STEM from Home

HCF and LCM

Introduction

There was a merchant. He had 150 l of kerosene oil, 250 l of sunflower oil and 500 l of mustard oil. He wants to sell the oil by filling each of kerosene oil, sunflower oil, and mustard oil in tins of equal volumes. What is the greatest volume of each tin?

Or if you are given a question that find the largest number which divides 146, 258 and 114 leaving a reminder 2 in each case, what will you find out—HCF or LCM?

HCF of two or more numbers is the highest of 2 or more of their common factors while

LCM of two or more numbers is the lowest of all the common multiples.

In the first instance, finding out the HCF of 150, 250 and 500 l will give a result as 50 l.

It means that 150 liters of kerosene oil is sold in 3 tins of volume 50 l in each tin.

Also, 250 liters of sunflower oil is sold in 5 tins of volume 50 l in each tin.

Moreover, 500 liters of mustard oil is sold in 10 tins of volume 50 l in each tin.

In the second situation, again you will find H.C.F. (Highest Common Factor). Easy, yes!

Let's begin, we subtract 2 from each number because the numbers obtained will be completely divisible by the required number.

$146 – 2 = 144 = 2 \times 2 \times 2 \times 2 \times 3 \times 3$

$258 – 2 = 256 = 2 \times 2 \times 2 \times 2 \times 4 \times 4$

$114 – 2 = 112 = 2 \times 2 \times 2 \times 2 \times 7$

H.C.F. of 144, 256 and 112 $= 2 \times 2 \times 2 \times 2 = 16$

Hence the required number is 16.

Suppose there are traffic lights at 4 different road crossing change after every 56 sec, 64 sec, 72 sec, 80 sec respectively. If they change simultaneously at 8 am., at what time they will change simultaneously again.

Now, while solving such a problem would you use HCF OR LCM?

This time go for LCM since we want to find the least common multiple of the given durations.

LCM of 56, 64, 72 and 80 is 20160 sec= 336 min= 5h 30 min

It means that the traffic lights will change simultaneously at 8 am + 5h 30 min= 1:30 pm again.

In this STEM pack, you will study about different situations where you apply either HCF or LCM to solve them and visualizing them using a tech tool.

Main Activity: **Real Life Problems**

Introduction

In this activity, you will study about how to apply HCF & LCM in real life

What You Will Need:

A computer with internet connection and stylus Pen.

What You Will Learn:

- How to use "OpenToonz" to create the story scene as per the situation given.

- Animate the video so as to solve one situation based on HCF and create another situation based on LCM with visual explanation.

- Verify whether the Product of 2 numbers is equal to the product of HCF and LCM.

Click here for activity details.

Bonus Activities

Activity 1:

Let's solve this problem: Two tankers contain 450 l and 750 l of Diesel. Find the maximum capacity of the container which can measure diesel when used an exact number of times.
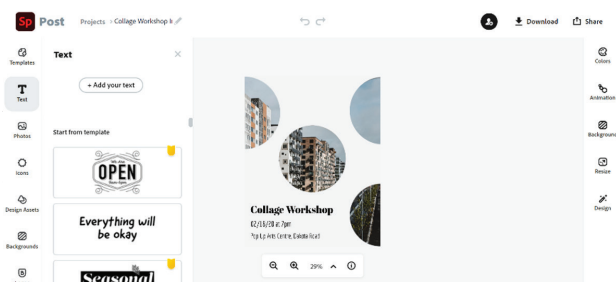
Solve the solution using Adobe Spark post.

- Design a square Collage using Workshop template.

- You may use your creativity to make it presentable and decent.

- Don't forget to publish it and share the link on Facebook/Twitter/Teams.

Refer to the tutorial guide to Adobe Spark: Getting Started with "Adobe Spark Post" Tutorial - YouTube

Activity 2

How about just digging out further and satisfy the thirst for more knowledge! I want to search about science behind storage of this fuel.

Explore what type of containers should be used to store diesel.

Click here

Now, what is to done with this information?

Create a Popplet depicting

- Mention the metal alloys to be avoided for storage of diesel.

- Benefits of using a plastic drum for diesel fuel storage.

- Is Polyethene plastic drum safe for storage of diesel.

- Remember to give a suitable heading and link the title with subheadings leading to more Branching to form a flowchart.

- Use your own creativity.

Challenge Activity: Modelling Your Restaurant

What You Will Learn

- Explore how is Biodiesel different from e- diesel.
  Click here to know more

- Diesel is flammable. Why?

- What are Diesel fuel Generator and where are they used?

- Does it lead to the problem of pollution? Click here to know more

- You may depict the explanation in a video of 2 min. Give your solution to the problem caused by Diesel fuel Generators using Adobe Spark Video.

Step 1: Setting up a project

Go to https://spark.adobe.com/. If you already have an adobe account sign in, if not, hit the start now button and create a new account.

Once you have an account and are signed in select the Create a project button.

Step 2: From the pop-up menu, select Video

For further information, Click here