× Real #'s

Properties

Commutative of ×

order of factors does not matter

$$ab = ba$$

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

Associative (groupings) ← parenthesis

how factors are grouped

does not matter

$$(ab)c = a(bc)$$

$$(2 \cdot 3)4 = 2(3 \cdot 4)$$

Identity

any # $\times 1$ = that #

$$a \cdot 1 = a$$

Zero

$$a \cdot 0 = 0$$

-1

$$a \cdot (-1) = -a$$

$-5 \cdot (-1) = +5$ (opposite)

$8(-1) = -8$ (opposite)

$\rightarrow$ opposite of a

Inverse

$$a \cdot \frac{1}{a} = 1$$

$+a \cdot (+b) = +c$

$-a\,(-b) = +c$

> same sign → + product

$+a(-b) = -c$

$-a(+b) = -c$

> diff. signs → product

$-2(-4) = +8$

$-3(+7) = -21$

Justify

$(-4x) \cdot 5$

$(-4 \cdot x) \cdot 5$

$(x \cdot (-4)) \cdot 5$

$x(-4 \cdot 5)$

$x(-20)$

$-20x$

commutative ★

associative ★

multiply

$-18(-x)$

$-18(-1 \cdot x)$ -1 property

$(-18 \cdot (-1))x$ Associative

$(18)x$ -1 property

$18x$

2.4

#3-27 odd

28-32 even

37-43

45-47

57-64