Operations on Whole Numbers

Chapter 2



Operations on whole no.

Whole no. => 0, 1, 2, 3, ... 00



(1) Commutative Property for addition
a, b are whole nor.

$$a+b = b+d$$

ey: 5 and 7 are while nos.
 $5+7 = 12$
 $7+5 = 12$
 $5+7 = 7+5^{-12}$

_)



II) Associative Property
II) Associative Property
II) a, b and c are three whole nos.

$$\begin{array}{rcl}
(a+b)+c &=& a+(b+c) \\
ef & 5, 2, 7 & are whole nos. \\
(5+2)+7 &=& 14 \\
5+(2+7) &=& 14 \\
\end{array}$$
=) Associative property holds for addition of whole nos.



	1 + 2 + 3 + 4 + 996 + 997 + 998 + 999	- <u>4</u> m
<u>ل</u> ۲	$\frac{2062}{1000} + 353 + \frac{1438}{547} + 547$	353 = 300 + 53
	$=)\left(\frac{1}{2062} + \frac{1}{1439}\right) + \left(553 + 547\right)$	+ 547 = 500 + 47
	= 3500 + 900	= 800 + 100
	- 440	- 9 ov
		© EKAdemy

Properties of Subtraction 1) (losure Property La does not held for subtraction of whole nos. $\begin{array}{cccc} \bullet f & 5 - 3 &= & 2 \\ \uparrow & \uparrow & \uparrow \\ W & W & W \end{array}$ 3-5 = -2 7 1 1w w Not W



$$5 - 3 = \frac{2}{3}$$

$$3 - 5 = -2$$

$$5 - 3 \neq 3 - 5$$

$$=) (commutative property does not hold for subtraction j while$$

no.





=)

$$5 - (3 - 1) = 3$$

 $(5 - 3) - 1 = 1$

$$5 - (3 - 1) \neq (5 - 3) - 1$$





$$7 \times 2 = 14$$

$$7 \quad 7 \quad 7$$

$$W \qquad W$$

*
$$L$$
 is called multiplicative
identity
 $13x(1) = 13$
 $7x(1) = 7$





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

=) multiplication of vehile no. is commutative
(1) Associative Property. a, b & c
(a × b) × c = a × (b × c)
(2 × 3)×4 = 24
2 × (3×4) = 24
(2 × 3)×4 = 2×(3×4)
(2 × 3)×4 = 2×(3×4)
(2 × 3)×4 = 2×(3×4)

(iv) Distributive property
-) Distributive property
(i) a, b & c ore unliqueation over addition subtraction
(i) a, b & c ore unliqueation.

$$a \times (b \oplus c) = a \times b + a \times c$$

 $a \times (5 \oplus 3) = 2 \times 5 \oplus 2 \times 3$
 $= 10 \pm 6$
 $= 16$



$$3 \times (7 + 15) = 3 \times 22 = 66$$

$$(7 + 15) = 3 \times 7 + 3 \times 15$$

ey H

$$= 21 + 45$$
$$= 66$$

$$\frac{eq}{f} \quad 5 \times (19 - 2) = 5 \times 17 = \frac{85}{5}$$

$$5 \times (19 - 2) = 5 \times 19 - 5 \times 2$$

$$= 95 - 10$$

$$= \frac{85}{5}$$



- Q. Find the products:
 - (i) $4 \times 4957 \times 25 = 4957 \times 25 \times 4$
 - = 4957 X100

= 495700

(ii)
$$37251 \times 25 \times 9 \times 40 = (37256 \times 9) \times (25\times 40)$$

= 335304×1000
= 3255304×1000



multiply: 475 by 64 using distributive property. ee.





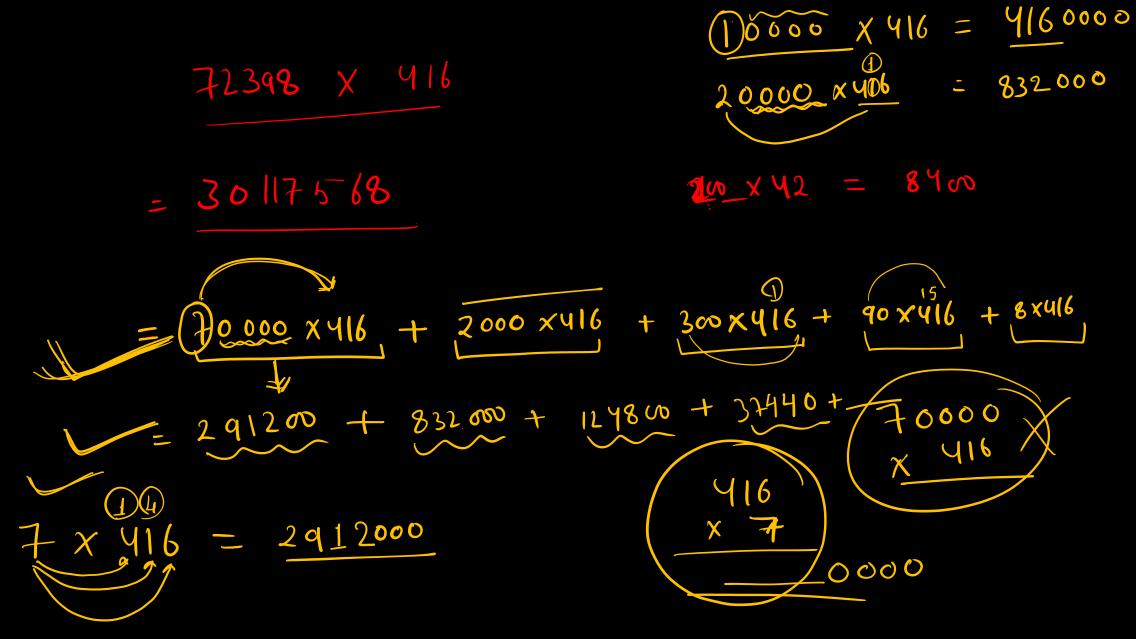


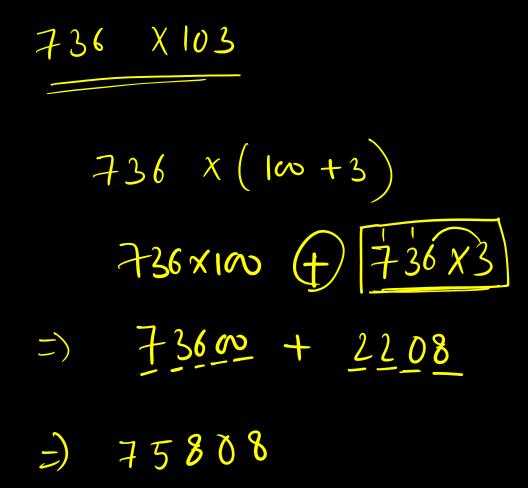
$$= 162500 + 65000 + 3250 + 2275$$

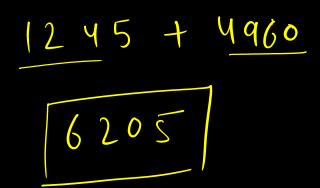
= 5000 × 325 + 200 × 325 + 10× 325 + 7×325

$$5217 = (5000 + 200 + 10 + 7) \times (325)$$











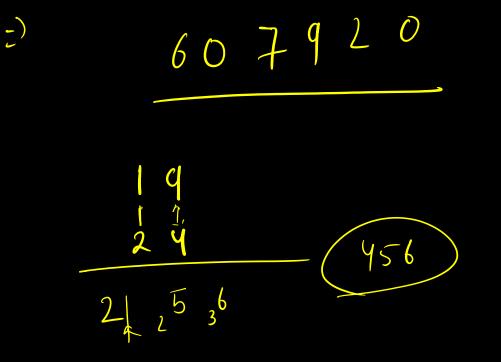
816 × 745 818 X (700 +40+5)

18

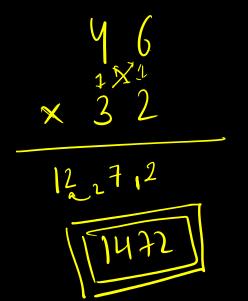
(26

 $\frac{300}{10+6}$ + 10 + 6) \times 7 4 5

596000 +7-450 + 4470







Properties of division of whole nos.

$$20 \div 5$$

$$20 \div 5$$

$$5 J 20$$
(1) Division is repeated Aubtraction
$$20 - 5 \div 5$$

$$15 - 5 \div 10$$

$$10 - 5 \div 5$$

$$40$$

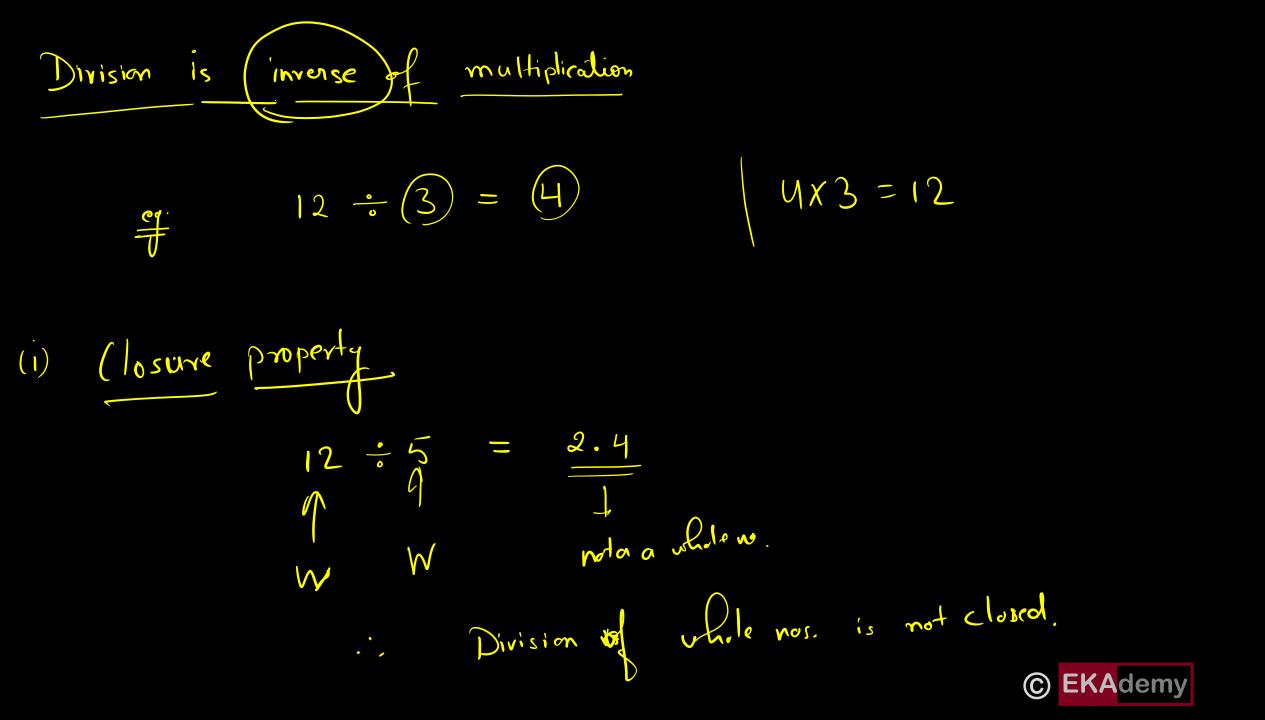
$$5 - 5 \div 10$$

$$4 \text{ trans}$$

$$40$$

$$4 \text{ trans}$$







5:2 7 2:5

Not Commutative

(11) Associative $(15\div3)\div2$ \neq $15\div(3\div2)$





$$(V)$$
 $0 \div (uhde no.) = 0$

$$\frac{0}{5} = 0$$



Division Algorithm
Division Algorithm
Divisor Quotient
Divisor Quotient
Divisor Quotient
Dividued by

$$eqt 3 = 0$$
 or $\tau \le b$.
 $a = bq + \tau$, where
 $s = 0$ or $\tau \le b$.
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Q Divide
$$46087$$
 by 356 and cluck the result by division digorithm.
 $129 \leftarrow V$ 356×9
 $54:$ $b \rightarrow 356 \int 46087 \leftarrow a$
 -356
 1048
 -712
 3367
 -3204
 $(back: Dividend = 46087$
 $63 \rightarrow r$
Question x divisor $\pm remainder$ $= 129 \times 356 \pm 163$
 $= 46087 \Rightarrow Dividend$



$$\frac{Sol:}{a: bq+r}$$

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- 524

(l

$$a = 46 \times 11 + 18$$

 $a = 506 + 18$

$$\begin{array}{c} q = 7 \\ \hline \end{array} \\ b = 46 \\ q = 11 \\ \gamma = 18 \end{array}$$
 Given

Q3: - The the product of two numbers is
$$504347$$
. If one of the numbers
is 1591 , find the other.

St:
 (1591) 504347
 -4773
 2704
 -1591
 11137
 01
So the other no. is 317 .



Q.Ondividing
$$55390$$
 by 299 , the remainder is E . FindHe quotient.Subtract 75 from bothSel:Griven: (a) dividend = 55390(b) divisor = 299 $55390 - 75 = 299 \times \sqrt{1+5-7}$ (b) divisor = 299 $55390 - 75 = 299 \times \sqrt{1+5-7}$ To find : (y) quotrent = 75 $55315 = 299 \times \sqrt{1+5-7}$ Division algorithm, $a = bq + r$ $55390 = 299 \times Q$ $75317 = q$ $55390 = 299 \times Q$ $75317 = q$ $75390 = 299 \times Q$ $755317 = q$ $75390 = 299 \times Q$ $755317 = q$ $9 = \frac{55315}{299} = 100 \times Q$ $9 =$