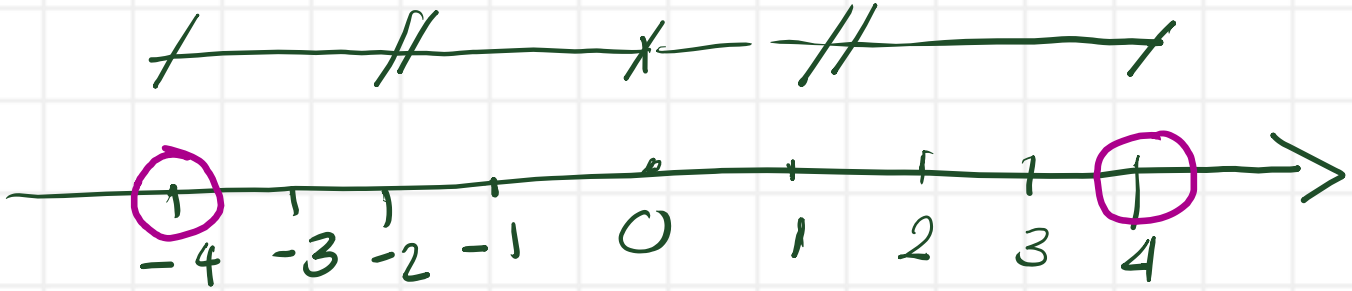
ABSolute Value

Absolute of $-4 = 4$



How Far From Zero → to 4 Units?

RATional Number

A rational number is a number that can be in the form ***p/q*** *where* ***p*** *and* ***q*** *are integers and* ***q*** *is not equal to zero.*

$P = 1$

$P = 1$
$q = 5$

Rational = 1/5

q is not Possible to be Zero

Fraction

$\frac{1}{2}, \frac{3}{4}, \frac{7}{10}$

→ Numerator

→ Denominator

Fraction

→ Improper Fraction

$\frac{4}{3}, \frac{6}{3}, \frac{8}{5}$

value ≥ 1

Fraction

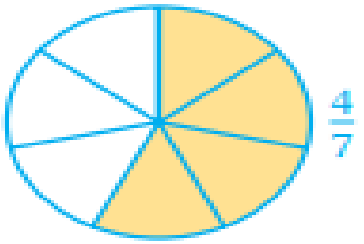
→ Proper Fraction

$\frac{1}{2}, \frac{5}{6}$

value < 1

A **fraction** can represent the number of equal parts of a whole.

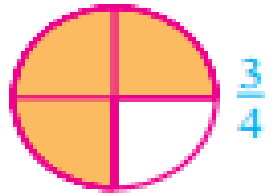
The shaded portion of the circle is represented by the fraction $\frac{4}{7}$. Four of the seven equal parts of the circle (that is, four-sevenths of it) are shaded.



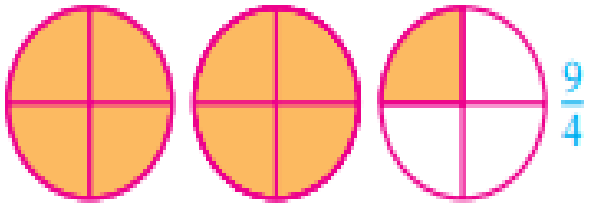
Each part of a fraction has a name.

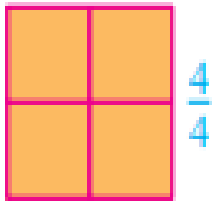
Fraction bar $\rightarrow \frac{4}{7}$ $\leftarrow$ **Numerator**
$\leftarrow$ **Denominator**

A **proper fraction** is a fraction less than 1. The numerator of a proper fraction is smaller than the denominator. The shaded portion of the circle can be represented by the proper fraction $\frac{3}{4}$.

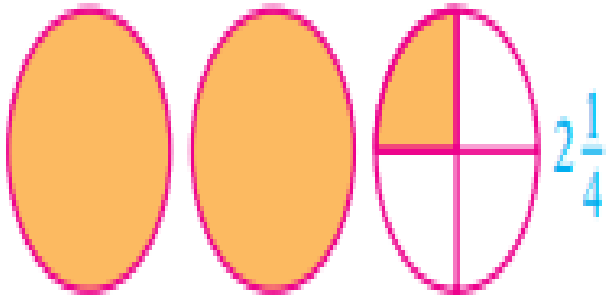


An **improper fraction** is a fraction greater than or equal to 1. The numerator of an improper fraction is greater than or equal to the denominator. The shaded portion of the circles can be represented by the improper fraction $\frac{9}{4}$. The shaded portion of the square can be represented by $\frac{4}{4}$.





A **mixed number** is a number greater than 1 with a whole-number part and a fractional part. The shaded portion of the circles can be represented by the mixed number $2\frac{1}{4}$.



Factoring against product

(1)(12)
(3)(4)
(2)(6)

12 → Product

Factoring → Make analysis to a Number

1 · 12
2 · 6
3 · 4
} Factoring

$C = a \times b$ → Factor

Product ← C → Factor

Irrational Number

Using Calculator $\sqrt{3} = 1.732050808$

$\sqrt{2} = 1.414213562$

$\pi = 3.14159\ldots$

↳ Non terminating Non-Recurring Decimal

Terminating

$\frac{1}{2} = 0.50$

$\frac{3}{4} = 0.75$

Recurring $= \frac{1}{3} = 0.3333\ldots$

$0.3\overline{3}$

An **Irrational Number** is a real number that **cannot** be written as a simple fraction.

Irrational means **not Rational**

$1.5 = \frac{3}{2}$ Ratio

Rational

$\pi = 3.14159... = \frac{?}{?}$ (No Ratio)

Irrational

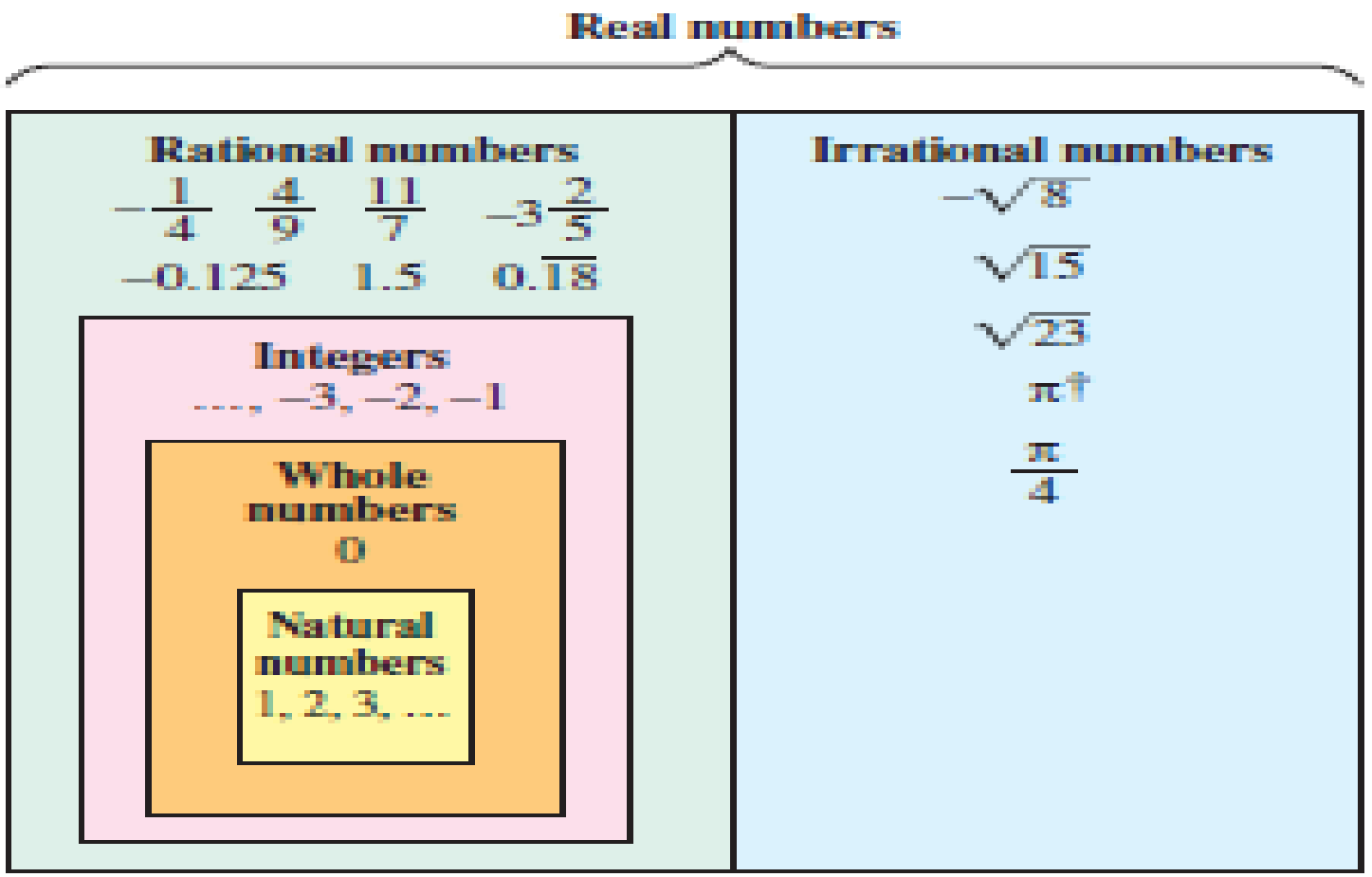
Example: **π (Pi)** is a famous irrational number.

π = 3.14159265358979323846264338327 95... (and more)

We **cannot** write down a simple fraction that equals Pi.

The popular approximation of $^{22}/_{7}$ = 3.142857142857... is close but **not accurate**.

Real Number R ⇒ Natural, whole Number, Integers, Rational, + IRRation



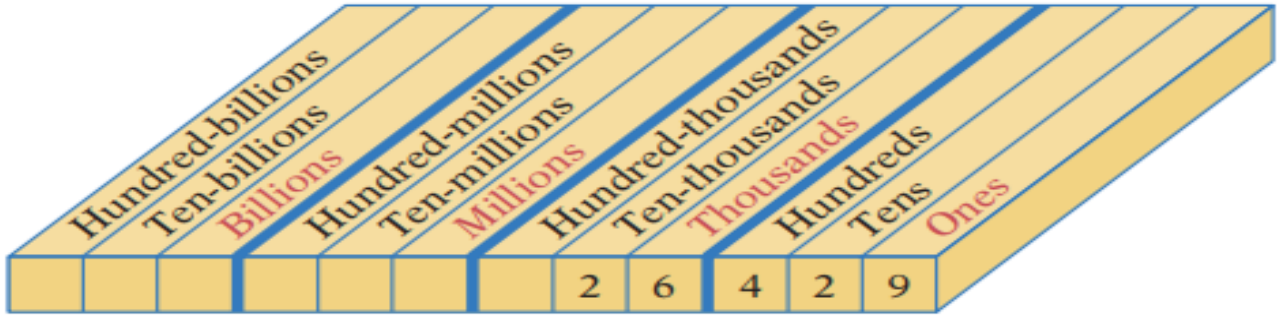
Writting a Whole number in an Expanded form

To write whole numbers in expanded form

The whole number 26,429 can be written in **expanded form** as

20,000 + 6000 + 400 + 20 + 9.

The place-value chart can be used to find the expanded form of a number.



2 Ten-thousands	+	6 Thousands	+	4 Hundreds	+	2 Tens	+	9 Ones

Rounding Number

0 ← 1, 2, 3, 4 → Round down
5, 6, 7, 8, 9 → 10 Round up

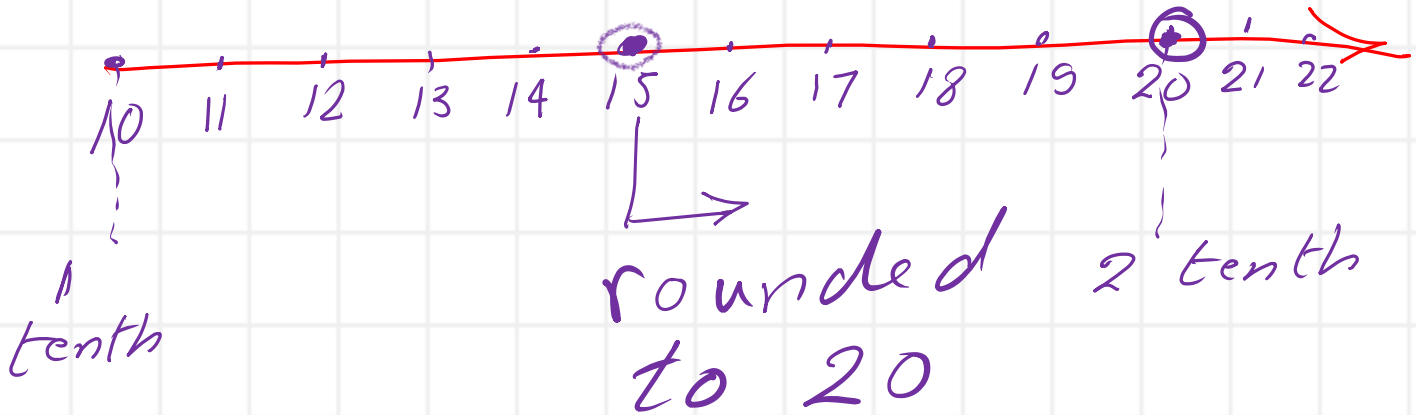
① To nearest tenth: : 15 $\xrightarrow{up}$ 20, 24 → 20 down

20 1 2 3 4 5 6 7 8 9 30

27 → 30
33 → 30

② To Nearest one hundred.

③ To Nearest One Thousand and Beyond



What is "Rounding" ?

Rounding means making a number **simpler** but keeping its value close to what it was.

The result is less accurate, but easier to use.

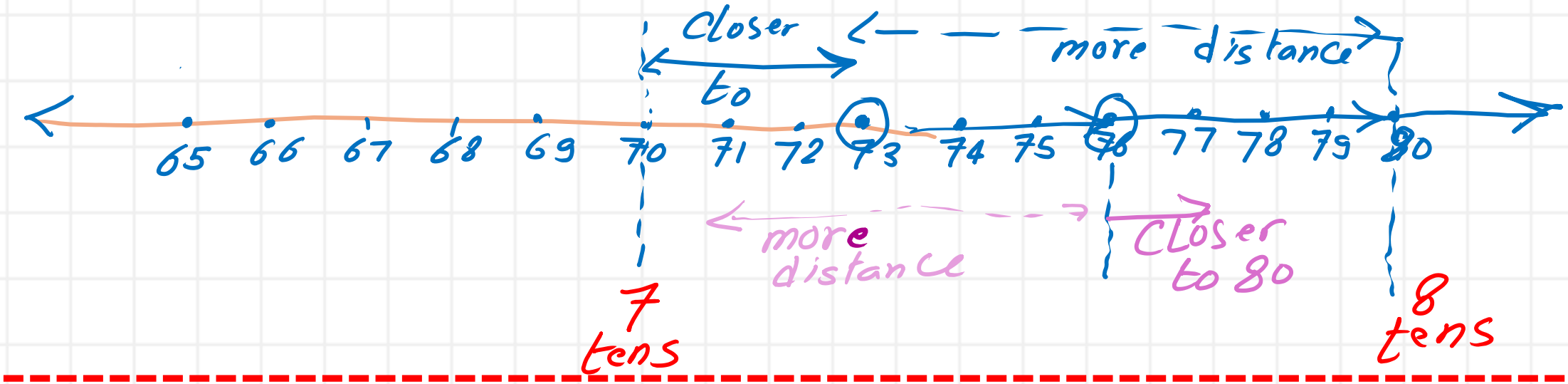
Example: **73** rounded to the nearest ten is **70**, because 73 is closer to 70 than to 80. But 76 goes **up** to 80.

73 → 70

76 → 80

Near to

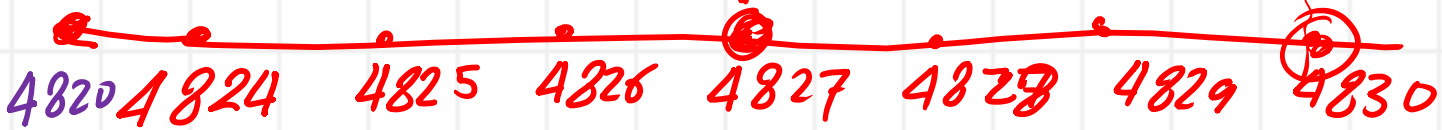
Near to



Round: 4827 to the nearest tenth

4827 = 4000 + 800 + 20 + 7

close to 4830



4800 — 4827 → 4900

Nearest hundreds

4800 — 27 — 4900 — 73

2 < 5

8 → stays → 4800

4827 → close to

For 4850 4870 4890

nearest hundered ← 27 smaller

73 more distance to 4900

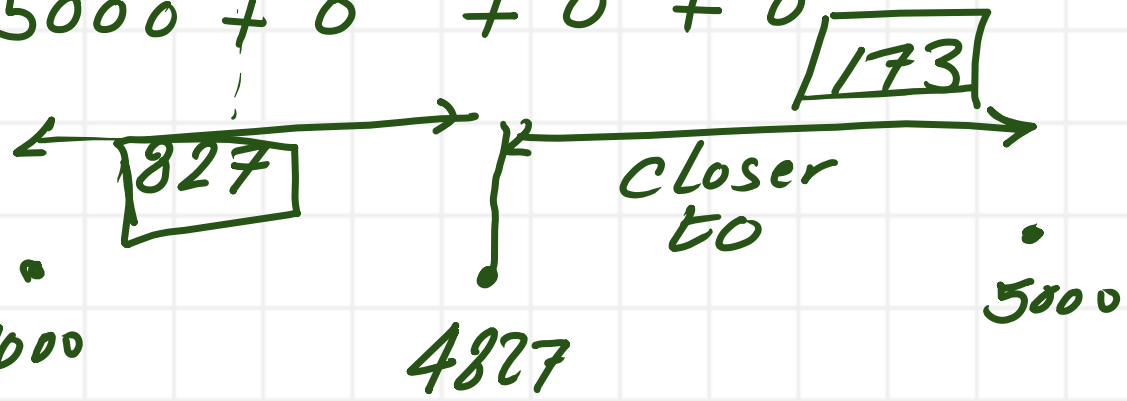
27 < 73

4827 → Nearest Thousand → 5000

8 > 4 → Round to 5000

4827 => 4000 + 800 + 20 + 7

5000 = 5000 + 0 + 0 + 0



173 < 827

Prepared by Eng.Maged Kamel.