Warm Up:
Write a word phrase for the following.
3x + 2
2 plus the product of 3 and x
Simplify.
\[
\begin{align*}
5^3 & \quad 125 \\
(3 + 2)^2 - 7 & \quad 18 \\
\frac{4^4}{8} & \quad 32
\end{align*}
\]

ACT Question:
Which one of the following is a solution to the equation \(x^4 - 2x^2 = -12\)?
A.) 0  B.) 1  C.) 2  D.) 3  E.) 4

Vocabulary:
Square Root: a number \(a\) is a square root of a number \(b\) if \(a^2 = b\)
Example: \(7^2 = 49\), so 7 is a square root of 49
Radicand: The expression under the radical symbol
\[
\sqrt{a} \quad \text{radicand}
\]

Examples 1-4:
Simplify each expression.
\[
\begin{align*}
\sqrt{64} & \quad 8 \\
\sqrt{25} & \quad 5 \\
\sqrt{\frac{1}{36}} & \quad \frac{1}{6} \\
\sqrt{\frac{81}{121}} & \quad \frac{9}{11}
\end{align*}
\]
Examples 5-8: (with your shoulder buddy)

Simplify each expression.

\[
\sqrt{\frac{121}{400}} = \frac{11}{20} \quad \sqrt{\frac{36}{6}} = 6 \quad \sqrt{\frac{49}{196}} = \frac{1}{2} \quad \sqrt{9} = 3
\]

\[
\frac{7}{14}
\]

Vocabulary:

Set: is a well-defined collection of objects.

Element of the set: each object

Subset: consists of elements from the given set

Vocabulary:

Rational Number: is any number that you can write in the form $a/b$, where $a$ and $b$ are integers and $b \neq 0$ (decimals CAN terminate or repeat)

\[\frac{1}{2} = .5 \quad \frac{1}{3} = .33\]

Natural Number: all positive numbers (does NOT include zero or decimals)

Whole Numbers: all positive numbers (does include zero but does NOT include decimals)

Integers: all positive and negative numbers (NO decimals)

Irrational Numbers: cannot be represented as the quotient of two integers (do not terminate or repeat)

Real Numbers: Rational and Irrational numbers form this set
Real Numbers:

Examples 9-11:
Name the subset of the real numbers to which each number belongs.

\[
\begin{align*}
\sqrt{9} &= 3 \\
\frac{3}{10} &= \text{rational} \\
-5 &= \text{integer} \\
\end{align*}
\]

Can they be a member of more than one?

Yes

Examples 12 and 13:
Order the numbers from least to greatest.

\[
\begin{align*}
2 &> 0.5 > 1.414 \\
\sqrt{4} &< 0.4 < -\frac{2}{3} < \sqrt{2} < -1.5 \\
-1.5 &< -\sqrt{3} < 0.4 < \sqrt{2} < \sqrt{4} \\
\end{align*}
\]

Examples 14 and 15: (with your shoulder buddy)
Order the numbers from least to greatest.

\[
\begin{align*}
\frac{3}{3} &< \sqrt{8} < \sqrt{11} < 2.9 < 3 \frac{10}{3} \\
3.3 &< 2.83 < 2.65 \\
\sqrt{11}, \sqrt{8}, 2.9, 3, \frac{10}{3} \\
\end{align*}
\]
Example 16:
Marsha, Josh, and Tyler are comparing how fast they can type. Marsha types 125 words in 7.5 minutes. Josh types 65 words in 3 minutes. Tyler types 400 words in 28 minutes. Order the students according to who can type the fastest.

\[
\begin{align*}
M: \frac{125}{7.5} & = 16.6 \\
J: \frac{65}{3} & = 21.6 \\
T: \frac{400}{28} & = 14.29
\end{align*}
\]

Josh, Marsha, Tyler

Summary

How should you simplify radicals?
Type in calculator

What is the biggest set of numbers?
Real #’s

How should you go about ordering numbers?
Change to decimals, order least to greatest

Coursework

pg 20 # 9-17 odd, 27-35 odd, 45-49 odd, #64
Make sure you check your answers in the back of the book....you must have work!!!