HCFs and LCMs

Let $A = 2^3 \times 3^2 \times 5 \times 7^2$

$B = 2^4 \times 3^2 \times 5^2 \times 7$

$C = 2^3 \times 3^3 \times 5 \times 7^3$

HCF of A, B, C $= 2^3 \times 3^2 \times 5 \times 7$

LCM of A, B, C $= 2^4 \times 3^3 \times 5^2 \times 7^3$

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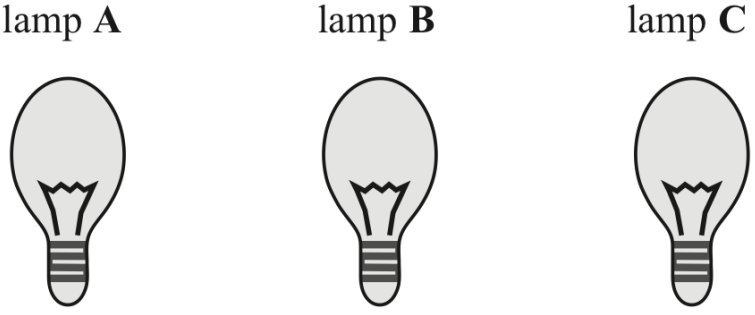
10 Here are three lamps.



Lamp **A** flashes every 20 seconds.
Lamp **B** flashes every 45 seconds.
Lamp **C** flashes every 120 seconds.

The three lamps start flashing at the same time.

How many times in one hour will the three lamps flash at the same time?

A 0 20 40 60 80 100 120 140 160 180 360

B 0 45 90 135 180 360

C 0 120 240 360

LCM = 360 seconds

OR

$$\begin{array}{r|l} 2 & 20 \\ 2 & 10 \\ 5 & 5 \\ & 1 \end{array} \qquad \begin{array}{r|l} 3 & 45 \\ 3 & 15 \\ 5 & 5 \\ & 1 \end{array} \qquad \begin{array}{r|l} 2 & 120 \\ 2 & 60 \\ 2 & 30 \\ 3 & 15 \\ 5 & 5 \\ & 1 \end{array}$$

$20 = 2 \times 2 \times 5$

$45 = 3 \times 3 \times 5$

$120 = 2 \times 2 \times 2 \times 3 \times 5$

LCM $= 2 \times 2 \times 2 \times 3 \times 5 \times 3 = 360$ seconds

$60 \times 60 = 3600$ seconds in 1 hr.

$\frac{3600}{360} = 10$ times flash together

11 if you count the starting flash

Density

A block of wood 1.2m x 75cm x 8cm has a mass of 6kg

A block of plastic 3.2m x 7m x 4.1m has a mass of 250kg.

Which has greatest density?

Work in kg/m^3

Wood Vol $1.2 \times 0.75 \times 0.08 = 0.072\ m^3$

$$\text{Density} = \frac{\text{Mass}}{\text{Vol}} = \frac{6}{0.072} = 83.3\ kg/m^3$$

Plastic Vol $3.2 \times 7 \times 4.1 = 91.84\ m^3$

$$\text{Density} = \frac{\text{Mass}}{\text{Vol}} = \frac{250}{91.84} = 2.72\ kg/m^3$$

$\therefore$ Wood is more dense since $83.3 > 2.72$
