

CHAPTER 1 : FOUR OPERATION OF WHOLE NUMBER (第一章:完整数的四则运算)

Numeral System (记数法)

- Whole numbers (完整数) = 0,1,2,3,4,5,6,7,8,9,10,11.....
- Natural numbers (自然数) = 1,2,3,4,5,6,7,8,9,10,11.....

Billion	Hundred Million	Ten Million	Million	Hundred Thousand	Ten Thousand	Thousand	Hundred	Ten	One
十亿	亿	千万	百万	十万	万	千	百	十	个
1x1000 000 000	1x100 000 000	1x10 000 000	1x1000 000	1x100 000	1x10 000	1x1 000	1x100	1x10	1

表1

例题 1

Write the number in words

~ 2673 = Two thousand six hundred and seventy-three

例题 2

Express the number in expanded form

~ 6789=(6 x 1000) + (7 x 100) + (8 x 10)+(9 x 1)

The Four Operations (四则运算)

- Addition 加法 (Sum, total 和)
- Subtraction 减法 (Subtracting, difference 差)
- Multiplication 乘法 (product 积)
- Division 除法 (quotient 商, remainder 余数)

Order of operations (混合运算)

- 1 括号 (由内向外)
- 2 先乘除后加减
- 3 从左到右

例题 3 $95 + [35 \div (15 - 4 \times 2)]$
 $= 95 + [35 \div (15 - 8)]$
 $= 95 + [35 \div 7]$
 $= 100$

Law of Arithmetic Operations (四则运算三大定律)

1 Commutative Law (交换律)

$$a + b = b + a$$

$$a \times b = b \times a$$

! 减法和除法不是交换律, 因为答案不同

2 Associative Law (结合律)

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

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

! 减法和除法不是结合律, 因为答案不同

3 Distributive Law (分配律)

$$(a \pm b) \times c = (a \times c) \pm (b \times c) \text{ or}$$

$$c \times (a \pm b) = (c \times a) \pm (c \times b)$$

$$(a \pm b) \div c = (a \div c) \pm (b \div c)$$

例题 4 $50 \times 67 \times 2$
 $= 67 \times 50 \times 2$ (◆ 交换律)
 $= 67 \times (50 \times 2)$ (◆ 结合律)
 $= 67 \times 100$
 $= 6700$

例题 5 $30 \div 2 + 20 \div 2$
 $= (30 + 20) \div 2$ (◆ 分配律)
 $= 50 \div 2$
 $= 25$

Average (平均)

$$\text{Average} = \frac{\text{Total}}{\text{Units}}$$

$$\text{平均数} = \frac{\text{总数}}{\text{个数}}$$

Distance Traveled (行程问题)

$$\text{Speed} = \frac{\text{Total Distance}}{\text{Total Time}}$$

$$\text{速度} = \frac{\text{距离}}{\text{时间}}$$

例题 7

The distance between Jay's house to office is 360km. Jay traveled at an average speed of 90km/h from his house to office. He took one hour longer to return home from his office. Calculate the average speed for return journey.

Solution ~

Total Distance = 360km

Average speed from home to office = 90km/h

$$\begin{aligned} \text{Time taken from home to office} &= \frac{360}{90} \\ &= 4 \text{ hours} \end{aligned}$$

$$\begin{aligned} \text{Time taken from office to home} &= 4 \text{ hours} + 1 \text{ hours} \\ &= 5 \text{ hours} \end{aligned}$$

$$\begin{aligned} \blacklozenge \text{ Average speed for return journey} &= \frac{360}{5} \\ &= 72\text{km/h} \end{aligned}$$

例题 8

Convert 36km/h to m/s.

Solution ~

1 hour = 60 minutes

60 minutes = 3600 seconds

1 km = 1000 m

36 km = 36 000 m

$$\begin{aligned} 36 \text{ km/h} &= \frac{36 \text{ km}}{1 \text{ h}} \\ &= \frac{36 \times 1000}{1 \times 3600} \\ &= 10 \text{ m/s} \end{aligned}$$

例题 6

The height of students are 158cm,160cm, 164cm and 170cm respectively. Find the average height of the group of students.

$$\begin{aligned} \text{Solution} &\sim (158 + 160 + 164 + 170) \div 4 \\ &= 652 \div 4 \\ &= 163 \end{aligned}$$

◆ The average height are 163cm.

例题 9

Convert 30m/s to km/h.

Solution ~

1 hour = 60 minutes

60 minutes = 3600 seconds

1 km = 1000 m

$$\begin{aligned} 30 \text{ m/s} &= \frac{30 \text{ m}}{1 \text{ s}} \\ &= \frac{30 \times 3600}{1 \times 1000} \\ &= 108 \text{ km/h} \end{aligned}$$