



MATH 001

Review

Chapter P: Prerequisites

P.2 Real Numbers

P.3 Integer Exponents
and Scientific Notation

P.4 Rational Exponents
and Radicals

P.5 Algebraic Expressions

P.6 Factoring

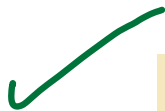
P.7 Rational Expressions

P.8 Solving Basic Equations

In the textbook, “P” refers to the Prerequisites chapter.

Reading Mathematical Expressions

Expression	Reads	Note
$a + b = c$	a plus b is equal to c	Addition; c is the sum
$a - b = c$	a minus b equals c	Subtraction; c is the difference
$a \cdot b = c$	a times b is equal to c	Multiplication; c is the product
$a \div b = c$	a divided by b equals c	Division; c is the quotient
$\frac{a}{b}$ or a/b	a over b or a by b	Fraction; a is the numerator, b is the denominator
a^b	a to the b ; a to the b th power	a : base, b : exponent (power)
a^2, a^3, a^{-1}	a squared, a cubed, a inverse	n th radical; a : radicand, n : index
$\sqrt{a}, \sqrt[3]{a}$	square root of a , cube root of a	



مقسم

base $\frac{1}{2}$ Power

الجذر التربيعي الجذر التكعيبي

مجموعه باء
فرق

حاصل ضرب a, b

شبهه
ط
مقام

قوة (power)

Reading Mathematical Expressions

عبره → عباره

Expression	Reads	Note
$a < b$	a is less than b	Inequalities
$a \leq b$	a is less than or equal to b	
$a > b$	a is greater than b	
$a \geq b$	a is greater than or equal to b	
$x \in A$	x belongs to A or x is in A	Between an element and a set
$A \subset B$	A is a subset of B	Between two sets
$\emptyset$	the empty (null) set	$\emptyset \neq \{\emptyset\}$
$A \cup B$	A union B	Between two sets
$A \cap B$	A intersection B	Between two sets

مساويه

اقل من او يساوي

اكبر

اكبر من او يساوي

$\emptyset \neq \{\emptyset\}$

$\emptyset = \{\}$

مجموعه خاليه

المتركة

قانون

الفرقه

تقاطع

اتحاد

Arithmetic Operations: Recitation Exercises

If $x = \frac{1}{9}$, $y = -5$, $w = -\frac{5}{7}$, then find:



(a) $x + y$

كسر (كسرات)
سكوني (سكوني)
والطرح (الطرح)

$$\frac{1}{9} + (-5)$$

$$\frac{1}{9} - \frac{5}{1} \cdot \frac{9}{9} = \frac{1}{9} - \frac{45}{9} = \frac{1-45}{9} = \frac{-44}{9}$$

(b) $\frac{x}{y} = x \div y = x/y$

$$\frac{1}{9} \div \frac{-5}{1} = \frac{1}{9} \cdot \frac{-1}{5} = \frac{-1}{45}$$

الفرق ← بطرقة
مقام * مقام

(c) $2x^2$

$$2x^2 = 2 \left(\frac{1}{9} \right)^2 = 2 \left(\frac{1^2}{9^2} \right) = 2 \left(\frac{1}{81} \right) = \frac{2}{81}$$

Arithmetic Operations: Recitation Exercises

الكبر - الصبر وح
- وحش + شدة الكبر

(d)

$$\frac{x + w}{w - x}$$

$$\frac{1}{9} + \frac{-5}{7}$$

$$\frac{-5}{7} - \frac{1}{9}$$

$$= \frac{7 \times \frac{1}{9} - \frac{5 \times 9}{7 \times 9}}{9 \times \frac{5}{7} - \frac{1 \times 7}{9 \times 7}}$$

Handwritten diagram showing two subtraction problems. The first problem is $63 - 7$, with 7 written above 63 and a blue arrow pointing to the 7. The second problem is $63 - 45$, with 45 written above 63 and a blue arrow pointing to the 45. Both problems are circled in blue. Below each problem is a subtraction line with the result 63.

$$\frac{a/b}{c/b}$$

$$= \frac{-38}{63}$$
$$= \frac{-52}{63}$$
$$= \frac{+38}{+52} \div 2 = \frac{19}{21}$$

↓
بازداشت
معتقل
(انحراف)
رافضه
الاست

Arithmetic Operations: Recitation Exercises

Find the exact value of:

1. $1.32 + \underline{0.132}$

$$= 1.452$$

$$\begin{array}{r} 1.320 \\ 0.132 \\ \hline 1.452 \end{array}$$

easy

2. $\sqrt{196}$

2
3
5
7

$$\begin{aligned} \sqrt{196} &= \sqrt{2 \cdot 2 \cdot 7 \cdot 7} \\ &= 2 \cdot 7 \\ &= 14 \checkmark \end{aligned}$$

$$\begin{array}{r|l} 2 & 19.6 \\ \hline 14 & 98 \\ & 49 \\ & 7 \\ & \textcircled{1} \end{array}$$

$$\begin{array}{r} 14 \\ \sqrt{196} \\ \underline{182} \\ 16 \\ \underline{16} \\ 0 \end{array}$$

Arithmetic Operations: Recitation Exercises

Which is larger π or $\frac{22}{7}$? ($\pi \approx 3.14159$)?

$$\frac{22}{7} \approx 3.1428 > \pi \approx 3.14159$$

1. Which is smaller $\frac{3}{5}$ or $\frac{1}{2}$?

$$\frac{3}{5} \times \frac{2}{2} = \frac{6}{10}$$

$$\frac{1}{2} \times 5 = \frac{5}{10}$$

$5 \times 2 = 10$
 $\frac{1}{2}$ is smaller

2. Find the reciprocal of the mixed number $-2\frac{3}{5}$. $\rightarrow$ improper fraction

المعكوس، العكسي

$$\frac{b}{c} = \frac{c \times a + b}{c}$$

$$\frac{2}{3} \rightarrow \text{reciprocal } \frac{3}{2}$$

$$-\frac{1}{2} \rightarrow " \quad -\frac{2}{1} = -2$$

$$-\frac{5}{1} \rightarrow " \quad -\frac{1}{5}$$

$$-\frac{2 \times 3}{5} = \frac{-5 \times 2 + 3}{5} = \frac{-10 + 3}{5} = -\frac{7}{5}$$

$$\text{reciprocal of } -\frac{7}{5} \text{ is } -\frac{5}{7}$$