UNDERSTAND

11. Reason Identify each solution as rational or irrational.

a. $\frac{4}{7} + \frac{-1}{3}$

b. $\sqrt{4} \cdot \frac{2}{5}$

12. Higher Order Thinking Is the product of two irrational numbers always an irrational number? Explain.

13. Error Analysis Describe and correct the error a student made when ordering numbers from least to greatest.

$\sqrt{144}, \frac{234}{3}, 68.12$

$\sqrt{144} = 72$

$\frac{234}{3} = 78$

$68.12, \sqrt{144}, \frac{234}{3}$ ✗

14. Mathematical Connections The bulletin board is in the shape of a square. Find two rational numbers that are within $\frac{1}{8}$ in. of the actual side length.

Soccer Tryouts
Saturday at the Athletic Field
4:30 to 6:00pm

Area = 150 square units

ATTENTION!

BAND CAMP
June 23 to June 28
Sign Up in the Caffeteria April 1
at 12:30

← x units →

15. Construct Arguments Tell whether each statement is *always true, sometimes true,* or *never true.* Explain.

a. An integer is a whole number.

b. A natural number is a rational number.

c. An irrational number is an integer.

PRACTICE

List all subsets of the real numbers from the list below that each number belongs to. **SEE EXAMPLE 1**

- real numbers
- irrational numbers
- rational numbers
- integers
- whole numbers

16. 10.5

17. $\frac{4}{7}$

18. 6

19. 0

20. $\sqrt{2}$

21. −29

Order the numbers shown from least to greatest.
SEE EXAMPLE 2

22. 3.5, $\frac{10}{3}$, $\sqrt{14}$

23. $\frac{1}{3}$, $0.1\overline{6}$, $\sqrt{\frac{1}{4}}$

Match each number to the letter that represents its position on the number line. **SEE EXAMPLE 2**

A   B   C   D
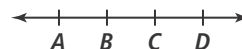
24. $-\sqrt{120}$

25. $-\sqrt{\frac{400}{4}}$

26. $-\frac{23}{2}$

27. −11.75

Determine whether each sum, difference, product, or quotient represents a rational number or an irrational number. Explain how you know without simplifying. **SEE EXAMPLES 3 AND 4**

28. $\frac{6}{23} - \frac{\sqrt{2}}{2}$

29. $\frac{6}{23} - \frac{15}{127}$

30. $\frac{6}{23} \div \frac{15}{127}$

31. $\frac{6}{23} \div \frac{\sqrt{2}}{2}$

32. Is the difference of two rational numbers always a rational number? Explain. **SEE EXAMPLE 3**

33. Is the quotient of a rational number and an irrational number always irrational? Explain. **SEE EXAMPLE 4**

PRACTICE & PROBLEM SOLVING

APPLY

34. Make Sense and Persevere Adam wraps the top edge of the gift box shown with gold ribbon.

Box Volume = **296 cm³**

8 cm

The top and bottom edges of the box are square. If Adam has $24\frac{1}{4}$ in. of gold ribbon, does he have enough to decorate the top of box?

35. Reason In statistics, *continuous data* can have values equal to any real number, such as the average temperature for an area or the number of inches of rainfall. Other sets of data are *discrete*. Examples of discrete data are the number of students in a school district, the number of home runs hit by a baseball team in a season, and the number of letters handled by the post office each month. Which subset of the real numbers is the best one to use to describe discrete data?

36. Make Sense and Persevere Helena builds a shed in her backyard. There is a larger section for large tools, like her lawn mower, and a smaller section for small tools. What is the length of the entire shed? What type of number is the length? List as many types of numbers for the length as you can.

? ft

A = 16 ft²

A = 50 ft²
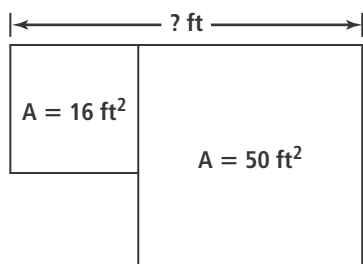
ASSESSMENT PRACTICE

37. Is 0.62473 a member of the set? For each set of real numbers, select *Yes* or *No*.

	Yes	No
natural numbers	❑	❑
whole numbers	❑	❑
integers	❑	❑
rational numbers	❑	❑
irrational numbers	❑	❑
real numbers	❑	❑

38. SAT/ACT What is the square root of $\sqrt{\frac{144}{256}}$?

Ⓐ $\frac{2}{3}$ Ⓑ $\frac{3}{4}$ Ⓒ $\frac{3}{16}$ Ⓓ $\frac{9}{4}$ Ⓔ $\frac{9}{16}$

39. Performance Task A basketball coach is considering three players for Most Valuable Player (MVP). The table shows the proportion of shots each player made of the shots they attempted.

Player	Free Throws	Field Goals (2 pts)	3-Point Shots
Martin	71%	49.5%	32%
Corey	$\frac{4}{5}$	$\frac{9}{20}$	$\frac{1}{3}$
Kimberly	0.857	0.448	0.338

Part A For a technical foul, the team can pick any player they want to shoot the free throw. Which player should the team pick? Explain.

Part B Which player is most successful with their field goal shots? Explain.

Part C Rank the players by the percentage of the 3-point shots each made.

Part D If all the players attempted the same number of shots, which player would you choose as the MVP? Justify your answer.

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