

# Operations on large numbers

Grade 4: Number System

# Operations on Numbers

- ① Addition
- ② Subtraction
- ③ Multiplication
- ④ Division

# ① Addition

eg. Add 42165 and 10212

$$\begin{array}{r} 42165 \\ + 10212 \\ \hline 52377 \end{array}$$

$$\begin{aligned} & 42165 \\ \Rightarrow & \underline{42000} + \underbrace{100} + \underbrace{60} + \underbrace{5} \\ \Rightarrow & \underline{10,000} + \underbrace{200} + \underbrace{10} + \underbrace{2} \end{aligned}$$

$$\begin{array}{r}
 \textcircled{1} \textcircled{1} \textcircled{1} \textcircled{1} \\
 425965 \\
 + 764059 \\
 \hline
 1190024
 \end{array}$$

Estimated Sum	
Actual numbers ✓	✓
6623	
+ 4231	
<hr/>	
10,854	

<u>7000</u>	← Estimated no.
+ <u>4000</u>	← Estimated nos.
<hr/>	
<u>11000</u>	← Estimated sum
	↓
	Close to actual sum.

Find the correct option for the addition of 6623 and 4231

(a) 13594

(b) 9542

(c) 10854

(d) 15429

$$51240 + 100 = 51340$$

$$728 + 532 = 700 + 20 + 8 + 500 + 30 + 2$$

$$\begin{array}{r} 728 \\ + 532 \\ \hline 1260 \end{array}$$

$$\Rightarrow \boxed{1260}$$

$$1200 + 50 + 10$$

$$632 + 221 = \underline{\underline{853}}$$

$$549 + 632 = \underline{1181}$$

$$\underline{4215} + \underline{3422} = \underline{\underline{7637}}$$

$$\begin{array}{r} \rightarrow \\ 432 \\ \hline \end{array} + \begin{array}{r} \rightarrow \\ 227 \\ \hline \end{array} = 659$$

The first number 432 has a box around the last two digits, 32, with the number 659 written below it. The second number 227 has a box around the last two digits, 27, with a checkmark next to it.

$$\Rightarrow 600 + 50 + 9$$

659

$$\underline{698} + \underline{545} \quad | \quad \underline{10}$$

$$\underline{1100} + \underline{130} + \underline{13}$$

$$\boxed{\underline{1243}} \checkmark$$

$$\begin{array}{r} \textcircled{4} \underline{39} \\ \underline{\quad} \end{array} + \begin{array}{r} \textcircled{7} \underline{36} \\ \underline{\quad} \end{array} = \underline{1100} + 60 + 10 + 5 \checkmark \\ = \underline{\underline{1175}}$$

$$\begin{array}{r} \underline{831} \\ \underline{\quad} \end{array} + \begin{array}{r} \underline{349} \\ \underline{\quad} \end{array} = \frac{1100 + 70 + 10}{\quad} \\ = \underline{\underline{1180}}$$

$$\begin{array}{r} \underline{4320} \\ \underline{\quad} \end{array} + \begin{array}{r} \underline{5130} \\ \underline{\quad} \end{array} = \underline{\underline{9450}} \\ = \underline{\underline{9000 + 400 + 50}}$$

## Properties of addition

① "Sum of two numbers does not change when the order of addends is changed".

[Order Property of addition]

eg:  $34968 + 25377 = 60345$

$25377 + 34968 = \underline{60345}$



H.W.

(i)  $69785 + 27958$

(ii)  $86945 + 27498 + 23761$

(iii)  $389631 + 52708 + 680796$

(iv)  $273564 + 67497 + 9543 + 156$

### 3. Additive property of zero (0)

\* The sum of a number and zero is the number itself.

eg.  $4567912 + 0 = \underline{4567912}$

Q. There are 425693 men, 372817 women and 296084 children in a city. What is the population of the city.

Solution:

$$\begin{array}{r} \textcircled{1} \textcircled{1} \textcircled{1} \textcircled{1} \textcircled{1} \\ 425693 \\ 372817 \\ + 296084 \\ \hline 1094594 \\ \hline \end{array}$$

Population of city =

Q.2: The cost of a video set is ₹ 18975, and the cost of a TV set is ₹ 8795 more than the video set. What is the cost of the TV set? What is the total cost of the TV set and Video set?

Sol:

$$\begin{aligned}\text{Cost of TV set} &= ₹(18975 + 8795) \\ &= ₹ 27770.\end{aligned}$$

$$\begin{aligned}\text{Total cost} &= ₹ 27770 + ₹ 18975 \\ &= \underline{₹ 46745} \checkmark\end{aligned}$$

# Subtraction (Difference)

eg. Subtract 42365 from 87596.

$$\begin{array}{r} 87596 \\ - 42365 \\ \hline 45231 \\ \hline \end{array}$$

Minuend  
Subtrahend  
Difference

Find the difference between 53642 and 1402.

$$\begin{array}{r} 53642 \\ - 1402 \\ \hline 52240 \\ \hline \end{array}$$

③ Subtract 18765 from 34000.

$$= \underline{\underline{15235}} \checkmark$$

Q. What number should be added to  $\boxed{16877}$  to get 20014?

$\Rightarrow$  Required no. is the difference between 16877 and 20014.

$$\begin{array}{r} 20014 \\ - 16877 \\ \hline 3137 \end{array}$$

Required number =  $\boxed{3137} \checkmark$

Q. What number should be subtracted from  $\frac{32050}{9}$  to get  $\frac{3675}{2}$  ✓

Sol. Required no. is the difference between 32050 and 3675.

$$\Rightarrow \begin{array}{r} 32050 \\ - 3675 \\ \hline 28375 \end{array}$$

9

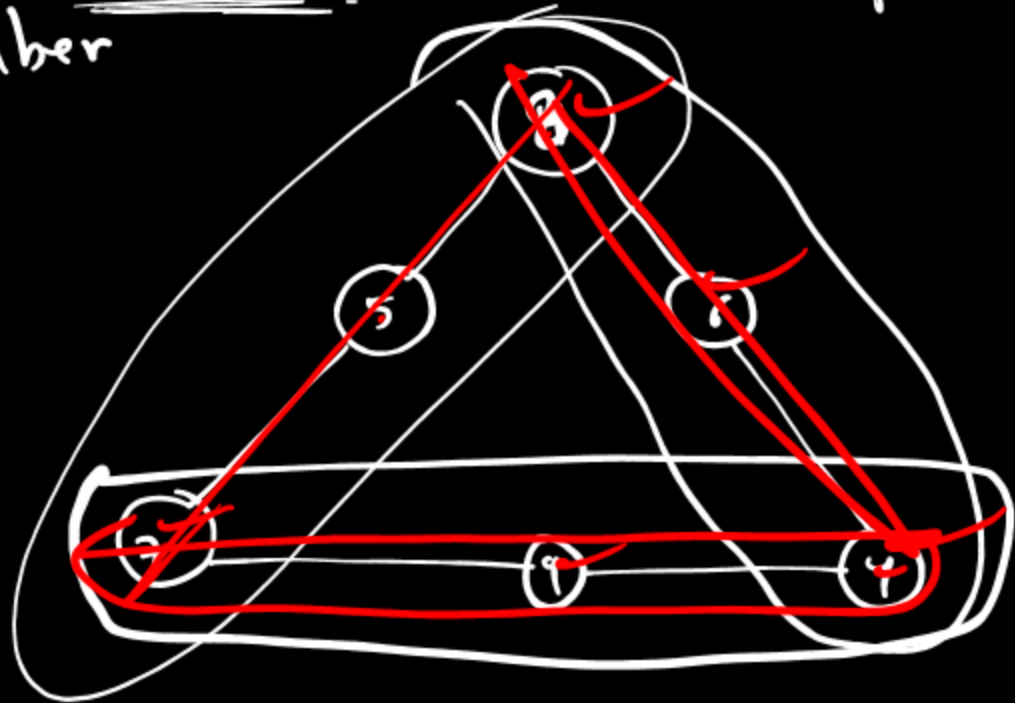
2

Required number = 28375 ✓

Q Arrange the numbers from 4 to 9 in the triangle such that the sum of number along each side is: 20

① ~~20~~      ② 21

4, 5, 6, 7, 8, 9  
 ↑ ↑ ↑ ↑ ↑ ↑  
 r r r r r r



## Magic Triangle

→ A triangle in which the sum of numbers along each side is the same.

[\* Number are not repeated]



$$\begin{array}{r}
 \overset{\curvearrowright}{5} \overset{\curvearrowright}{\boxed{6}} 7 \\
 - 189 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 5 \quad 6 \quad \boxed{17} \\
 1 \quad 8 \quad 9 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 \overset{100}{\curvearrowright} 500 + \overset{10}{\curvearrowright} \boxed{60} + \underline{\underline{7}} \\
 100 + \underline{\underline{80}} + 9
 \end{array}$$

150

$$\begin{array}{r}
 6 \quad \boxed{4} \quad \overset{13}{\cancel{4}} \quad 16 \\
 - \quad \boxed{4} \quad 2 \quad \boxed{8} \quad 7 \\
 \hline
 2 \quad 1 \quad 5 \quad \boxed{9}
 \end{array}$$

$$13 - 8 = 5$$

$$\quad - 2 = 1$$

||  
8.

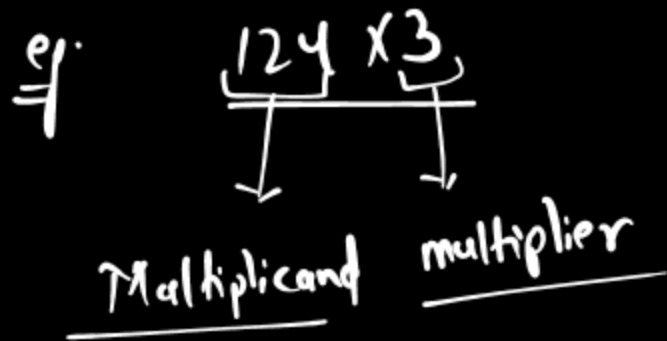
$$\begin{array}{r} 2 \quad \boxed{6} \quad 7 \quad 3 \quad \boxed{2} \\ + \quad 4 \quad 1 \quad \boxed{2} \quad 7 \quad 4 \\ \hline \boxed{6} \quad 8 \quad 0 \quad \boxed{0} \quad 6 \\ \hline \end{array}$$

$$63478 + \boxed{1522} = 65000 \Rightarrow$$

$$5 + \boxed{4} = 9$$
$$\boxed{9-5=4}$$

$$\begin{array}{r} 65000 \\ -63478 \\ \hline 1522 \end{array}$$

# Multiplication



$$\begin{array}{r} 36 \\ \times 23 \\ \hline \end{array}$$

$$\begin{array}{r} \textcircled{0} \textcircled{0} 36 \longrightarrow \text{Multiplicand} \\ \times \underline{23} \longrightarrow \text{Multiplier} \\ \hline 108 \\ + 720 \\ \hline \boxed{828} \longrightarrow \text{Product} \end{array}$$

[Multiplication is repeated Addition]

# Properties of Multiplication

## ① Order property of multiplication

$$\text{eg. } \underline{36} \times \underline{23} = 828$$

$$\underline{23} \times \underline{36} = 828$$

$$\boxed{36 \times 23 = 23 \times 36}$$

## ② Grouping Property of multiplication

$$\text{group } \underbrace{(10 \times 11)}_{550} \times 5 = 10 \times \underbrace{(11 \times 5)}_{550} \text{ group}$$

\* grouping is done using brackets

③ Multiplicative property of 1

$$56 \times 1 = 56$$

Any number  $\times 1 =$  Number itself.

④ Multiplicative property of zero (0).

$$28 \times 0 = 0$$

Any no.  $\times 0 = 0$

## 5. Distributive Property of Multiplication over Addition/Subtraction.

Ex.

$$\begin{aligned} 3 \times (5 + 7) &= \underline{3 \times 5} + \underline{3 \times 7} \\ &= 15 + 21 \\ &= 36 \end{aligned}$$

$$\begin{array}{r} 12 \\ \times 14 \\ \hline 48 \\ 120 \\ \hline 168 \end{array}$$

$$\begin{aligned} 12 \times (14 + 15) &= 12 \times 14 + 12 \times 15 \\ &= \underline{168} + \underline{180} \\ &= \underline{348} \end{aligned}$$

B → Brackets  
O → Order  
D → Division  
M → Multiplication  
A → Additions  
S → Subtraction

Value of:  $\underline{5 \times 7 + 4 \div 2}$

$$\underline{5 \times 7 + 2}$$

$$= 35 + 2$$

$$= \underline{37} \checkmark$$

ex.  $9 \times (4 + 2 + 5)$  =  $9 \times 4 + 9 \times 2 + 9 \times 5$

=  $36 + 18 + 45$

= 99

$5 \times (10 - 2)$  =  $5 \times 10 - 5 \times 2$

=  $50 - 10$

= 40

5

$$\underline{\underline{7 \times 24}}$$

$$\begin{aligned} 7 \times (20 + 4) &= 7 \times 20 + 7 \times 4 \\ &= \underline{140} + \underline{28} \\ &= \underline{\underline{168}} \end{aligned}$$

$$7 \times (\underline{10} + \underline{10} + \underline{4})$$

~~11~~

$$\underline{\underline{11 \times 108}}$$

$$\begin{aligned} 11 \times (100 + 8) &= \underline{\underline{11 \times 100}} + 11 \times 8 \\ &= 1100 \end{aligned}$$

Multiplication of a number by 10, 100, 1000, ... etc.

Ex. →

$$\underline{24} \times \underline{10} = 240$$

$$24 \times \underline{100} = 24\underline{00}$$

$$24 \times \underline{1000} = 24\underline{000}$$

$$\underline{24} \times \underline{10000} = 240000$$

$$72 \times 1000 = 72000$$

$$\underline{80} \times \underline{100} = \underline{8000}$$

## Multiples

$$2 \times 1 = 2$$

$$2 \times 2 = 4$$

$$6$$

$$8$$

} Multiples of 2

## Multiples of 10

$$10 \times 1 = 10$$

$$10 \times 2 = 20$$

$$30$$

$$40$$

⋮

Multiples of 100 → 100, 200, 300, ...

Multiples of 1000 → 1000, 2000, 3000, ...

Multiplication of a number by multiples of 10, 100, 1000, etc.

$$\begin{aligned} \textcircled{i} \quad & 24 \times \underline{20} \\ & (\underline{24} \times \underline{2}) \times 10 \\ & = 48 \times 10 \\ & = \underline{\underline{480}} \end{aligned}$$

$$\begin{aligned} \textcircled{ii} \quad & \underline{36} \times \underline{300} \\ & = (36 \times 3) \times 100 \\ & = 108 \times 100 \\ & = \underline{\underline{10800}} \end{aligned}$$

$$\begin{aligned} \textcircled{iii} \quad & 32 \times 4000 \\ & = 32 \times 4 \times 1000 \\ & = \underline{\underline{128000}} \end{aligned}$$

$$\begin{aligned} \textcircled{\text{iv}} \quad & \underline{321} \times 60 \\ & = 321 \times \underline{6} \times 10 \\ & = \underline{19260} \end{aligned}$$

$$\begin{aligned} \textcircled{\text{v}} \quad & 132 \times 90 \\ & = \underline{\underline{11880}} \end{aligned}$$

H.W.

①  $86 \times 300$

②  $1206 \times 700$

③  $2136 \times 8000$

④  $478 \times 80$

⑤  $526 \times 400$

⑥  $1549 \times 6000$

⇒ ⑦  $9 \times (12 + 14) \Rightarrow (9 \times 12) + (9 \times 14)$

⑧  $\underline{\underline{12 \times 108}} \Rightarrow \underline{\underline{12(100 + 8)}} = 1200 + 12 \times 8$   
 $= 1200 + 96 = \underline{\underline{1296}}$

$\begin{array}{r} 108 \\ \times 12 \\ \hline \end{array}$  ✓

$\begin{array}{r} 12 \\ \times 9 \\ \hline \end{array}$

# Multiplication using Suitable Grouping

$$\text{eg. (i)} \quad \underline{2 \times 49 \times 5} = 49 \times \underline{2 \times 5} = 49 \times 10 = \underline{\underline{490}}$$

$$\text{(ii)} \quad 5 \times 85 \times 20 = \underline{85 \times (5 \times 20)} = \underline{85 \times 100} = \underline{\underline{8500}}$$

$$\text{(iii)} \quad 4 \times 76 \times 25 = 76 \times (4 \times 25) = 76 \times 100 = 7600$$

$$\text{(iv)} \quad 8 \times 24 \times 25 = 24 \times (8 \times 25) = 24 \times \underline{200} = \underline{24 \times 2 \times 100} = \underline{\underline{4800}}$$

$$\begin{array}{r} 2 \\ 25 \\ \times \boxed{4} \\ \hline \boxed{100} \end{array} \quad \begin{array}{r} 25 \\ \times \boxed{8} \\ \hline 200 \end{array}$$

Multiply

$$\underline{248} \text{ by } \underline{36}$$

$$\boxed{248 \times (30 + 6)}$$

$$= \underline{8928}$$

$\Rightarrow$

$$\begin{array}{r}
 8 \quad 4 \\
 248 \\
 \times 36 \\
 \hline
 8
 \end{array}$$

$$\boxed{8928}$$

Multiply

$$\boxed{376} \times (100 + 40 + 7)$$

[Distributive Property]

$$= \underline{376 \times 100} + \underline{376 \times 40} + \underline{376 \times 7}$$

$$= \underline{37600} + \underline{15040} + \underline{2632}$$

$$= \underline{55272}$$

Q.

$$15 \times (10 + 7) = \underline{15 \times 10} + \underline{15 \times 7}$$

$$= 150 + 105$$

$$15 \times 17 \longrightarrow = \underline{\underline{255}}$$

$$\underline{6 \times (100 + 30 + 2)} = 6 \times 100 + 6 \times 30 + 6 \times 2$$

$$= \underline{600 + 180 + 12}$$

or

$$\underline{6 \times 132}$$

$$= \underline{\underline{792}}$$



Q. 1284 x 607

$$\begin{array}{r} 15\textcircled{2} \\ 1284 \\ \times \underline{\underline{607}} \\ \hline 8988 \leftarrow 7 \times 1284 \\ \hline 0000 \leftarrow 0 \times 1284 \\ \hline 770400 \leftarrow \underline{\underline{600}} \times \underline{1284} \\ \hline \underline{\underline{779388}} \end{array}$$

779388

$$\begin{array}{r}
 426 \\
 \times 32 \\
 \hline
 1852 \\
 12780 \\
 \hline
 13632
 \end{array}$$

$$32 = \underline{\underline{30}} + 2$$

$$= 3 \times 10$$

$$645$$

$$645 \times 200$$

$$645 \times 2 \times 100$$

$$\begin{array}{r}
 \times \underline{\underline{232}} \\
 \hline
 2 \quad 1935 \quad \leftarrow 3 \times 645 \\
 19350 \quad \leftarrow 30 \times 645 \\
 129000 \quad \leftarrow 200 \times 645 \\
 \hline
 150285
 \end{array}$$

$$\begin{array}{r} \cancel{6} \cancel{4} \cancel{6} \\ \cancel{5} \cancel{3} \cancel{5} \cancel{2} \end{array}$$

$$21859$$

$$\times 376$$

---

$$11154$$

$$6 \times 1859$$

1

$$130130$$

$$\leftarrow 70 \times 1859$$

$$+ 567700$$

$$\leftarrow 300 \times 1859$$

---

$$708984$$

---



①

$$\begin{array}{r}
 3274 \\
 \times 265 \\
 \hline
 \end{array}$$

3 min. 15 sec.

$$\begin{array}{r}
 2 \quad 1 \\
 \hline
 6 \quad 1 \quad 4 \\
 4926
 \end{array}$$

②

$$\begin{array}{r}
 4926 \\
 \times 307 \\
 \hline
 \end{array}$$

✓ →

✓

$$\begin{array}{r}
 \times \quad 307 \\
 \hline
 34482 \\
 000000 \\
 1477800
 \end{array}$$

---


$$1512282$$


---

3092282

$$\underline{3000} \times \underline{400}$$

→ 12,000,000 ←

$$\begin{array}{r} \phantom{\rightarrow} 2967 \phantom{\rightarrow} \\ \times \phantom{\rightarrow} 407 \\ \hline \phantom{\rightarrow} 800 \end{array}$$

31,697 ✓

7 × 7

~~(3)~~ ~~(2)~~ ~~(2)~~  
2 9 6 7

x            407  
→            20769  
              00000  
              1186800 ←  
—————  
              12,07,569

63  
4

4 ) +4  
8 ) +4  
12 ) +4  
16 ) +4  
20 ) +4  
24 ) +4  
28 ) +4  
32 ) +4  
36 ) +4  
40 ←

# Division

eg. Divide 125 by 8

Dividend → 125  
Divisor → 8  
Quotient → 15

$$\begin{array}{r} 25 \\ \hline 025 \end{array}$$

- $8 \times 1 = 8$
- $8 \times 2 = 16$
- $8 \times 3 = 24$
- $8 \times 4 = 32$
- $8 \times 5 = 40$
- $8 \times 6 = 48$

$$\begin{array}{r} 15 \\ 8 \overline{) 125} \\ \underline{-08} \phantom{0} \\ 45 \\ \underline{-40} \\ 5 \end{array}$$

$$\begin{array}{r} 15 \\ 8 \overline{) 120} \\ \underline{-8} \phantom{0} \\ 40 \\ \underline{-40} \\ 0 \end{array}$$

Remainder → 5

Divide 2468 by 7.

$$\begin{array}{r} \boxed{352} \leftarrow Q \\ \textcircled{7} \overline{) 2468} \\ \underline{-21} \phantom{0} \\ 36 \\ \underline{-35} \phantom{0} \\ 18 \\ \underline{-14} \\ 4 \leftarrow R \end{array}$$

$$\begin{array}{r} 3 \phantom{0} \phantom{0} \\ 3 \phantom{0} \phantom{0} \\ \phantom{0} 5 \phantom{0} \\ \phantom{0} \phantom{0} 2 \\ \hline \phantom{0} \phantom{0} \phantom{0} \phantom{0} \\ \phantom{0} \phantom{0} \phantom{0} \phantom{0} \\ \phantom{0} \phantom{0} \phantom{0} \phantom{0} \\ \phantom{0} \phantom{0} \phantom{0} \phantom{0} \\ \hline 2464 \end{array}$$

$$\underline{\text{Dividend}} = \text{Divisor} \times \text{Quotient} + \text{Remainder}$$

$$\begin{aligned} &= 7 \times \underline{352} + 4 \\ &= 2464 + 4 = \underline{\underline{2468}} = \underline{\underline{\text{Dividend}}} \end{aligned}$$

Divis by 2-Digit nos.

Ex.

$$\begin{array}{r} 569 \leftarrow \text{Quotient} \\ \underline{11 \overline{) 6259}} \\ \underline{-55} \phantom{0} \\ 75 \phantom{0} \\ \underline{-66} \phantom{0} \\ 99 \\ \underline{-99} \\ 0 \leftarrow \text{Remainder} \end{array}$$

$$\begin{array}{r}
 17 \overline{) 6259} \\
 \underline{-51} \phantom{0} \\
 115 \phantom{0} \\
 \underline{-102} \phantom{0} \\
 139 \phantom{0} \\
 \underline{-136} \\
 3
 \end{array}$$

368 ← Q.  
3 ← R

$$\begin{array}{r}
 42 \\
 15 \\
 \hline
 47
 \end{array}$$

$$\underline{4+6} = 10$$

- $17 \times 1 = 17$
- $17 \times 2 = 34$
- $17 \times 3 = 51$
- $17 \times 4 = 68$
- $17 \times 5 = 85$
- $17 \times 6 = 102$
- $17 \times 7 = 119$
- $17 \times 8 = 136$
- $17 \times 9 = 153$
- $17 \times 10 = 170$

Check your division

$$\begin{aligned}
 \text{Dividend} &= \text{Divisor} \times \text{Quotient} + \text{Remainder} \\
 &= 17 \times 368 + 3 \\
 &= 6256 + 3 \\
 &= \underline{6259} = \text{Dividend}
 \end{aligned}$$

$$\underline{34 + 10 + 7} = 44 + 7 = \underline{51}$$

$$\begin{array}{r}
 61 \\
 \times 17 \\
 \hline
 427 \\
 3680 \\
 \hline
 6256
 \end{array}$$

$$\begin{array}{r}
 265 \leftarrow Q. \\
 29 \overline{) 7708} \\
 \underline{- 58} \phantom{0} \\
 190 \\
 \underline{- 174} \\
 168
 \end{array}$$

$$\begin{array}{r}
 29 \\
 \times 7 \\
 \hline
 \boxed{23} \leftarrow R
 \end{array}$$

$$\underline{\underline{30 \times 2 = 60}}$$

$$\underline{\underline{30 \times 3 = 90}}$$

$$\overset{1}{29} \times 2 = \underline{58}$$

$$\overset{2}{29} \times 3 = \underline{87}$$

$$\overset{3}{30} \times 5 = \underline{150}$$

$$30 \times 5$$

$$\overset{4}{30} \times 8 = \underline{\underline{240}}$$

$$\overset{5}{30} \times 7 = \underline{\underline{210}}$$

$$\overset{6}{29} \times 7 = \underline{\underline{203}}$$

$$29 \times 6 =$$

$$\overset{5}{29} \times 6 = \underline{\underline{174}}$$

$$\overset{4}{29} \times 5 = \underline{\underline{145}}$$



Edit PDF



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Highlight



Text comment



Text Box



Sign



OCR PDF



Extract Text



Snip and Pin



Find and Replace



Auto Scroll



Eye Protection Mod



FILL THE GRID WITH THE NUMBERS 1 TO 4 IN SUCH THAT EACH NUMBER APPEARS ONLY ONCE IN EACH ROW AND COLUMN. THE MATHDOKU GRID IS ALSO DIVIDED IN OUTLINED REGIONS CALLED CAGES EACH WITH A GIVEN OPERATOR AND TARGET NUMBER. THE NUMBERS IN THE INDIVIDUAL CELLS OF A CAGE MUST PRODUCE THAT TARGET NUMBER USING THE OPERATOR IN A MATHEMATICAL CALCULATION.

24×			
3+		4×	12×
12×	6×		
		2÷	

9+		3+	1-
	9+		
		24×	4÷



Divide 5479 by 12 → Q.

$$\begin{array}{r} 12 \overline{) 5479} \\ \underline{-48} \phantom{0} \\ 67 \\ \underline{-60} \\ 79 \\ \underline{-72} \\ 7 \end{array}$$

29 +

Verify!

$$\text{Dividend} = \frac{\text{Divisor} \times \text{Quotient} + \text{Remainder}}{=}$$

$$\begin{array}{r} 456 \\ \times 12 \\ \hline 912 \\ 4560 \\ \hline \boxed{5472} \\ + 7 \\ \hline \end{array}$$

5479

Divide 20563 by 99.

$$\begin{array}{r} 207 \quad \boxed{Q} \\ \underline{99} \overline{) 20563} \\ \underline{-198} \phantom{0} \phantom{0} \phantom{0} \\ 76 \phantom{0} \phantom{0} \phantom{0} \\ \underline{-00} \phantom{0} \phantom{0} \\ 763 \phantom{0} \\ \underline{-693} \\ \boxed{70} \quad \boxed{R} \\ \hline 29 \end{array}$$

$$\begin{array}{r} 100 \times 7 = 700 \\ \hline 8 = 80 \\ 6 \\ 99 \\ \times 7 \\ \hline 893 \end{array}$$

$$\begin{array}{r} 99 \\ \times 2 \\ \hline 198 \end{array}$$

~~Ex~~ Find Quotient and Remainder when 9546 is divided by 38.

$$\begin{array}{r} 251 \\ 38 \overline{) 9546} \\ \hline \end{array}$$

|

---

8

Verify:  $\text{Dividend} = \underline{\underline{Q \times D + R}}$

$$85 \overline{) 9025} \rightarrow \boxed{Q}$$

$$\begin{array}{r} 106 \\ \hline 15 \end{array} \rightarrow \boxed{R}$$

Division by 10, 100 and 1000.

$$\begin{array}{r} \underline{10} \overline{) 253} \\ \underline{20} \phantom{0} \\ 53 \\ \underline{50} \\ 3 \end{array}$$

Diagram illustrating the division of 253 by 10. The quotient is 25, and the remainder is 3. The quotient 25 is written above the dividend 253. A horizontal line is drawn below the dividend. The remainder 3 is written below the line. Arrows indicate the mapping from the digits of the dividend to the quotient and remainder.

$$\begin{array}{r} \underline{10} \overline{) 1724} \\ \underline{10} \phantom{00} \\ 724 \\ \underline{700} \\ 24 \\ \underline{20} \\ 4 \end{array}$$

Diagram illustrating the division of 1724 by 10. The quotient is 172, and the remainder is 4. The quotient 172 is written above the dividend 1724. A horizontal line is drawn below the dividend. The remainder 4 is written below the line. Arrows indicate the mapping from the digits of the dividend to the quotient and remainder.

$$\underline{10} \overline{) 9785}$$

$$\begin{array}{l} Q \rightarrow 978 \\ R \rightarrow 5 \end{array}$$

$$\underline{100} \overline{) 9785}$$

$$\begin{array}{l} Q \rightarrow 97 \\ R \rightarrow 85 \end{array}$$



H.W.

Q. Find Quotient and Remainder.

(i)  $8938 \div 15$

(ii)  $3567 \div 32$

(iii)  $40291 \div 39$

(iv)  $90862 \div 29$

(v)  $57062 \div 54$

(vi)  $725000 \div 72$

(vii)  $99831 \div 92$

(viii)  $8704 \div 34$

A ⇒ target No. 24  
operator =  $\times$

B ⇒ target No. 3  
operator  $+$   
 $1 + 2 = 3$

C ⇒ target No. 12  
operator  $\times$   
3x2

$1 \times 2 \times 3 \times 4 = 24$

# MATHADOKU

9+

$3 \times 4 \times 2 \times 1 = 24$

FILL THE GRID WITH THE NUMBERS 1 TO 4 IN SUCH THAT EACH NUMBER APPEARS ONLY ONCE IN EACH ROW AND COLUMN. THE MATHADOKU GRID IS ALSO DIVIDED IN OUTLINED REGIONS CALLED CAGES EACH WITH A GIVEN OPERATOR AND TARGET NUMBER. THE NUMBERS IN THE INDIVIDUAL CELLS OF A CAGE MUST PRODUCE THAT TARGET NUMBER USING THE OPERATOR IN A MATHEMATICAL CALCULATION.

1, 2, 3, 4

24x				
	1	4	3	2
3+			4x=4	2x
	2	1		3
12x	6x		1	4
	3	2	F	G
	4	3	2+	
		2		1

9+		3+	1-
1	4	2	3
4	9+	1	2
	3		
2	1	24x	4+
		3	4
3	2	4	1

C →  $2 \times 3 \times 4$

1, 2, 3, 4

**A**  $\rightarrow 4-3$   
 $\rightarrow 2-1$   
 $\rightarrow 3-2$

**B**  $3 \times 2$   $\Rightarrow$

**C**  $1 \times 2 \times 1$   $\Rightarrow$

**D**  $2 \div 1$   
 $4 \div 2$

**E**  $4+3$

**F**  $2+1$   $\neq$

**G**  $4 \times 3 \times 1$   $\Rightarrow$

	B	C	
<b>A</b> $\rightarrow$	1- 4	6x 3	2x 2
$\rightarrow$	3	2	1
			2÷ 4 <b>D</b>
	3+ 1	7+ 4	3 <b>E</b>
	2 <b>F</b>	12x 1	4
			3 <b>G</b>

**A** →  $4+3+2$   
 $4+4+1$

1, 2, 3, 4

**B**  $2+1$  ✓

**C**  $3 \times 2 \times 1$  →

**D**  $3 \div 1$

**E**  $4-1$

**F** •  $4+3+2+4$  →

→ **A**

→

**B** **C**

9+	3+		6×
4	2	1	3
2	3	13+	1
3÷	3-		
1	4	3	2
3	1	2	4
	<b>E</b>		<b>F</b>

✓

A:  $4 \times 4 \times 2$  ✓

1, 2, 3, 4

~~3x3x4~~

A:  $2 \times 4 \times 3$

B:  $3 \div 1$  ✓

B:  $4 + 3 + 1$

C:  $4 \div 2$  ✗  
 $2 \div 1$

C:  $\frac{(2 \div 1)}{(4 \div 2)}$

D:  $3 \div 1$

D:  $3 \times 1 \times 1$

E:  ~~$4 + 4 + 1 + 1 + 4$~~   
 $3 + 3 + 4 + 2 + 2$  B

E:  $3 \times 2$

F:  $4 \div 1$

F:  $4 \times 4 \times 2$

	C		D						
A	32x 4	2÷ 2	1	3÷ 3	A	24x 2	8+ 4	1	3 <sub>B</sub>
	2	4	14+ 3 <sup>v</sup>	1	4	3	2÷ 2	1	C
	3÷ 1	3 <sup>v</sup>	2	4	3x 3	1	32x 4	2	
	3	4÷ 1	4 <sub>F</sub>	2 <sub>E</sub>	D	1	6x 2	3 <sub>E</sub>	4 <sub>F</sub>

$2^2$

$$100 \overline{) 21349} ($$

Q: 213
R: 49



Q. The product of two numbers is 9156. If one of the numbers is 84, find the other.

$$84 \times 10 = \underline{840}$$

$$\begin{array}{r} \underline{84} \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 84 \\ 8 \end{array}$$

$$\underline{84}$$

$$\underline{80} \times 2 =$$

$$8 \times 10 \times 2 = \underline{160}$$

$$84 \times 2 > \underline{160}$$

$$\textcircled{3} 84$$

$$\times 9$$

$$\hline 756$$

$$746$$

$$\begin{array}{r} \boxed{109} \\ 84 \overline{) 9156} \\ \underline{-84} \phantom{00} \\ 756 \\ \underline{-756} \\ 0 \end{array}$$

Ans: The other number is 109

Q. If 23 chairs cost ₹ 8855, what is the cost of each chair?

Sl:

$$\text{cost of 23 chairs} = ₹ 8855$$

$$\text{cost of 1 chair} = ₹ (8855 \div 23)$$

$$23 \times 10 = \boxed{230}$$

$$= 200 + 30$$

$$\boxed{23 \times 5 = 115} = \boxed{100 + 15}$$

$$\begin{array}{r} 385 \\ 23 \overline{) 8855} \\ \underline{-69} \phantom{5} \\ 195 \\ \underline{-184} \phantom{5} \\ 115 \\ \underline{-115} \\ 0 \end{array}$$

$$\underline{\underline{\$ 385}}$$

$$\boxed{\underline{\underline{₹ 385}}}$$

Ans: cost of 1 chair is  $\boxed{₹ 385}$ .

Q. How many hours are there in 3240 minutes?

Sol<sup>n</sup>: Given minutes = 3240

$$\therefore \text{no. of hours in 3240 minutes} = 3240 \div 60 \\ = 324 \div 6$$

$$\begin{array}{r} 54 \\ 6 \overline{) 324} \end{array}$$

$$\begin{array}{r} 60 \\ 60 \overline{) 3240} \end{array}$$

Ans: 54 hours in 3240 minutes

~~hours = minutes~~

$$\# \text{ hours} = \text{minutes} \div 60$$

$$3240 \cancel{\div 60}$$

$$(324 \times \cancel{10}) \div (6 \times \cancel{10})$$

$$\boxed{324 \div 6}$$

$$\boxed{10 \div 10}$$

$$3240 \div 60 = \frac{3240}{60}$$

$$\boxed{\frac{2}{5} = 2 \div 5}$$

$$\begin{array}{r} \boxed{4} \boxed{9} \boxed{8} \star A \\ \times \textcircled{8} \\ \hline \textcircled{3984} \end{array}$$

$$\underline{A} \times 8 = 3984$$

$$\begin{array}{r} 498 \\ 8 \overline{) 3984} \end{array}$$

$$\underline{A} \times \underline{2} = \underline{12}$$

$$\begin{array}{r} \textcircled{6} \\ 2 \overline{) 12} \end{array}$$

(a) 1

(b) 5

(c) 7

(d)  9

$$260 \times 60$$

$$15600$$

$$260 \div 60$$

$$260 \div 60$$

$$\begin{array}{r} 260 \\ \times 60 \\ \hline \end{array}$$

$$26 \times 6$$

$$26 \div 6$$

How many 50-rupee notes are there in ₹ 8650?

- (A) 163 ✓
- (B) 173
- (C) 183
- (D) 193

~~8~~  
 $8650 \div 50$

$$865 \div 5$$

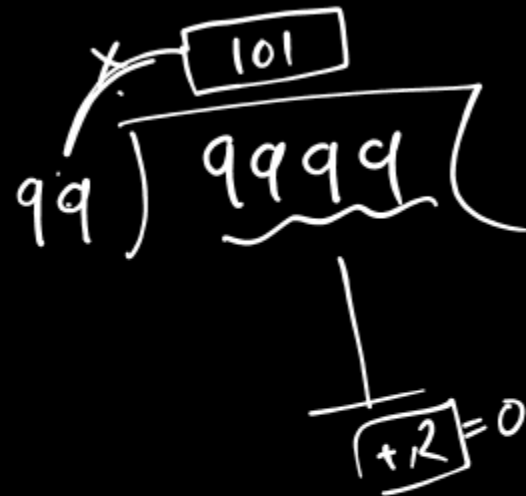
$$5 \overline{) 865}$$

Divide largest 4 digit no. by largest 2 digit no. The quotient is.

9999

99

- (a) 99
- (b) 11
- (c) 100
- (d) 101



$$99 \times 100 = \underline{9900}$$



Crude

The product of all odd numbers between 3 and 8 is:

(a) 105

~~(b) 35~~

(c) 12

(d) 28

(3), 5, 7, 8  
↑     ✓     ↑

1 and 10  
~~1, 2, 3, 4, 5, 6, 7, 8, 9~~

0 10  
1 2 3 4 5 6 7 8 9

Multiply 4829 by 385

$$\begin{array}{r} 4829 \\ \times 385 \\ \hline \end{array}$$

1831255

1859165

$$\begin{array}{r} \overset{2}{\cancel{6}}\overset{2}{2}\overset{2}{7} \\ 4829 \\ \times \quad \underline{385} \\ \hline 24145 \\ 386320 \\ + 1448700 \\ \hline \Rightarrow \underline{1859165} \end{array}$$

$$32 + 6 = 38$$

H.W.

(i)  $5489 \times 527$

(ii)  $10648 \div 27$

(iii)  $60350 \div 86$

$$\begin{array}{r} 1914 \\ \times 703 \\ \hline 1345542 \checkmark \end{array}$$

$$\begin{array}{r} 222 \\ 1769 \\ \times 328 \\ \hline 14152 \\ 35380 \\ + 530700 \\ \hline 580232 \end{array}$$

142  
6395

x 549

2 2 5 7 5 5 5

2 5 5 8 0 0

3 1 9 ~~7~~ 5 0 0

3 5 1 0 8 5 5

Q. A fruit seller bought 7300 oranges. Out of these, 64 were found rotten. Remaining oranges were packed equally in 67 boxes. Find the number of oranges in each box.

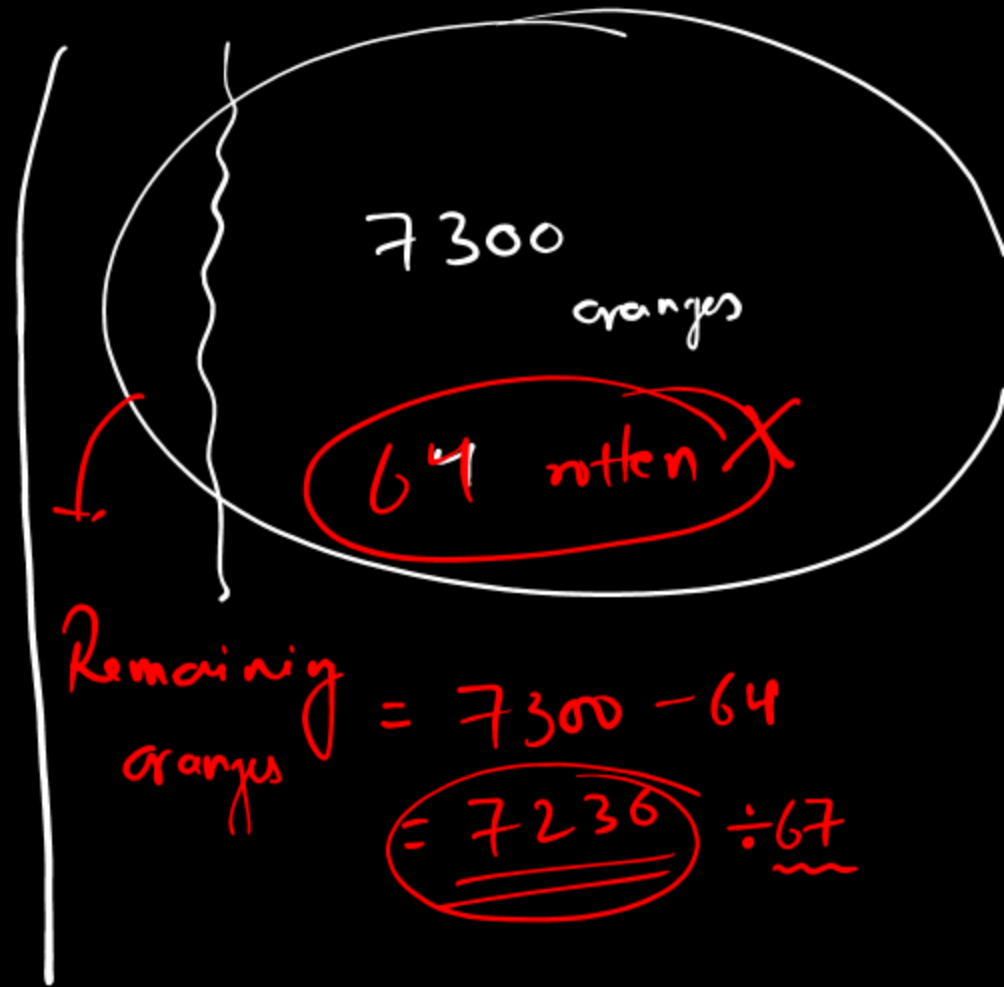
Sol<sup>n</sup>:

$$\begin{aligned}\text{Total no. of oranges} &= 7300 \\ \text{Rotten oranges} &= 64 \\ \text{Remaining oranges} &= 7300 - 64 \\ &= 7236\end{aligned}$$

$$\text{Number of oranges in each box} = 7236 \div 67$$

$$\begin{array}{r} 108 \\ 67 \overline{) 7236} \\ \underline{\phantom{0}0} \\ \phantom{0}0 \end{array}$$

Ans: No. of oranges in 1 box are 108.



Q. 36 eggs can be packed in one tray. How many trays will be required to pack 1264 eggs? How many eggs will be left?

Sol:

No. of eggs in 1 tray = 36

Total no. of eggs = 1264

• Required number of trays = Quotient of  $\frac{1264 \div 36}{1264 \div 36}$

• Eggs left behind = Remainder of  $\frac{1264 \div 36}{1264 \div 36}$

$$\begin{array}{r} 144 \\ \times 36 \\ \hline 864 \\ 1440 \\ \hline 1800 \end{array}$$

$$\begin{array}{r} 35 \\ 36 \overline{) 1264} \\ \underline{-108} \phantom{0} \\ 184 \\ \underline{-180} \\ 4 \end{array}$$

Ans: Req. No. of trays = 35  
No. of eggs left behind = 4

$$\boxed{9000 \div 3000}$$

$$10 \div 10$$

$$20 \div 10$$

$$\begin{array}{r} 300 \\ 3 \overline{) 900} \\ \underline{-9} \phantom{0} \\ 00 \end{array}$$

$$\underline{9} \times \underline{1000} \quad \div \quad \underline{3} \times \underline{1000}$$

$$\boxed{9 \div 3}$$

$$\boxed{3} \checkmark$$

$$\underline{40} \overline{) 20} \phantom{0}$$

$$9000 \div 3000$$

$$\begin{aligned} 1000 \div 1000 &= 900 \div 3 \\ &= \underline{\underline{9 \times 100 \div 3}} \end{aligned}$$

End of the chapter