

Warm-up
Solve.
1) $3(x - 4) = .5$

Simplify.
2) $(3x - 5) - (-2x + 4)$

Explain.
3) List the steps you would take to solve and give 3 possible solutions to the inequality below:

$-2x - 6 > 18$

Oct 31-10:04 AM

Common Core State Standards

7.RP.2 Recognize and represent proportional relationships between quantities.

7.RP.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

Common Core State Standards

7.RP.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the unit rate as the complex fraction $\frac{1/2}{1/4}$ miles per hour, equivalently 2 miles per hour.

7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers.

Oct 31-10:35 AM

A ratio that compares two quantities of different measures is called a **rate**. Some examples of rates are below:

- *Driving 336 miles in 5 hours
- *Eating 3 pieces of pizza in 30 minutes
- *Doing 40 math problems in 52 minutes

<https://www.youtube.com/watch?v=blt87l-z48>

Oct 31-3:01 PM

Unit Rates

When you see a car advertisement, you may be told that the car will travel a certain number of miles per gallon of gas. In this example you are comparing two quantities with different units of measure: miles traveled and gallons of gas used.

When you compare one quantity with one measure to a single unit of the second quantity, you create a **unit rate**. The number of miles traveled per (one) gallon of gasoline is an example of unit rate. The denominator of a unit rate is always reduced to 1.

20 miles per gallon or $\frac{20 \text{ miles}}{1 \text{ gallon}}$

Oct 31-9:33 AM

Your family is taking a road trip to Nashville and renting a car to drive there. You are helping your parents find out the unit rate, or miles they can travel per gallon of gas. Nashville is about 420 miles away.

- ~If they choose a Ford Mustang, they will need 13.5 gallons of gas
- ~If they choose a Toyota Camry, they will need 11 gallons of gas
- ~If they choose a Jeep Wrangler, they will need 20 gallons of gas

*With your partner, set up 3 different ratios to find the unit rates for these cars.

420 miles/13.5 gallons = About 31 miles per gal.
420 miles/11 gallons = About 38 miles per gal.
420 miles/20 gallons = About 21 miles per gal.

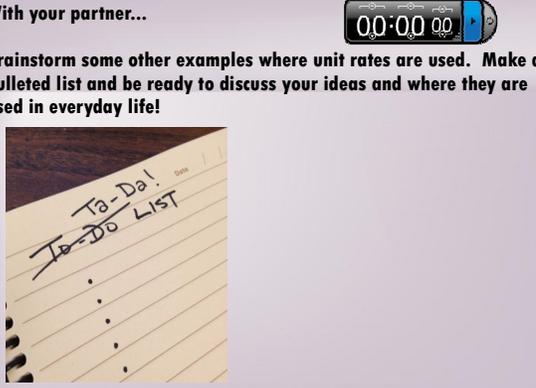
Move the cars to reveal the answers!



Oct 31-10:08 AM

With your partner...

Brainstorm some other examples where unit rates are used. Make a bulleted list and be ready to discuss your ideas and where they are used in everyday life!



Oct 31-10:07 AM

Give the unit rate for the following situations:

- *24 cans for \$8
- *175 beats in 2.5 minutes
- *560 students in 20 classes in 6th grade

<https://www.youtube.com/watch?v=kxRByQOwF4&list=PLD54221C6359DBC89>

<https://www.youtube.com/watch?v=iFh2VvM9iyM>

Oct 31-10:04 AM

Mrs. Reynolds loves Starbucks coffee. Today, while waiting to place her order for her non-fat white chocolate mocha without whipped topping, she noticed the prices for the three sizes that were available.

She could order:

		
Tall	Grande	Venti
12 oz	16 oz	20 oz
\$3.55	\$4.25	\$4.55

Part A
Which size is the better unit rate? _____

Part B
Use what you know about unit rates to explain how you determined your answer. Use words, numbers, and/or symbols in your explanation.

Nov 3-12:41 PM

Ticket Out!

Explain the difference between a rate and a unit rate and give an example of each.

Nov 14-11:17 AM

Warm-up

Find the unit rate.

1. A bird flew 58.5 miles in 3 hours
2. Mr. Edwards scored 97 points in 4 games
3. Mrs. Reinke paid \$4.28 for 12 apples
4. Mrs. Russell went to the grocery store with \$2.00 in her wallet. She wanted to know how many apples she could buy. Apples were on sale for \$5.50 a dozen. At this rate, how many apples can she buy?

Nov 7-1:20 PM

CCSS Common Core State Standards

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CCSS Common Core State Standards

7.RP.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2 ÷ 1/4 miles per hour, equivalently 2 miles per hour.*

7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers.

Oct 31-10:35 AM

Now let's talk about **COMPLEX FRACTIONS...**

Take a minute to brainstorm with your partner/group about what you think a **COMPLEX FRACTION** is...




Nov 4-9:58 AM

Try these 3 problems with your partner...

Simplify. (Examples 1 and 2)

1. $\frac{18}{\frac{3}{4}} =$ _____

2. $\frac{\frac{3}{6}}{4} =$ _____

3. $\frac{\frac{1}{3}}{\frac{1}{4}} =$ _____

Show your work!

Nov 4-11:21 AM

Let's apply complex fractions to unit rates...check out the examples below:

3. Josiah can jog $1\frac{1}{2}$ miles in $\frac{1}{4}$ hour. Find his average speed in miles per hour.

4. Tia is painting her house. She paints $34\frac{1}{2}$ square feet in $\frac{3}{8}$ hour. At this rate, how many square feet can she paint each hour?

Hint: What you are finding one of, almost always comes after the word "per" or "each"

Nov 4-11:19 AM

Try these on your own...

Remember...

- *Identify what you are finding one of (that will be your denominator!)
- *Simplify or divide the complex fraction to find a unit rate
- *Check to see if you answer makes sense!

e. Mr. Ito is spreading mulch in his yard. He spreads $4\frac{2}{3}$ square yards in 2 hours. How many square yards can he mulch per hour?

f. Aubrey can walk $4\frac{1}{2}$ miles in $1\frac{1}{2}$ hours. Find her average speed in miles per hour.

Nov 4-11:25 AM

5. A county sales tax is $6\frac{2}{3}\%$. Write the percent as a fraction in simplest form. (Example 5) _____

What steps would we need to take to solve the problem above? Brainstorm and create a plan of action with your partner, then try to solve!



Nov 4-1:38 PM

Ticket Out

1. $\frac{\frac{1}{4}}{\frac{7}{10}} =$

2. $15\frac{3}{5}\% =$

3. Doug entered a canoe race. He rowed $3\frac{1}{2}$ miles in $\frac{1}{2}$ hour. What is his average speed in miles per hour? (Examples 3 and 4)

Nov 4-1:34 PM