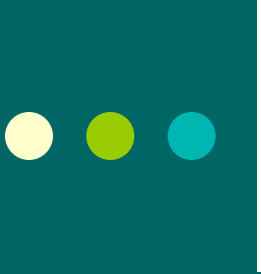
The LCM of 12 and 18 is: 36

After 36 minutes the two bikers will meet again at the starting point



Question #3

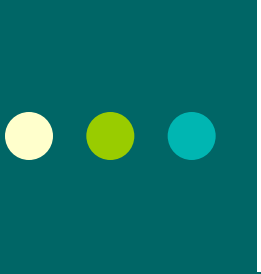
- ★ Sean has 8-inch pieces of toy train track and Ruth has 18-inch pieces of train track. How many of each piece would each child need to build tracks that are equal in length?



Sean has 8-inch pieces of toy train track and Ruth has 18-inch pieces of train track. How many of each piece would each child need to build tracks that are equal in length?

This problem answers the question:
Will we have to purchase or get multiple items in order to have enough?

We need to find the LCM of 8 and 18



Sean has 8-inch pieces of toy train track and Ruth has 18-inch pieces of train track. How many of each piece would each child need to build tracks that are equal in length?

The LCM of 8 and 18 is: 72

Each child would build a 72-inch track.

To determine how many pieces each child will need, we have to divide:

Sean needs $72 \div 8 = 9$

Ruth needs $72 \div 18 = 4$

Sean needs 9 8-inch pieces of track

Ruth needs 4 18-inch pieces of track