Highly recommended:

Use a notebook or a section in your binder to organize your math notes.

They will be a useful reference for daily work and a valuable study tool for each unit test.

Label each section with the lesson number.

Notes: 1.1

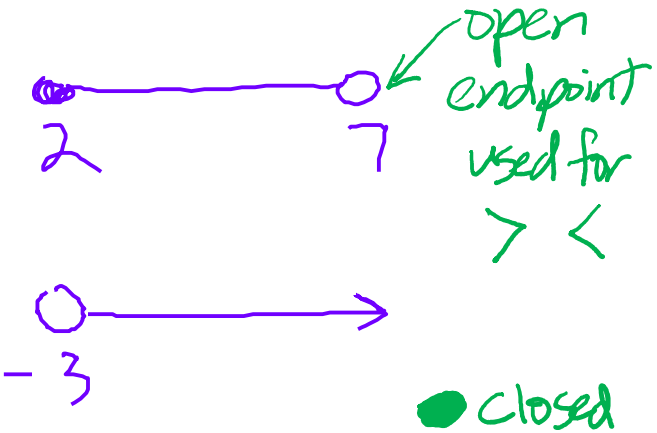
***Sets** $\cup$ = union (all terms combined)

$\cap$ = intersection (common terms only)

***Intervals** $[2,7)$ closed, open $\quad 2 \le x < 7$ closed, open

$(-3, \infty) \quad -3 < x < \infty$

or $\quad x > -3$



***Repeating decimal to fraction**

→*add example here from homework*

Previously:

Express each repeating decimal as a fraction.

1.1 #77b → $0.2\overline{8}$

You must show work or no credit!!!

Goal: multiply by appropriate powers of 10, then subtract and eliminate repeating part and solve for x.

$x = 0.288888\ldots$

$100x = 28.8888\ldots$

$-10x = -2.8888\ldots$

$90x = 26$

$x = \frac{26}{90}$

Today's assignment:

1.1 #23-28, 30, 41-43,
47-59odd,
69-72, 75, 77

NO calculator!!

Write problem, show work!

Put work on a sheet of paper that is separate from today's notes.

See book for examples that are similar to the assigned problems:

Assigned problem	See ebook for example
#23-28	#1 and #2
#30	#3
#41-43	#4
#47-59 odd	#5
#69-72	#7
#75	#8
#77	See intro notes/example for real numbers

Refer to book for extra examples:

Example 4 **Union and Intersection of Sets**

If $S = \{1, 2, 3, 4, 5\}$, $T = \{4, 5, 6, 7\}$, and $V = \{6, 7, 8\}$, find the sets $S \cup T$, $S \cap T$, and $S \cap V$.

Solution

$S \cup T = \{1, 2, 3, 4, 5, 6, 7\}$ All elements in S or T

$S \cap T = \{4, 5\}$ Elements common to both S and T

$S \cap V = \emptyset$ S and V have no element in common

Now Try Exercise 41

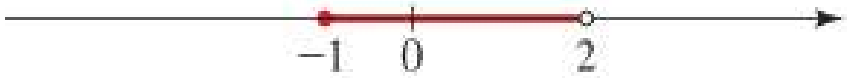
Compare to #41-43

Similar to #47-59odd:

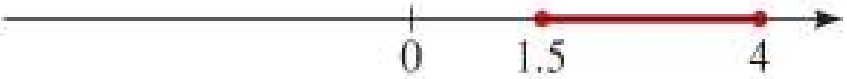
Example 5 **Graphing Intervals**

Express each interval in terms of inequalities, and then graph the interval.

(a) $[-1, 2) = \{x \mid -1 \le x < 2\}$



(b) $[1.5, 4] = \{x \mid 1.5 \le x \le 4\}$



(c) $(-3, \infty) = \{x \mid -3 < x\}$

Now Try Exercise 47

Example for #77 can be found under intro notes for “real numbers”

Note

A repeating decimal such as

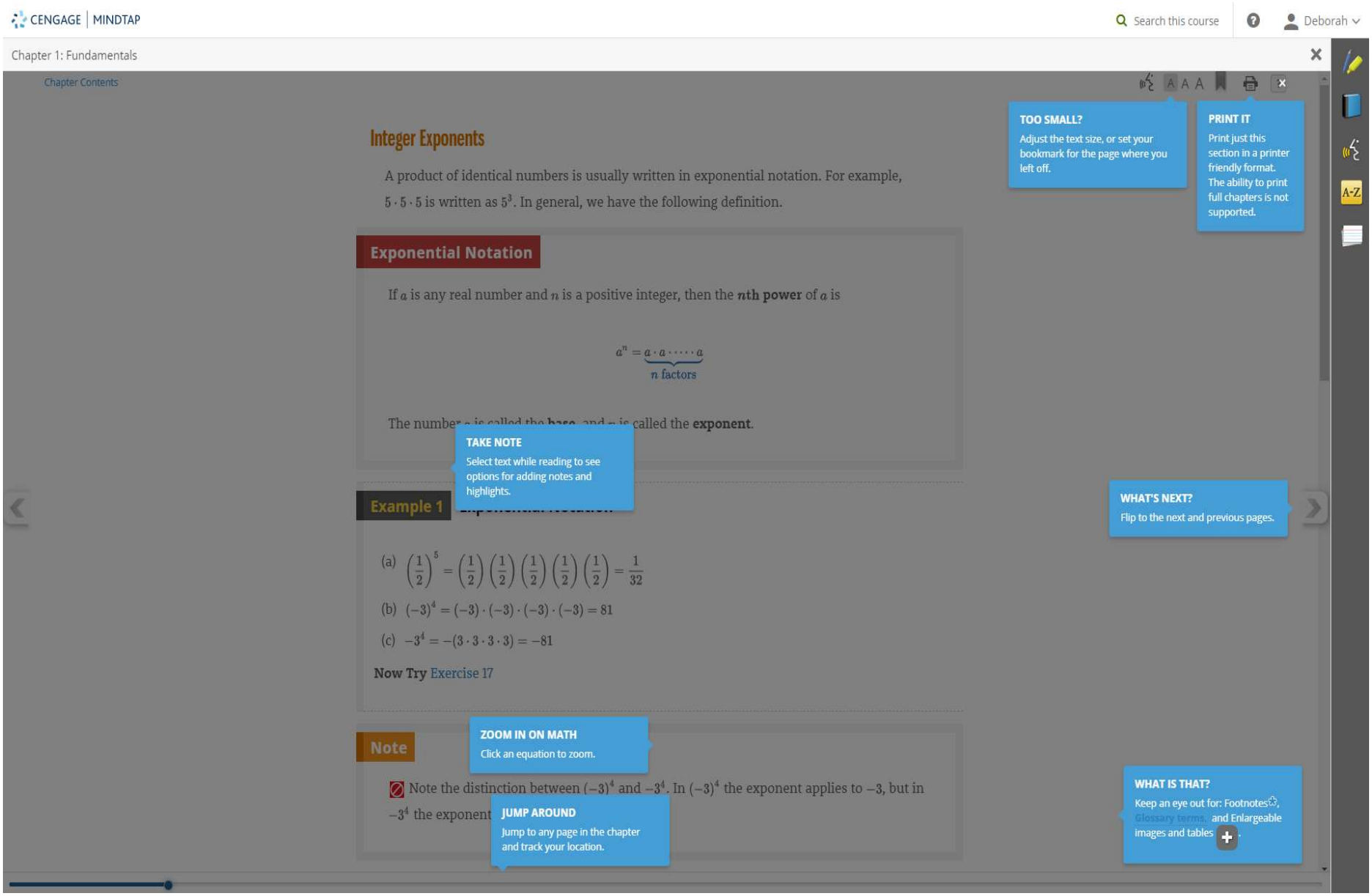
$$x = 3.5474747\ldots$$

is a rational number. To convert it to a ratio of two integers, we write

$$\begin{aligned} 1000x &= 3547.47474747\ldots \\ 10x &= \quad 35.47474747\ldots \\ \hline 990x &= 3512.0 \end{aligned}$$

Thus $x = \dfrac{3512}{990}$. (The idea is to multiply x by appropriate powers of 10 and then subtract to eliminate the repeating part.)

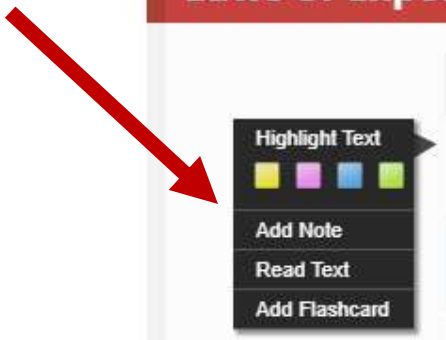
Helpful tips for navigating the ebook:



Helpful tips for navigating the ebook:

Familiarity with the following rules is essential for our work with exponents and bases. In the table the bases a and b are real numbers, and the exponents m and n are integers.

Laws of Exponents

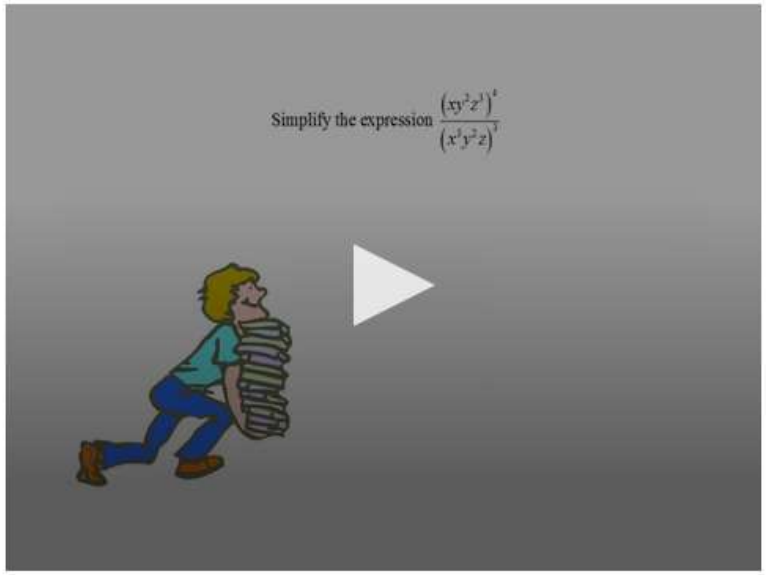


Law	Example	Description
1. $a^m a^n = a^{m+n}$	$3^2 \cdot 3^5 = 3^{2+5} = 3^7$	To multiply two powers of the same number, add the exponents.
2. $\frac{a^m}{a^n} = a^{m-n}$	$\frac{3^5}{3^2} = 3^{5-2} = 3^3$	To divide two powers of the same number, subtract the exponents.
3. $(a^m)^n = a^{mn}$	$(3^2)^5 = 3^{2 \cdot 5} = 3^{10}$	To raise a power to a new power, multiply the exponents.
4. $(ab)^n = a^n b^n$	$(3 \cdot 4)^2 = 3^2 \cdot 4^2$	To raise a product to a power, raise each factor to the power.
5. $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$	$\left(\frac{3}{4}\right)^2 = \frac{3^2}{4^2}$	To raise a quotient to a power, raise both numerator and denominator to the power.
6. $\left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n$	$\left(\frac{3}{4}\right)^{-2} = \left(\frac{4}{3}\right)^2$	To raise a fraction to a negative power, invert the fraction and change the sign of the exponent.
7. $\frac{a^{-n}}{b^{-m}} = \frac{b^m}{a^n}$	$\frac{3^{-2}}{4^{-5}} = \frac{4^5}{3^2}$	To move a number raised to a power from numerator to denominator or from denominator to numerator, change the sign of the exponent.

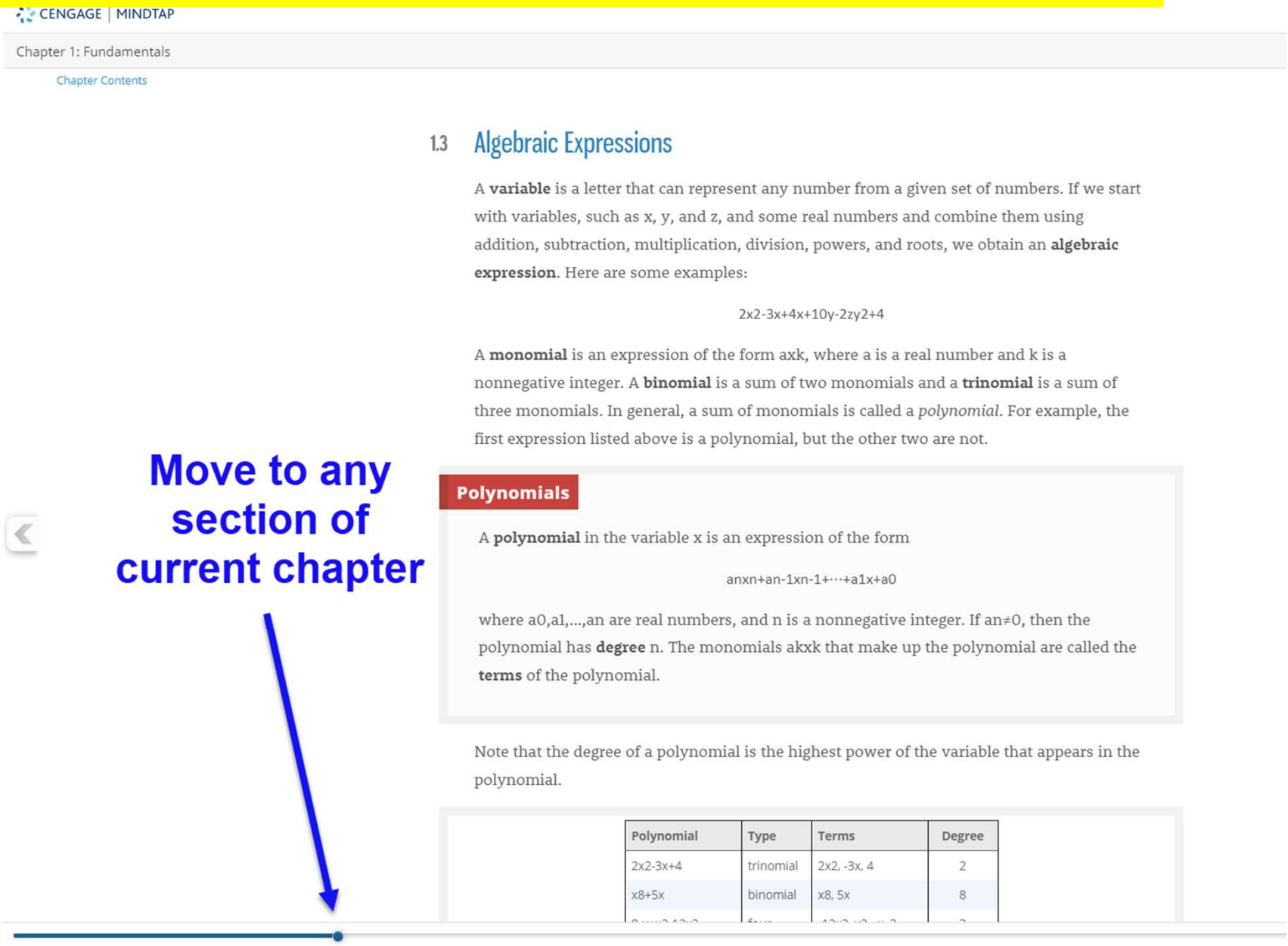
Look for videos with further information and explanations:

Rules for Working with Exponents

Video: Rules for Working with Exponents



Helpful tips for navigating the ebook:



Move to any section of current chapter


EDUCATION
IS THE MOST
POWERFUL
WEAPON YOU
CAN USE TO
CHANGE THE
WORLD