

# Measurement of Length, Mass and Capacity

Grade 4

# Measure of Length, mass and capacity

## Important words and its meaning.

Word	Kilo (k)	hecto (h)	deca (da)	Base unit	deci (d)	centi (c)	milli (m)
Meaning	1000	100	10		$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$

Metric System of measurement

higher units

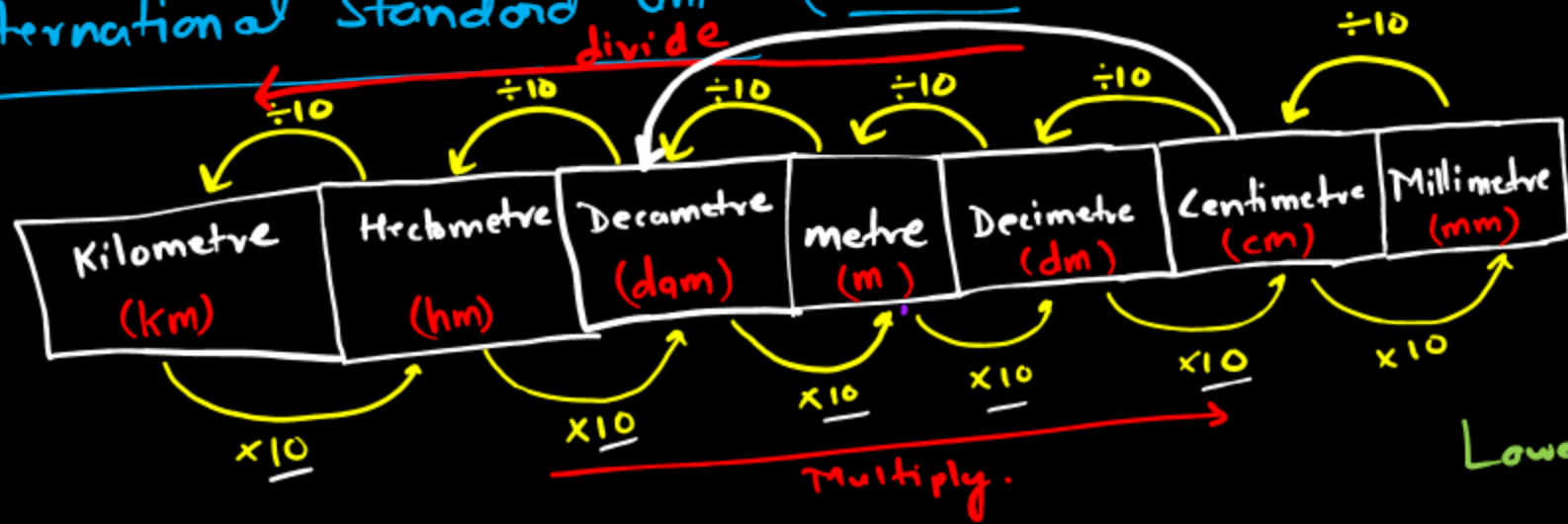
smaller units

# Measure of Length.

Base unit is metre (m)

Standard unit

International Standard unit (SI unit)



$$1 \text{ km} = 1 \times 10 \text{ hm} = \underline{10 \text{ hm}}$$

$$3 \text{ km} = \underline{30 \text{ hm}}$$

$$2 \text{ hm} = \underline{200000 \text{ mm}}$$

$$12 \text{ km} = \underline{12000000 \text{ cm}}$$

Lower unit to higher unit  
 $\Rightarrow$  Divide

Higher to Lower  
 $\Rightarrow$  Multiply.

$$20000 \text{ mm} = \frac{20000 \div 1000}{1} \text{ m}$$
$$= 20 \text{ m}$$

$$\frac{20000}{1000}$$

$$1000 \overline{) 20000}$$

$$20000 \text{ mm} = \frac{0.002}{1} \text{ km}$$

$$\frac{20000}{1000000}$$

$$\frac{2}{1000} = \underline{\underline{0.002}}$$

$$21 \text{ dam} = \frac{2100}{1} \text{ dm}$$

$$\frac{21 \times 100}{1} = \underline{\underline{2100}}$$

$$4 \text{ km} = \frac{400000}{1} \text{ cm}$$

$$41000 \text{ cm} = \frac{41}{1} \text{ dam}$$

$$\frac{41000}{1000} = \frac{41}{1}$$

• m into cm  $\Rightarrow$   $\times 100$

• cm into dm  $\Rightarrow$   $\div 10$

• km into hm  $\Rightarrow$   $\times 10$

• m into km  $\Rightarrow$   $\div 1000$

} Important

Convert 80 mm into cm.

$$80 \text{ mm} = \frac{80}{10} \text{ cm} = \underline{8 \text{ cm}}$$

Q. Convert  $\underbrace{6\text{cm}} + \underbrace{6\text{mm}}$  in mm.

$$\Rightarrow 6\text{cm} + 6\text{mm}$$

$$\Rightarrow 6 \times 10\text{mm} + 6\text{mm}$$

$$\Rightarrow 60\text{mm} + 6\text{mm}$$

$$\Rightarrow 66\text{mm.}$$

Q. Convert  $\underline{5\text{ km } 7\text{ hm } 4\text{ dam } 3\text{ m}}$  into metres.

$$\Rightarrow 5\text{km} + 7\text{hm} + 4\text{dam} + \underline{3\text{m}}$$

$$\Rightarrow (5 \times 1000)\text{m} + (7 \times 100)\text{m} + (4 \times 10)\text{m} + 3\text{m}$$

$$\Rightarrow 5000\text{m} + 700\text{m} + 40\text{m} + 3\text{m}$$

$$\Rightarrow \underline{\underline{5743\text{ m}}}$$

# Addition and Subtraction of Lengths.

⇒ just like ordinary number.

1. Add 215m 35cm and 120m 59cm.

$$\begin{array}{r} \text{m} \quad \text{cm} \\ 215 \quad 35 \\ 120 \quad 59 \\ \hline \underline{335 \quad 94} \end{array}$$

$$\begin{array}{r} 215.35 \\ + 120.59 \\ \hline \end{array}$$

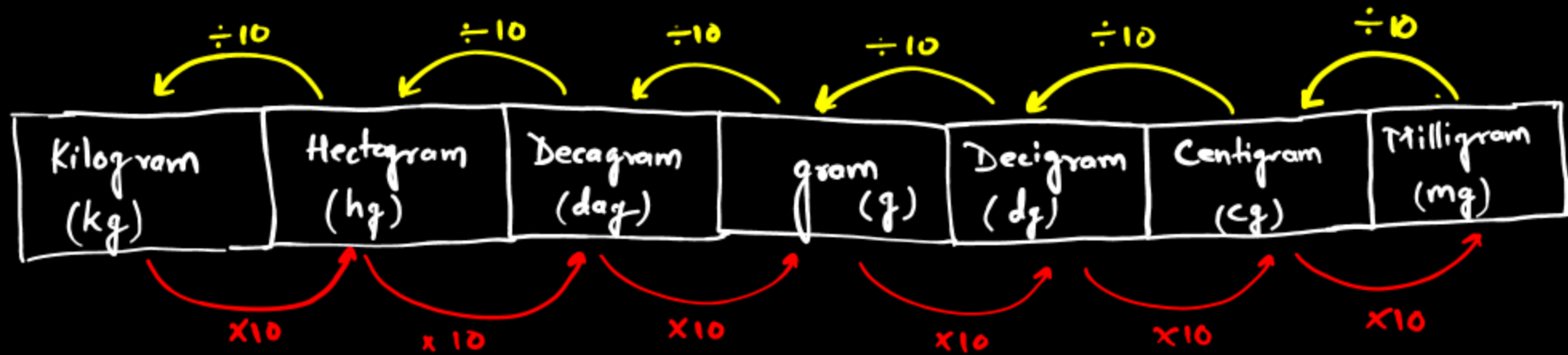
335m 94cm.

Subtract 20 km 315 m ✓ from 52 km 525 m. ✓

	km	m
	52	525
-	20	315
	<hr/>	<hr/>
	32	210
	<hr/>	<hr/>

**32 km 210 m**

# Measures of Mass/Weight



$$1 \text{ kilogram (kg)} = \frac{1000}{1} \text{ grams (g)}$$

$$1 \div 1000$$

$$1 \text{ Hectogram (hg)} = \frac{100}{1} \text{ grams (g)}$$

$$1 \text{ milligram (mg)} = \left( \frac{1}{1000} \right) \text{ grams (g)}$$

$$\underline{30} \text{ mg} = \frac{30}{1000} \text{ g} = \frac{3}{100} = \underline{\underline{0.03 \text{ g}}}$$

$$1000 \overline{) 30}$$

~~1000~~

$$1 \text{ cg} = \frac{1}{100} \text{ g}$$

$$\boxed{1 \text{ cg} = 0.01 \text{ g}}$$

$$20 \text{ cg} = \frac{20}{100} \text{ g} = \underline{\underline{0.2 \text{ g}}}$$

$$\boxed{20 \text{ cg} = 0.2 \text{ g}}$$

Quintal is another unit of mass.

$$\underline{1 \text{ quintal}} = \underline{100 \text{ kg}}$$

11 Q.

Convert 6 kg into grams.

$$\begin{aligned} 6 \text{ kg} &= (6 \times 1000) \text{ g} \\ &= \underline{\underline{6000 \text{ g}}} \end{aligned}$$

$$\begin{aligned} 1 \text{ kg} &= 1000 \text{ g} \\ 6 \text{ kg} &= 6 \times 1000 \text{ g} \\ &= \underline{\underline{6000 \text{ g}}} \end{aligned}$$

Q. Convert 8 kg 235 g into grams.

$$\Rightarrow 8 \text{ kg} + 235 \text{ g}.$$

$$\Rightarrow (8 \times 1000) \text{ g} + 235 \text{ g}$$

$$\Rightarrow 8000 \text{ g} + 235 \text{ g}$$

$$\Rightarrow \underline{\underline{8235 \text{ g}}}.$$

Convert 6 kg 8 hg 5 dag 9 g into grams.

Sol:

$$6 \text{ kg} + 8 \text{ hg} + 5 \text{ dag} + 9 \text{ g} \rightarrow$$

$$\Rightarrow (6 \times 1000) \text{ g} + (8 \times 100) \text{ g} + (5 \times 10) \text{ g} + 9 \text{ g} \rightarrow$$

$$\Rightarrow 6000 \text{ g} + 800 \text{ g} + 50 \text{ g} + 9 \text{ g} \leftarrow$$

$$\Rightarrow \underline{6859 \text{ g}}$$

Add 12 kg 565 g and 27 kg 302 g

	kg	g
	12	565
+	27	302
<hr/>		
	39 kg	867 g
<hr/>		

Convert 2345 g into kg.

Sol:  $1 \text{ g} = \frac{1}{1000} \text{ kg}$

$$2345 \text{ g} = \frac{2345}{1000} \text{ kg.}$$

$$= \underline{\underline{2.345}} \text{ kg.}$$

$$\Rightarrow 2 \text{ kg } 345 \text{ g.}$$

II method

$$\underline{2345 \text{ g}} = \underline{2000 \text{ g}} + \underline{345 \text{ g}}$$

$$= 2 \text{ kg} + 345 \text{ g}$$

$$= 2 \text{ kg } 345 \text{ g}$$

Q. Convert 5205 mg into grams and milligrams.

Sol:  $5205 \text{ mg} = \frac{5205}{1000} \text{ g} \quad [ \underline{1000 \text{ mg} = 1 \text{ g}} ]$

$$= 5.205 \text{ g}$$
$$= 5 \text{ g } 205 \text{ mg}$$

$$1680 \text{ g} = \frac{1}{1000} \text{ kg} \frac{680}{1000} \text{ g}$$

$$13440 \text{ mg} = \frac{13}{1000} \text{ g} \frac{440}{1000} \text{ mg}$$

Addition / Subtraction of mass.

eg. Add 12 kg 565 g and 27 kg 302 g

$$\begin{array}{r} \text{kg} \quad \text{g} \\ 12 \quad 565 \\ + 27 \quad 302 \\ \hline 39 \text{ kg} \quad 867 \text{ g} \\ \hline \end{array}$$

$$\Rightarrow 39.867 \text{ kg}$$

Subtract 40 kg 630 g from 62 kg 460 g.

$$\begin{array}{r} \text{kg} \qquad \text{g} \\ \boxed{62} \qquad 460 \\ - \quad 40 \qquad 630 \\ \hline 21 \text{ kg} \qquad 830 \text{ g} \\ \hline \end{array}$$

$$\underline{\underline{41.309}} \text{ kg}$$

$$\underline{\underline{32.841}} \text{ kg}$$

Subtract  $39 \text{ kg } 842 \text{ g}$  from  $54 \text{ kg } 201 \text{ g}$ .

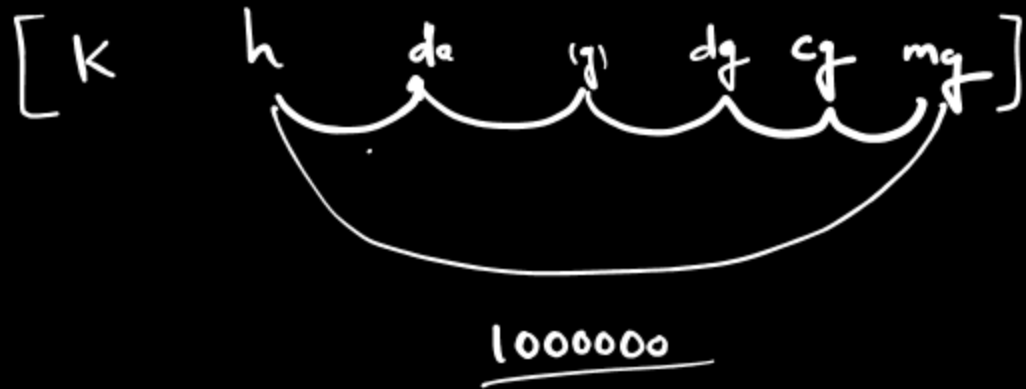
$$\begin{array}{r} \text{kg} \qquad \text{g} \\ 54 \qquad 201 \\ - 39 \qquad 842 \\ \hline 14 \text{ kg} \qquad 359 \text{ g} \\ \hline \end{array}$$

$$14.359 \text{ kg}$$

$$\begin{array}{r} 54.201 \\ - 39.842 \\ \hline \\ \hline \end{array}$$

Q.  $80 \text{ g} = \frac{80}{10} \text{ dag}$   
 $= \underline{8 \text{ dag}}$

k h da (b) d c m

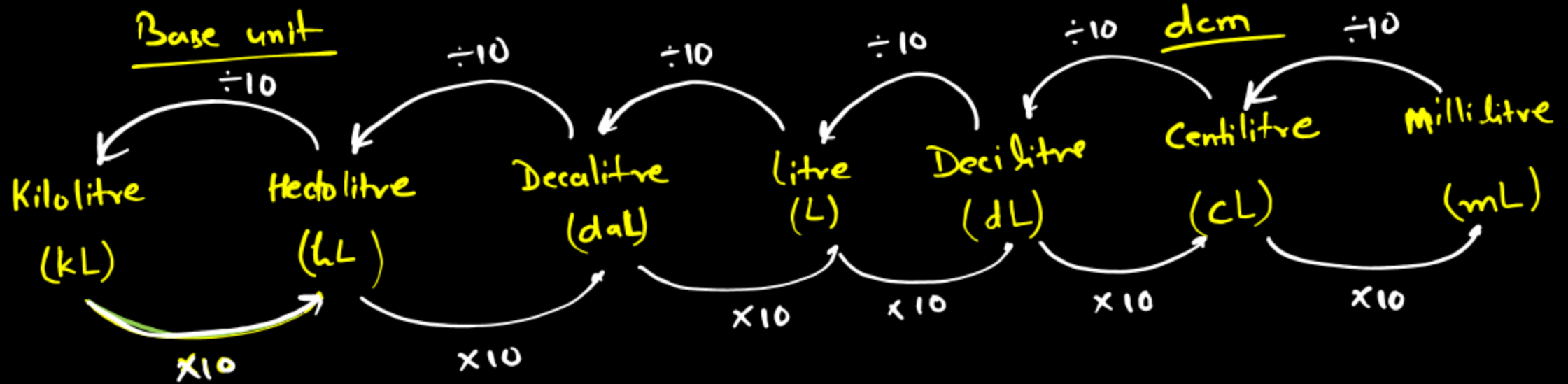


Q. 13 hg into mg

$13 \text{ hg} = 13 \times 1000000 \text{ mg}$   
 $= \underline{\underline{13000000 \text{ mg}}}$

# Measures of capacity (volume)

Standard unit to measure capacity (volume) is litre (L)



✓	$1 \text{ kL} = \underline{1000} \text{ L}$ ✓
✓	$1 \text{ L} = \underline{1000} \text{ mL}$

$10 \times 10 \times 10 \times 10$
------------------------------------

Q. Convert 5 kL into daL.

$$5 \text{ kL} = \underline{5 \times 100} \text{ daL} = 500 \text{ daL}$$

$$5 \text{ kL} = \underline{5000} \text{ L}$$

Q. Convert 4 kL 320 L into litres.

$$\begin{aligned}\underline{4 \text{ kL } 320 \text{ L}} &= (4 \times 1000) \text{ L} + 320 \text{ L} && (\because \underline{1 \text{ kL} = 1000 \text{ L}}) \\ &= \underline{4000 \text{ L}} + \underline{320 \text{ L}} \\ &= \underline{4320 \text{ L}}\end{aligned}$$

Q. Convert 3 L into mL.

$$\begin{aligned}3 \text{ L} &= 3 \times 1000 \text{ mL} && (\because \underline{1 \text{ L} = 1000 \text{ mL}}) \\ &= \underline{\underline{3000 \text{ mL}}}\end{aligned}$$

$$11000 \text{ mL} = \underline{11} \text{ L}$$

$$8080 \text{ L} = \underline{8.080} \text{ kL}$$

$$\frac{8080}{1000}$$

Convert 4 kL 320L into litres.

$$\begin{aligned} 4 \text{ kL } 320\text{L} &= \underline{4 \times 1000 \text{ L}} + \underline{320\text{L}} \\ &= \underline{4320\text{L}} \end{aligned}$$

Convert 3L into mL

Convert 2kL 5hL 6daL 3L into litres.

$$= \underline{2563 \text{ L}}$$

→ Subtract 8 m 65 cm from 12 m 30 cm.

→ Add 10 kg 375 g, 8 kg 285 g and 6 kg 780 g.

Kg	g
10	<sup>2</sup> 375
8	285
6	780
<hr/>	
25	440
<hr/>	

A curved arrow points from the 5 in the kg column to the 4 in the g column. A circled 1 is written below the 4 in the g column.

Subtract 56 L 734 ml from 75 L 125 ml

Q. Shivani has ₹ 540. How many caps of ₹ 12 each can she buy?

(a) 35

(b) 40

~~(c) 45~~

(d) 55



Q. Shilpa walks 5 km 50 m and Amit walks 3 km 212 m every morning. How much more distance does Shilpa walk than Amit.

Km	m
5	(50)
3	(212)

~~(A)~~ 1 km 838 m

(B) 1 km 520 m

(C) 1852 km

(D) 1720 km

# Subtract

$$\begin{array}{r} 4 \text{ km} \\ \underline{5} \\ 3 \\ \hline \underline{1 \text{ km}} \end{array} \quad \begin{array}{r} \text{m} \\ \underline{500} \\ 212 \end{array} \quad \begin{array}{r} 1050 \\ - 212 \\ \hline 838 \text{ km} \end{array}$$

An arrow labeled "1 km" points from the "4 km" above the "5" to the "m" above the "500".

Subtract 8m 65cm from 12m 30cm.

dc m

$$\begin{array}{r} \text{m} \\ 12 \\ \hline 8 \\ \hline 3 \end{array}$$

1m  
100cm

$$\begin{array}{r} \text{cm} \\ 130 \\ 65 \\ \hline \end{array}$$
$$\begin{array}{r} 130 \\ - 65 \\ \hline 65 \end{array}$$

Subtract 8m 65cm from 12m 3cm

$$\begin{array}{r} \text{m} \quad \text{cm} \\ 12 \quad 3 \\ \hline 8 \quad 65 \\ \hline 3 \text{ m} \quad 38 \text{ cm} \end{array}$$

1m  
100

Subtract

$$\begin{array}{r} \text{L} \quad \text{mL} \\ 13 \quad 1083 \\ 7 \quad 241 \\ \hline 5 \text{L} \quad 842 \text{mL} \end{array}$$

*Note: A curved arrow points from the 13 L to the 1083 mL, with a circled "1000 L" and a small "w" below it, indicating a conversion of 1000 L to 1000000 mL.*

$$\begin{array}{r} 1083 \\ 241 \\ \hline \end{array}$$

Q. Mohit bought a cloth of length 15m. if he divided the cloth into 25 equal pieces, find the length of each piece of cloth.

(a) 55 cm ✓

~~(b) 60 cm ✓~~

(c) 75 cm ✓

(d) 50 cm.

$$15\text{m} = \frac{1500}{60} \text{ cm}$$

$$\begin{array}{r} \textcircled{6} \quad \textcircled{6} \quad \textcircled{6} \\ \hline 25 \overline{) 1500} \\ \underline{150} \end{array}$$

Q. A milkman has 20L 500mL of milk. He gives 3L 250mL to Mr. X, 2L to Mrs. Y and 4L 500mL to Mr. Z.  
 How much milk is left with the milkman?

- (a) 10L 750mL  
 (b) 7L 250mL  
 (c) 9L 50mL  
 (d) 8L 250mL.

13 <sup>L</sup>	mL
<del>14</del>	1000
3	250
10	750

<u>14L</u>	-	<del>20L</del> <u>3L 250mL</u>
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Multiply

289.56 with 3.2

$$\begin{array}{r} \begin{array}{r} \overset{\overset{1}{\downarrow}}{2} \overset{\overset{1}{\downarrow}}{8} \overset{\overset{1}{\downarrow}}{9} \overset{\overset{1}{\downarrow}}{.} \overset{\overset{1}{\downarrow}}{5} \overset{\overset{1}{\downarrow}}{6} \leftarrow \\ \times \quad \quad \quad 3.2 \leftarrow \\ \hline 57912 \\ + 868680 \\ \hline 926.592 \end{array} \end{array}$$

7 multiply

862.53 with 13.91

$\frac{72}{5}$

$$\begin{array}{r} 862.53 \\ \times 13.91 \\ \hline 86253 \\ 7762770 \leftarrow \\ 25875900 \\ + 86253000 \\ \hline 11997.7923 \end{array}$$

$$\begin{array}{r} 862.53 \\ \times 13.91 \\ \hline 11949.7923 \\ \hline \boxed{11997.7923} \end{array}$$

Q. The monthly salary of Mr. X is ₹ 45000. He spent  $\left(\frac{1}{3}\right)^{\text{rd}}$  of it on clothes and  $\left(\frac{1}{2}\right)$  of the remaining amount on groceries. How much money is left with him?

$$\text{On clothes} \rightarrow ₹ \left(\frac{1}{3} \text{ of } 45000\right) = \frac{1}{3} \times \frac{45000}{1} = \frac{45000}{3} = ₹ 15000$$

$$\begin{aligned} \text{Money left} &= 45000 - 15000 \\ \text{Remaining} &= ₹ \underline{30000} \end{aligned}$$

$$\begin{aligned} \text{On groceries} &= \frac{1}{2} \times 30000 \\ &= ₹ 15000 \end{aligned}$$

$$\text{Final amt. left} = 30000 - 15000 = ₹ 15000$$

$$\frac{2}{3} \times \frac{5}{4} = \frac{2 \times 5}{3 \times 4} = \frac{10}{12}$$

$$\begin{array}{r} 15000 \\ 3 \overline{) 45000} \\ \underline{- 30} \phantom{00} \\ 15 \phantom{00} \\ \underline{- 15} \phantom{00} \\ 0 \phantom{00} \end{array}$$

$$\left\{ \begin{aligned} \text{Amt. spent on cloth} &= ₹ \left( \frac{1}{3} \text{ of } 45000 \right) = \frac{1}{3} \times 45000 = \frac{45000}{3} = \underline{\underline{₹ 15000}} \\ \text{Remaining amt} &= ₹ (45000 - 15000) = \underline{\underline{₹ 30000}} \parallel \\ \text{Amt. spent on groceries} &= ₹ \frac{1}{2} \text{ of (remaining amt.)} = \frac{1}{2} \text{ of } 30000 = \frac{1}{2} \times 30000 = \underline{\underline{₹ 15000}} \\ \text{Final amt. left with Mr. X} &= ₹ 30000 - ₹ 15000 \\ &= \underline{\underline{₹ 15000}} \end{aligned} \right.$$

- (A) ₹ 5000
- (B) ₹ 10000
- (C) ₹ 7500
- (D) ₹ 15000

Divide

4592.75

by

7

$$\begin{array}{r} 656.10 \\ 7 \overline{) 4592.75000} \\ \underline{-42} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\ 39 \phantom{00} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\ \underline{-35} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\ 42 \phantom{00} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\ \underline{-42} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\ 07 \phantom{00} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\ \underline{-7} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\ 05 \phantom{00} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\ \underline{00} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \\ 5 \phantom{00} \phantom{00} \phantom{00} \phantom{00} \phantom{00} \end{array}$$

# Factors

Factors of (12)

$$\begin{array}{l} \rightarrow (1) \times (12) = 12 \\ \rightarrow (2) \times (6) = 12 \\ \rightarrow (3) \times (4) = 12 \end{array}$$

$$\begin{array}{r} 1 \\ (12) \overline{) 12} \\ \underline{12} \\ 0 \end{array}$$

$$\begin{array}{r} (1) \overline{) 12} \\ \underline{12} \\ 0 \end{array}$$

$$\begin{array}{r} (2) \overline{) 12} \\ \underline{12} \\ 0 \end{array}$$

$$\begin{array}{r} (3) \overline{) 12} \\ \underline{12} \\ 0 \end{array}$$

Factors of 13.

$$\underline{1} \times \underline{13} = \underline{\underline{13}}$$

$$13 \times 1 = 13$$

$$7 \times 2 = 14$$

Is 11 a factor of 1034?

11 divides 1034 completely.

Hence, 11 is a ~~factor~~ factor of 1034.

$$\begin{array}{r} 94 \\ 11 \overline{) 1034} \\ \underline{- 99} \phantom{4} \\ 44 \\ \underline{- 44} \\ 0 \leftarrow \text{Remainder} \end{array}$$

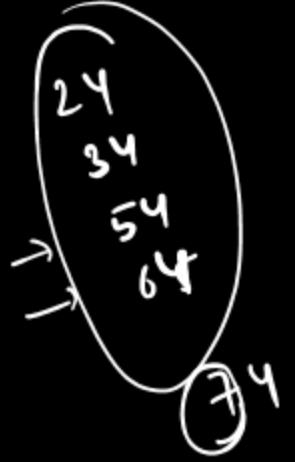
Find all the factors of  $\boxed{48}$

$\boxed{48}$

- $1 \times 48 = 48$
- $2 \times 24 = 48$
- $3 \times 16 = 48$
- $4 \times 12 = 48$
- $6 \times 8 = 48$

222

$3 \times \underline{16} = \underline{48}$



$48 : \underline{1}, 2, 3, 4, 6, 8, 12, 16, 24, \underline{48}$   $3 \times 4 =$

$20 \div 0 = 15 \div 0$

$0 \div 2$   
 $0 \div 20$

1

$$\begin{array}{r} 3 \\ \times \quad - \\ \hline 8 \end{array}$$

$$\begin{array}{r} 6 \\ \times 3 \\ \hline 18 \end{array}$$

- $3 \times 1 = 3$
- $3 \times 2 = 6$
- $3 \times 3 = 9$

$$\begin{array}{r} 16 \\ 3 \\ \hline 48 \end{array}$$

$$\begin{array}{r} \boxed{16} \\ \times 3 \\ \hline 48 \end{array}$$

$$\begin{array}{r} 26 \\ \times 3 \\ \hline 8 \end{array}$$

$20 \div 0$   $\times$

$$3 \times \underline{39} = \underline{117}$$

$$3 \times 1 = 3$$

$$\begin{array}{r} 17 \\ 3 \end{array} \quad \begin{array}{r} 19 \\ \underline{29} \\ 39 \\ \underline{49} \end{array}$$

$$3 \times 9 = 27$$

Is 15 a factor of 1309

$15 \times 1 = 15$
$15 \times 2 = 30$
$15 \times 3 = 45$
$15 \times 4 = 60$

$$\begin{array}{r} 87 \\ \hline 15 \overline{) 1309} \\ \underline{120} \phantom{0} \\ 109 \\ \underline{105} \\ 4 \leftarrow \end{array}$$

$$\begin{array}{r} 15 \\ \times 9 \\ \hline 135 \\ \underline{15} \\ \hline 0 \end{array}$$

$$\begin{array}{r} 15 \\ \times 7 \\ \hline 105 \end{array}$$

$$\frac{2}{2} \quad \frac{2}{1} \quad \frac{2}{0.9} \quad \frac{2}{0.01} \quad \frac{2}{0.0002} \quad \frac{2}{0}$$

$$\frac{1}{1} \quad \frac{2}{2} \quad \frac{2.22}{2.22} \quad 200 \quad \frac{1000}{10000000}$$

$$\frac{2}{0.0000002}$$

$$A = 2$$

$$B = 2$$

$$A = B$$

$$A = \infty$$

$$B = \infty$$

$$\frac{2}{0} = \infty$$

$$\frac{12}{0} = \infty$$

Not possible

$$\frac{2}{0} = \frac{12}{0} \quad \times$$

$$2 = 12 \quad \times$$

factor of zero

1, 2, 3, 4, ...  $\infty$

84

$$1 \times 84 = \underline{84}$$

$$\boxed{2 \times 42} = \underline{84}$$

$$3 \times \underline{28} = \underline{84}$$

$$4 \times 21 = \underline{84}$$

$$6 \times 14 = \underline{84}$$

$$7 \times 12 = \underline{84}$$

~~$$12 \times 7 = \underline{84}$$~~

$$\begin{array}{r} 2 \\ 28 \\ \times 3 \\ \hline 84 \end{array}$$

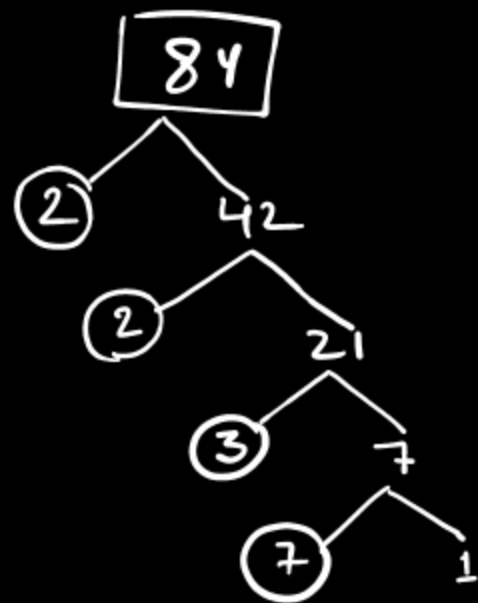
$$\begin{array}{r} 12 \\ 7 \\ \hline \underline{84} \end{array}$$

$$\begin{array}{r} 7 \times 12 = \\ 7 \times 10 = \underline{70} \\ 7 \times 2 = \underline{14} \\ \hline 84 \end{array}$$

$$7 \times (\underline{10} + \underline{2}) = 84$$

$$\begin{array}{r} 6 \times 13 = \underline{78} \end{array}$$

84 Prime Factor tree



Division Method

2	84
2	42
3	21
7	7
	1

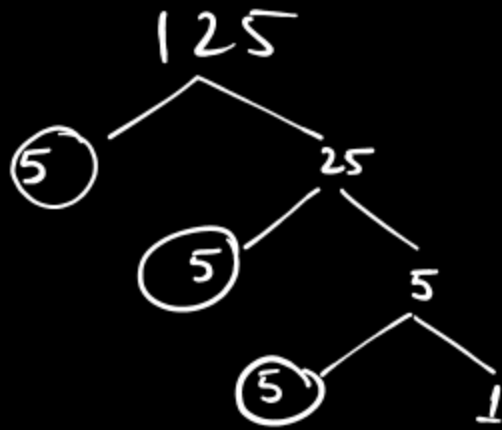
Prime Factors of 84 :  $2 \times 2 \times 3 \times 7$

$$84 = 2 \times 2 \times 3 \times 7$$

125

prime factor tree

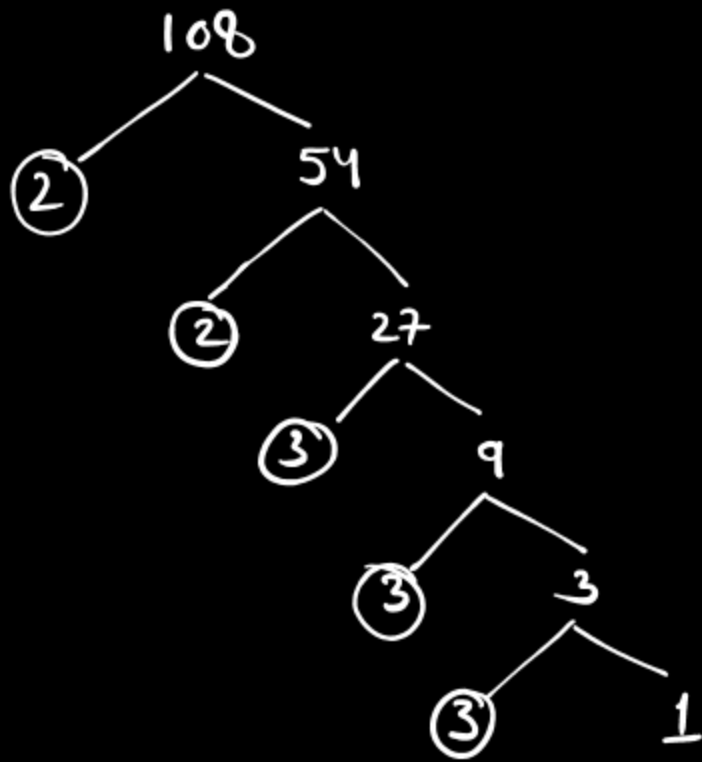
$$5 \overline{)125}$$



$$125 = 5 \times 5 \times 5$$

108

factor tree



$$2 \overline{) 108}$$

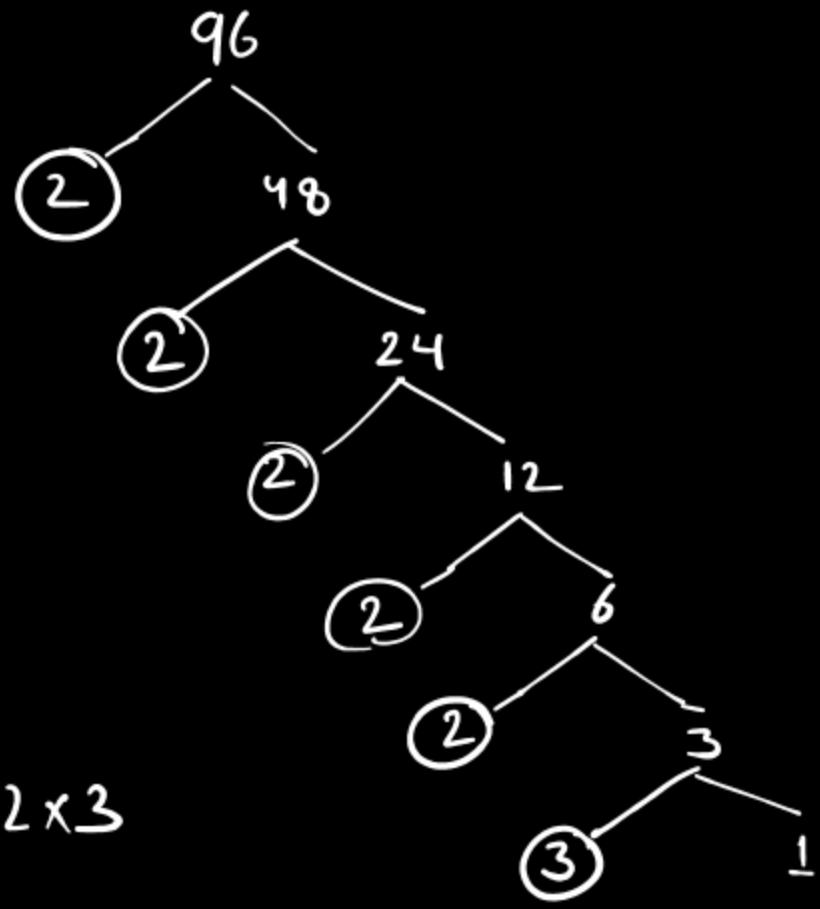
54

$$\begin{array}{r} 50 + 4 \\ \hline 25 + 2 \end{array}$$

$$108 = \underline{2} \times \underline{2} \times \underline{3} \times \underline{3} \times \underline{3}$$

all the prime factors of 108

Q. Find all the prime factors of 96

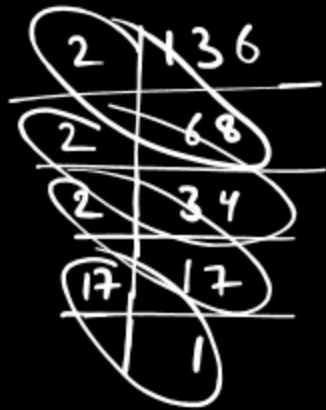


$$\boxed{90 + 6}$$
$$45 + 3$$

$$24 \times 3 = 72$$
$$(\underline{20} + \underline{4}) \times 3$$
$$\begin{array}{r} 60 + 12 \\ \hline \boxed{72} \end{array}$$

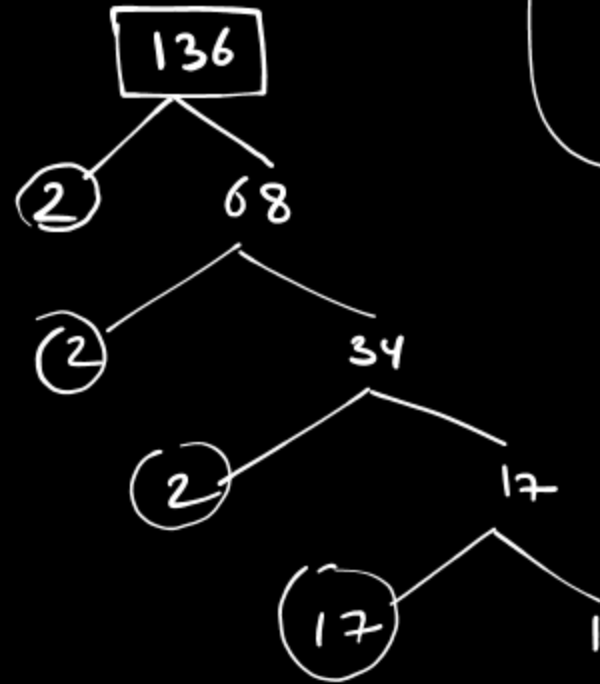
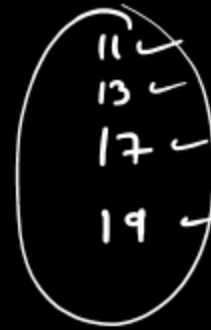
96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3

Factor 136 using division method.



$$136 = 2 \times 2 \times 2 \times 17$$

$$136 = 100 + 30 + 6$$
$$50 + 15 + 3$$



## H.C.F.

H.C.F. of 18 and 27

$$18 = 1, 2, 3, 6, 9, 18$$

$$27 = 1, 3, 9, 27$$

H.C.F. of 18 and 27 is 9

Prime factorisation method:

$$\begin{array}{r|l} 2 & 18 \\ \hline 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 3 & 27 \\ \hline 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

$$18 = 2 \times 3 \times 3$$

$$27 = 3 \times 3 \times 3$$

H.C.F. = product of common prime factors = 3 × 3 = 9

HCF of 16 and 24

$$16 = 1, 2, 4, 8, 16$$

$$\underline{24} = 1, 2, 3, 4, 6, 8, \underline{12}, 24$$

$$\boxed{\text{HCF} = 8}$$

Check whether 6 is a factor of 1296.

$$\begin{array}{r} 216 \\ 6 \overline{) 1296} \\ \underline{- 12} \phantom{6} \\ 09 \phantom{6} \\ \underline{- 6} \phantom{6} \\ 36 \\ \underline{- 36} \\ 0 \rightarrow \end{array}$$

Factor ~~of~~ 612

$$612 = 2 \times 2 \times 3 \times 3 \times 17$$

2	612
2	306
3	153
3	51
17	17
	1

306
<del>612</del>
2
153
<del>306</del>
2
51
<del>153</del>
17
<del>51</del>
3

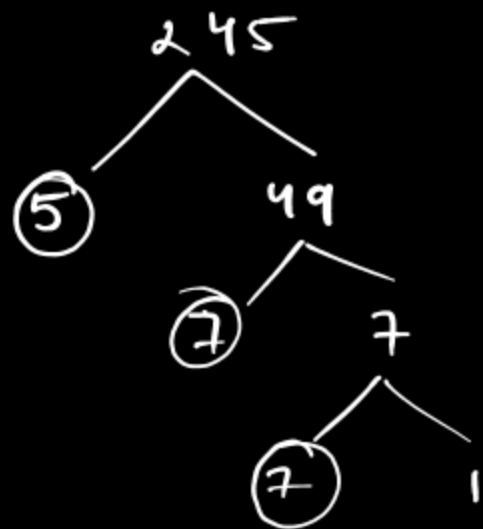
11, 13, 17, 19

Prime factors of 245

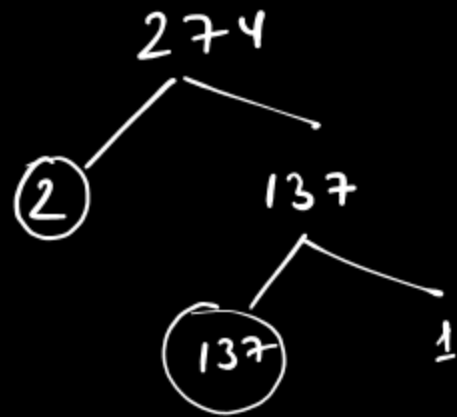
$$245 = \underline{5 \times 7 \times 7}$$

5	245
7	49
7	7
	1

$$\begin{array}{r} 49 \\ \underline{245} \\ 5 \end{array}$$



Prime factors of 274 using factor tree.



$$\begin{array}{r} 137 \\ \times 2 \\ \hline 274 \end{array}$$

Prime factors of 108

2		108
2		54
3		27
3		9
3		3
		1

Find remainder when 5268 is divided by 15.

$$\rightarrow 13 \times 6 = \underline{78}$$

$$\rightarrow 32 \times 6 = \underline{192}$$

$$103 \times 6 =$$

$$(100 + 3) \times 6 = \underline{618}$$

$$14 \times 7 =$$

$$10 + 4$$

$$\begin{array}{r} 351 \\ 15 \overline{) 5268} \\ \underline{-45} \phantom{00} \\ 76 \phantom{00} \\ \underline{-75} \phantom{00} \\ 18 \phantom{00} \\ \underline{-15} \phantom{00} \\ 3 \end{array}$$

$$70 + \underline{28}$$

$$\boxed{70 + 20 + 8}$$

$$54 \times 4 =$$

$$(\underline{50} + \underline{4}) \times \underline{4} = 200 + 16 = \underline{\underline{216}}$$

$$\underline{\underline{\cancel{50} \times 4}}$$

$$13 \times 2$$

12

$$\underline{\underline{130}} \times \underline{2} = \underline{\underline{260}}$$

$$61 + 25$$

$$\begin{array}{r} 40 \\ \underline{\underline{20}} \end{array} \quad \begin{array}{r} 5 \\ \underline{\underline{3}} \end{array}$$

$$\boxed{68}$$

$$54 + 24$$

$$\underline{13} + \underline{82}$$

HCF of  $\boxed{15}$  and 25

$$15 = 3, \underbrace{5}, 15$$

$$25 = \underbrace{5}, 25$$

$$HCF = 5$$

HCF of  $\boxed{56}$  and  $\boxed{96}$

$$4 \overline{)56}$$

$$56 : \underline{2}, \underline{4},$$

① Find Prime factors of 56 and 96

$$56 : 2 \times 2 \times 2 \times 7$$

$$96 : 2 \times 2 \times 2 \times 2 \times 2 \times 3$$

$$\text{HCF} = 2 \times 2 \times 2 = \underline{\underline{8}}$$

$$\begin{array}{r|l} 2 & 56 \\ \hline 2 & 28 \\ \hline 2 & 14 \\ \hline 7 & 7 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 2 & 96 \\ \hline 2 & 48 \\ \hline 2 & 24 \\ \hline 2 & 12 \\ \hline 2 & 6 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$



LCM of 15 and 40 ✓

15 → 15, 30, 45, 60, 75, ...

40 → 40, 80,

Factorisation method:

3	15
5	5
	1

✓  
✓

2	40
2	20
2	10
5	5
	1

✓  
✓  
✓

$$15 = 3 \times 5$$

$$40 = 2 \times 2 \times 2 \times 5$$

$$\text{LCM of } 15 \text{ and } 40 = \underline{\underline{3 \times 2 \times 2 \times 2 \times 5}} = \underline{\underline{120}}$$

2	15, 40
2	15, 20
2	15, 10
5	15, 5
3	3, 1
	1, 1

Short-Division Method

∴ LCM =  $2 \times 2 \times 2 \times 3 \times 5$

Find LCM of 48 & 72

2	48, 72
2	24, 36
2	12, 18
2	6, 9
3	3, 9
3	1, 3
	1, 1

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

$$= \underline{\underline{144}}$$

$$16 \times 3$$

$$48 \times 3 = \cancel{40} + 8 \quad 3$$
$$120 + 24$$

LCM of 20, 30, 50

2	20, 30, 50
5	10, 15, 25
	2, 3, 5

2	20, 30, 50
5	10, 15, 25
2	2, 3, 5
3	1, 3, 5
5	1, 1, 5
	1, 1, 1

$$\begin{aligned} \text{LCM} &= 2 \times 5 \times 2 \times 3 \times 5 \\ &= 300 \end{aligned}$$

LCM of 96, 108, 80

$$\begin{aligned} \text{LCM} &= \underbrace{2 \times 2 \times 2 \times 2 \times 2}_{32} \times \underbrace{3 \times 3 \times 3}_{27} \times 5 \\ &= 32 \times 27 = 864 \times 5 \\ &= \underline{\underline{4320}} \end{aligned}$$

2	96, 108, 80
2	48, 54, 40
2	24, 27, 20
2	12, 27, 10
3	6, 27, 5
2	2, 9, 5
3	1, 9, 5
3	1, 3, 5
5	1, 1, 5
	1, 1, 1

Compare  $\frac{7}{12} + \frac{3}{6} + \frac{1}{3}$    $\frac{1}{4} + \frac{5}{6} + \frac{3}{12}$

(A) <

(B) =

~~(C)~~ >

(D) Can't say

$$\frac{1}{4} + \frac{5}{6} + \frac{3}{12}$$

$$\frac{7}{12} + \frac{3}{6} + \frac{1}{3}$$

LCM (4, 6, 12) = 12

LCM of denominators (12, 6, 3) = 12

$$\frac{1}{4} \times 3 = \frac{3}{12}$$

$$\frac{5}{6} \times 2 = \frac{10}{12}$$

$$\frac{3}{12} + \frac{10}{12} + \frac{3}{12}$$

$$\frac{16}{12}$$

$$\frac{3}{6} \times 2 = \frac{6}{12}$$

$$\frac{1}{3} \times 4 = \frac{4}{12}$$

$$\frac{7}{12} + \frac{6}{12} + \frac{4}{12} = \frac{17}{12}$$

Find  $\frac{2}{5}$  of  $\frac{1750}{1}$

$$\frac{2}{5} \times \frac{1750}{1} = \frac{3500}{5} = \frac{35 \times 100}{1} = \underline{\underline{700}}$$

$$\frac{7}{3} - \frac{1}{2}$$

$$\frac{14}{6} - \frac{3}{6} = \boxed{\frac{11}{6}}$$

Q. If the perimeter of a square is 16 cm, then find the side of square

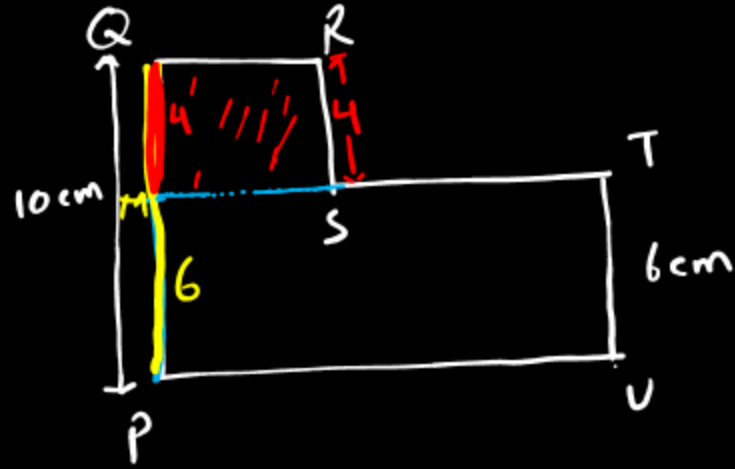
Q. If radius of a circle is 5 cm. Find its diameter in metres.

$$10 \text{ cm} = \text{---} \text{ m}$$

$$10 \text{ cm} = \frac{10}{100} \text{ m}$$

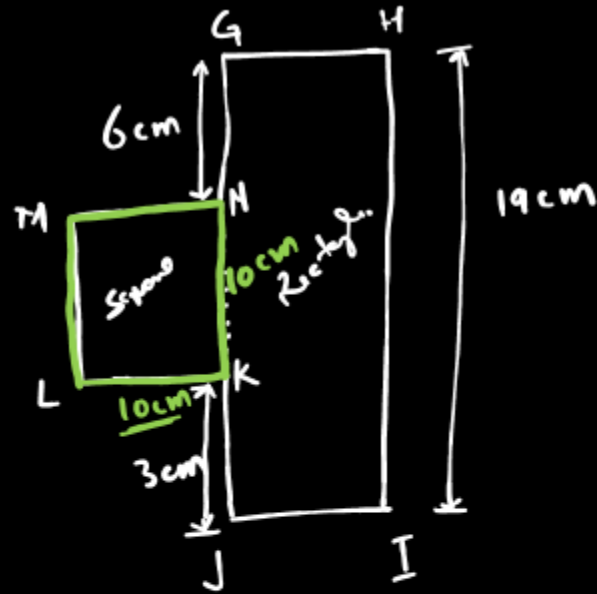
$$= \underline{\underline{0.10 \text{ m}}}$$

length of line segment RS



Rectangle + Square.

Find LK = 10cm  
↑  
Sides



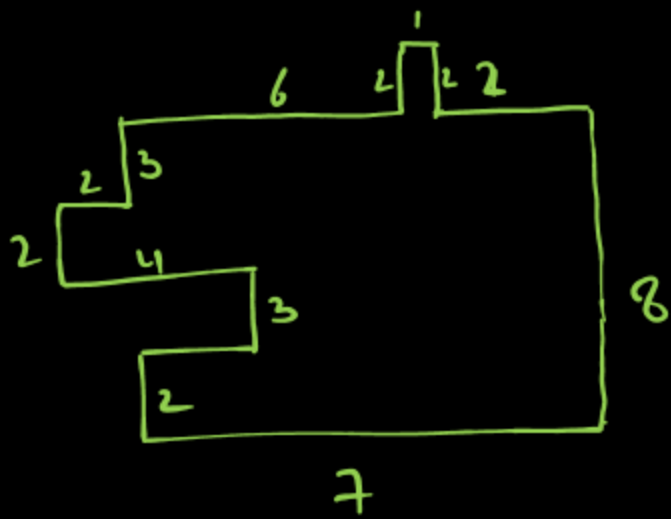
$$GJ = 19 \text{ cm}$$

$$GN + NK + KJ = 19 \text{ cm.}$$

$$NK + 6 \text{ cm} + 3 \text{ cm} = 19 \text{ cm.}$$

$$NK = 19 - 9 = \underline{\underline{10 \text{ cm.}}}$$

Find its perimeter.



There are 1750 students in a school.  $\frac{2}{5}$  of them are boys and rest are girls.  $\frac{4}{7}$  of the boys participated in different olympiads and  $\frac{1}{5}$  of the girls did not participate in any olympiad. Among the students who participated in olympiads, if  $\frac{1}{10}$  of the boys and  $\frac{1}{12}$  of the girls won the gold medal, then find:

- (i) How many of the students who participated in olympiad did not get gold medal?
- (ii) How many more girls than boys won the gold medal?

$$\begin{aligned} \text{No. of boys} &= \frac{2}{5} \times \frac{1750}{1} = \frac{2 \times 1750}{5 \times 1} \\ &= 2 \times 350 \\ &= \underline{700} \end{aligned}$$

$$\text{No. of girls} = 1750 - 700 = \underline{1050}$$

$$\frac{1}{5} \times 1050 =$$

	(i)	(ii)
(A)	1240	100
(B)	1130	30
(C)	1240	30
(D)	1130	70

$$x + \frac{11}{20} = \frac{19}{20}$$

$$x = \frac{8}{20}$$

b.

$$\frac{22}{\times 7}$$

$$2:44 \text{ se}$$

$$\Rightarrow \left(5\frac{7}{3}\right) + \left(9\frac{4}{7}\right) + \left(11\frac{2}{3}\right)$$

$$\text{LCM} = \underline{\underline{21}}$$

$$\frac{49}{21}$$

$$5\frac{7}{3} = \frac{22}{3}$$

$$9\frac{4}{7} = \frac{67}{7}$$

$$11\frac{2}{3} = \frac{35}{3}$$

$$\frac{72}{21} = \frac{24}{7}$$

$$\frac{22}{3} + \frac{67}{7} + \frac{35}{3}$$

$$\Rightarrow \frac{154}{21} + \frac{201}{21} + \frac{245}{21}$$

$$= \frac{600 \div 3}{21 \div 3} = \frac{200}{7} = 28\frac{4}{7}$$

There are 1750 students in a school.  $\frac{2}{5}$  of them are boys and rest are girls.  $\frac{4}{7}$  of the boys participated in different olympiads and  $\frac{1}{5}$  of the girls did not participate in any olympiad. Among the students who participated in olympiads, if  $\frac{1}{10}$  of the boys and  $\frac{1}{12}$  of the girls won the gold medal, then find:

(i) How many of the students who participated in olympiad did not get gold medal?

(ii) How many more girls than boys won the gold medal?

	(i)	(ii)
<del>(A)</del>	1240	100
<del>(B)</del>	1130	30
<del>(C)</del>	1240	30
(D)	1130	70

$$\text{gold medal} = \frac{1}{12} \times 840 = 70$$

$$840 + 100 = \underline{\underline{1240}} - 110 = 1130$$

$$\begin{aligned} \text{No. of boys} &= \frac{2}{5} \times \frac{1750}{1} = \frac{2 \times 1750}{5 \times 1} \\ &= 2 \times 350 \\ &= \underline{\underline{700}} \end{aligned}$$

$$\text{No. of girls} = 1750 - 700 = \underline{\underline{1050}}$$

$$\frac{1}{5} \times 1050 =$$

Karthik bought a sack of rice of weight  $\underline{25 \text{ kg } 325 \text{ g}}$ . If he packed  $\underline{3 \text{ kg } 200 \text{ g}}$  rice equally in 7 packets, then how much quantity of rice is left in the sack?

- A) 2 kg 925 g  
 B) 2 kg 350 g  
 C) 3 kg 150 g  
 D) None of these



$$\begin{array}{|c} \hline 3 \text{ kg} \\ \hline 200 \text{ g} \\ \hline \end{array} \times 7$$

$$\frac{1400 \text{ g}}{22 \text{ kg } 400 \text{ g}} = \underline{\underline{1 \text{ kg } 400 \text{ g}}}$$

$$\begin{array}{r} 25 \text{ kg } 325 \text{ g} \\ 22 \text{ kg } 400 \text{ g} \\ \hline 2 \text{ kg } 925 \text{ g} \end{array}$$

IJKL and MNOP are two rectangles.

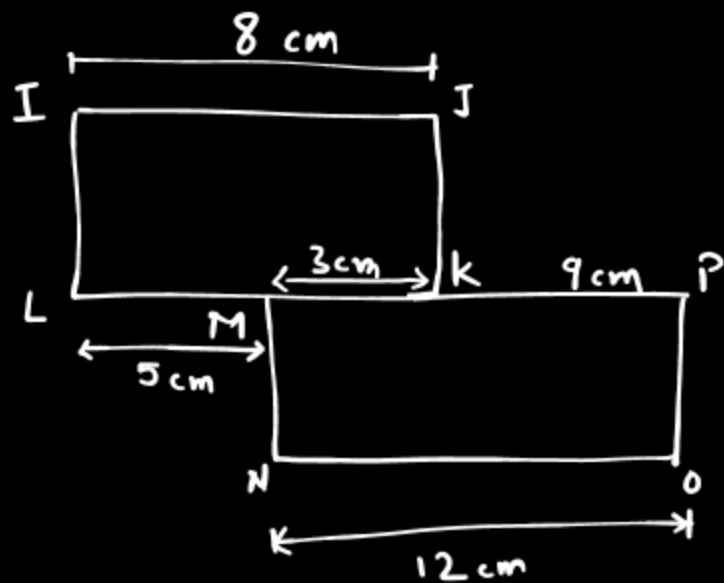
Find the length of KP.

A) 3 cm

B) 5 cm

C) 8 cm

~~D) 9 cm~~



Rashi walked 4 times around a square field each side of which is 55 m.  
How much total distance did she cover?

- A) 800 m
- B) 440 m
- ~~C) 880 m~~
- D) 220 m

Perimeter  $\rightarrow$  
$$\begin{array}{r} 55 \\ \times 4 \\ \hline 220 \end{array}$$

4 x perimeter  $\Rightarrow$

If,  $\underline{G} + \underline{G} + \underline{B} = ₹510$ , and

$$\underline{B + B + B} = \underline{₹630} \quad |$$

Find the value of  $\boxed{G}$

" $B + B + B = 630$ "

$$B \Rightarrow 3 \sqrt[210]{630}$$

$$B = \underline{\underline{210}}$$

$$= 510 - 210$$

$$G + G = 300$$

$$G = \frac{300}{2} = \underline{\underline{150}}$$

A) 100

~~B) 150~~

C) 205

D) 180

$$\frac{3}{15} + \frac{7}{30} = \frac{13}{30}$$

$$\frac{15}{3} - \frac{3}{12}$$

~~15~~

$\frac{57}{12}$
-----------------

































