

Algebra 1
Classifying & Ordering Real Numbers | Algebra 1 | 2-Topic Bundle

2-topic bundle | 192 problems | Four activity formats

01 Classifying Real Numbers

[View individual product and its full preview](#)

02 Ordering and Estimating Real Numbers

[View individual product and its full preview](#)

In every topic

Answer Bank Challenge	24 tasks
Grid Rounds	24 tasks
Match & Move	24 cards
Error Analysis & Strategy	24 tasks
Quick Answer Key and Full Worked Solutions	included
Teacher / Parent Use Guide and Terms of Use	included

Product previews

The following preview pages show the cover, all four activity formats, and worked examples for each included resource, in the listed order.

16 PDFs and 2 READMEs; 101 buyer PDF pages across the 2 products.

Preview pages are not included in the buyer page count. Check the list against resources you already own.

This is a fixed collection of the listed products. Purchase includes the existing individual resource files. To open a product's online preview, follow its title link and select View Preview.

Algebra 1
Classifying Real Numbers

Classifying Real Numbers | A1-U01-P01

96 problems · Four activity formats

01	Answer Bank Challenge	24 tasks
02	Grid Rounds	24 tasks
03	Match & Move	24 cards
04	Error Analysis & Strategy	24 tasks
05	Quick Answer Key	96 answers
06	Full Worked Solutions	96 solutions
07	Teacher / Parent Use Guide	included
08	Terms of Use & License	included

Topic focus
Across 96 tasks this topic asks for classification with justification.
8 PDFs and a README; 48 buyer pages.

Algebra 1

Classifying Real Numbers

Name: _____ Date: _____ Class: _____

Answer each question and record the matching bank letter. Give exact values. Give the whole requested response, including any reasoning the question asks for.

Use $N = \{1, 2, 3, \dots\}$, $W = \{0, 1, 2, \dots\}$, Z for integers, Q for rational numbers, and R for real numbers. For the exact value $\sqrt{11}$, name the smallest set it belongs to and then list every containing set among N, W, Z, Q, and R. _____ Bank label: _____	Use $N = \{1, 2, 3, \dots\}$, $W = \{0, 1, 2, \dots\}$, Z for integers, Q for rational numbers, and R for real numbers. For the exact value $(2 - \sqrt{5})(2 + \sqrt{5})$, name the smallest set it belongs to and then list every containing set among N, W, Z, Q, and R. _____ Bank label: _____
Determine whether the number is rational, irrational, or not determined by the evidence. Justify your decision: 1.08333...; after 08, the digit 3 repeats forever. _____ Bank label: _____	Use $N = \{1, 2, 3, \dots\}$, $W = \{0, 1, 2, \dots\}$, Z for integers, Q for rational numbers, and R for real numbers. For the exact value $\frac{0.125}{0.5}$, name the smallest set it belongs to and then list every containing set among N, W, Z, Q, and R. _____ Bank label: _____
Determine whether the number is rational, irrational, or not determined by the evidence. Justify your decision: $0.d_1d_2d_3\dots$ where $d_n = 3$ when n is a power of 2 and 0 otherwise. _____ Bank label: _____	Use $N = \{1, 2, 3, \dots\}$, $W = \{0, 1, 2, \dots\}$, Z for integers, Q for rational numbers, and R for real numbers. For the exact value $\frac{\sqrt{12}}{\sqrt{3}}$, name the smallest set it belongs to and then list every containing set among N, W, Z, Q, and R. _____ Bank label: _____
Determine whether the number is rational, irrational, or not determined by the evidence. Justify your decision: 0.314159...; only these six digits are supplied and no continuation rule is given. _____ Bank label: _____	Use $N = \{1, 2, 3, \dots\}$, $W = \{0, 1, 2, \dots\}$, Z for integers, Q for rational numbers, and R for real numbers. For the exact value $\sqrt{0}$, name the smallest set it belongs to and then list every containing set among N, W, Z, Q, and R. _____ Bank label: _____

Algebra 1

Classifying Real Numbers

Name: _____ Date: _____ Class: _____

Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

A student gives this classification argument: (1) $\sqrt{36}$ contains a radical sign. (2) Every radical is irrational. (3) Therefore $\sqrt{36}$ is irrational. Identify the first invalid claim and repair it, or state that the argument is correct.

A student gives this classification argument: (1) 0.333... repeats forever. (2) A nonterminating decimal is irrational. (3) Therefore 0.333... is irrational. Identify the first invalid claim and repair it, or state that the argument is correct.

A student gives this classification argument: (1) $\frac{7}{2}$ is a ratio of integers. (2) Its denominator is nonzero. (3) Therefore it is rational but not an integer. Identify the first invalid claim and repair it, or state that the argument is correct.

A student gives this classification argument: (1) If x is irrational, then x is real. (2) If x is real, then x is irrational. (3) Thus every real number is irrational. Identify the first invalid claim and repair it, or state that the argument is correct.

Classifying Real Numbers

Full Worked Solutions - excerpt

Worked example

Problem. Use $N = \{1, 2, 3, \dots\}$, $W = \{0, 1, 2, \dots\}$, Z for integers, Q for rational numbers, and R for real numbers. For the exact value $\sqrt{11}$, name the smallest set it belongs to and then list every containing set among N, W, Z, Q , and R .

Answer. irrational; also R

Explanation and check.

Eleven is not a perfect square, so $\sqrt{11}$ is irrational and real.

Worked example

Problem. Use $N = \{1, 2, 3, \dots\}$, $W = \{0, 1, 2, \dots\}$, Z for integers, Q for rational numbers, and R for real numbers. For the exact value $(2 - \sqrt{5})(2 + \sqrt{5})$, name the smallest set it belongs to and then list every containing set among N, W, Z, Q , and R .

Answer. Z ; also Q, R

Explanation and check.

The conjugate product is

$$4 - 5 = -1$$

an integer.

Algebra 1
Ordering and Estimating Real Numbers

Ordering and Estimating Real Numbers | A1-U01-P02

96 problems · Four activity formats

01	Answer Bank Challenge	24 tasks
02	Grid Rounds	24 tasks
03	Match & Move	24 cards
04	Error Analysis & Strategy	24 tasks
05	Quick Answer Key	96 answers
06	Full Worked Solutions	96 solutions
07	Teacher / Parent Use Guide	included
08	Terms of Use & License	included

Topic focus
Across 96 tasks this topic asks for allowed integer radicands, allowed integer radicands; justified checking-strategy choice, allowed real radicands, exact consecutive-integer bounds, justified strategy choice, relation symbol and exact justification and least-to-greatest list.
8 PDFs and a README; 53 buyer pages.

Algebra 1

Ordering and Estimating Real Numbers

Name: _____ Date: _____ Class: _____

Answer each question and record the matching bank letter. Give exact values. Give the whole requested response, including any reasoning the question asks for.

Use the trial-square table to estimate $\sqrt{17}$ to the nearest tenth. Explain how the midpoint row determines the rounding direction. Table: $4.1^2 = 16.81$; $4.15^2 = 17.2225$; $4.2^2 = 17.64$.

Trial	Exact square
4.1	16.81
4.15	17.2225
4.2	17.64

Bank label: _____

Order these exact rational numbers from least to greatest. Use an equals sign for any tie: $-\frac{23}{41}$, -1.5 , 0 , $\frac{39}{24}$.

Bank label: _____

Order these exact real numbers from least to greatest, showing equality if needed: $-\sqrt{39}$, -3 , 0 , $\sqrt{10}$. Use exact integer bounds and squared comparisons to justify the radical placements.

Bank label: _____

Order these exact real numbers from least to greatest, showing equality if needed: $-\sqrt{8}$, -2.8 , $\sqrt{4}$, 2 . Use exact integer bounds and squared comparisons to justify the radical placements.

Bank label: _____

Algebra 1

Ordering and Estimating Real Numbers

Name: _____ Date: _____ Class: _____

Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. Give the whole requested response, including any reasoning the question asks for.

Assume n is a nonnegative integer and $\frac{3}{2} < \sqrt{n} \leq 4$. Determine every possible value of n, preserving the endpoint conditions exactly. _____ _____	Assume n is a nonnegative integer and $1 < \sqrt{n} \leq \frac{7}{2}$. Determine every possible value of n, preserving the endpoint conditions exactly. _____ _____
Assume n is a nonnegative integer and $\frac{3}{2} \leq \sqrt{n} < \frac{9}{2}$. Determine every possible value of n, preserving the endpoint conditions exactly. _____ _____	Assume n is a nonnegative integer and $\frac{5}{2} \leq \sqrt{n} \leq \frac{9}{2}$. Determine every possible value of n, preserving the endpoint conditions exactly. _____ _____
Assume n is a nonnegative real number and $\frac{3}{2} \leq \sqrt{n} < 3$. Determine every possible value of n, preserving the endpoint conditions exactly. _____ _____	Without rounding either number, insert $<$, $>$, or $=$ between $\sqrt{11}$ and $\frac{10}{3}$. Justify the comparison using signs and exact squares. _____ _____

Algebra 1

Ordering and Estimating Real Numbers

Name: _____ Date: _____ Class: _____

Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

Evaluate this reasoning: From $3 < \sqrt{10} < 4$, a student reports $\sqrt{10} = 3.2$ to the nearest tenth. State whether the conclusion and evidence are valid, then repair the justification with exact comparisons.

Evaluate this reasoning: A calculator shows $\sqrt{2}$ as 1.41, so a student concludes $\sqrt{2} = 1.41$ exactly. State whether the conclusion and evidence are valid, then repair the justification with exact comparisons.

Evaluate this reasoning: A student says $\sqrt{20}$ is halfway between $\sqrt{16}$ and $\sqrt{25}$, so $\sqrt{20} = 4.5$. State whether the conclusion and evidence are valid, then repair the justification with exact comparisons.

Evaluate this reasoning: A student writes $-\sqrt{12} > -3$ because $\sqrt{12} > 3$. State whether the conclusion and evidence are valid, then repair the justification with exact comparisons.

Ordering and Estimating Real Numbers

Full Worked Solutions - excerpt

Worked example

Problem. Use the trial-square table to estimate $\sqrt{17}$ to the nearest tenth. Explain how the midpoint row determines the rounding direction. Table: $4.1^2 = 16.81$; $4.15^2 = 17.2225$; $4.2^2 = 17.64$.

Trial	Exact square
4.1	16.81
4.15	17.2225
4.2	17.64

Answer. $\sqrt{17} \approx 4.1$

Explanation and check.

The table brackets the root between 4.1 and 4.2. Since 17 is below the midpoint square 17.2225, round to 4.1.

Worked example

Problem. Order these exact rational numbers from least to greatest. Use an equals sign for any tie: $-\frac{23}{41}$, -1.5 , 0 , $\frac{39}{24}$.

Answer. $-1.5 < -\frac{23}{41} < 0 < \frac{39}{24}$

Explanation and check.

Writing the values as exact fractions gives the order $-1.5 < -\frac{23}{41} < 0 < \frac{39}{24}$.