School Home Letter

Module 3: Understand Addition and Subtraction of Rational Numbers

Dear Family,

During the next 6 school days, we will be learning how to use a number line to add and subtract positive and negative rational numbers.

Along the way, ask about these concepts. When students explain or show how to solve a problem, it helps them make sense of the mathematics and deepens their understanding. Go to the *Family Resources* and use digital resources with your child to learn together.

Vocabulary

Addition Property of Opposites
additive inverse

Lesson		Family Resources Online Support
3.1	Add or Subtract a Positive Integer on a Number Line	Interactive Reteach, Lesson 3.1
3.2	Add or Subtract a Negative Integer on a Number Line	More Practice/Homework, Problem 2, Math on the Spot Video
3.3	Use a Number Line to Add and Subtract Rational Numbers	Interactive Reteach, Lesson 3.3

Home Activity

Research to find the record high and low temperatures for a variety of locations around the world. Be sure to include locations that have negative temperatures. Working with your child, use an actual thermometer, an online thermometer, or a drawing of a thermometer to represent and find the difference in the temperatures for each location.

Carta a la familia

Módulo 3: Comprende la suma y resta de números racionales

Estimada familia:

Durante los próximos 6 días escolares, aprenderemos a usar una recta numérica para sumar y restar números racionales positivos y negativos.

En ese tiempo, pregunten acerca de estos conceptos. Cuando los estudiantes explican o muestran cómo resolver un problema, les ayuda a encontrarles sentido a las matemáticas y a profundizar su comprensión. Ingrese en *Recursos para la familia*y utilice los recursos digitales con su hijo(a) para estudiar juntos.

Vocabulario

Propiedad de la Suma de los Opuestos
inverso aditivo

Lección		Apoyo en línea para recursos familiares
3.1	Suma o resta un entero positivo en una recta numérica	Refuerzo interactivo, Lección 3.1
3.2	Suma o resta un entero negativo en una recta numérica	Más práctica/Tarea, Problema 2, Video de Matemáticas al instante
3.3	Usa una recta numérica para sumar y restar números racionales	Refuerzo interactivo, Lección 3.3

Actividad para la casa

Busque el récord de temperaturas altas y bajas en distintos lugares alrededor del mundo. Asegúrese de incluir lugares donde se registren temperaturas negativas. Ayude a su hijo(a) a usar un termómetro real, un termómetro en línea o el dibujo de un termómetro para representar y calcular la diferencia en las temperaturas de cada ubicación.

Carta da Escola para Casa

Módulo 3: Entender a adição e subtração de números racionais

Prezada Família,

Durante os próximos seis dias de aulas, aprenderemos a usar uma linha de números para adicionar e subtrair números racionais positivos e negativos.

Enquanto isso, pergunte sobre esses conceitos. Quando os alunos explicam ou mostram como resolver um problema, isto os ajuda a compreender a matemática e aprofunda sua compreensão. Vá para *Recursos da Família* e use os recursos digitais com seu filho/sua filha para que aprendam juntos.

Vocabulário

Propriedade dos opostos da adição

Lição		Recursos da Família - Suporte Online
3.1	Adicionar ou subtrair um número inteiro positivo em uma linha de números	Reensino interativo, Lição 3.1
3.2	Adicionar ou subtrair um número inteiro negativo em uma linha de números	Mais Prática/Dever de Casa, Problema 2, Vídeo "Math on the Spot"
3.3	Usar uma linha de números para adicionar e subtrair números racionais	Reensino interativo, Lição 3.3

Atividade de casa

Pesquise para encontrar as temperaturas mais altas e baixas de vários locais ao redor do mundo. Não deixe de incluir locais que tenham temperaturas negativas. Trabalhando com seu filho, use um termômetro real, um termômetro da internet ou um desenho de um termômetro para representar e encontrar a diferença das temperaturas para cada local.

Lèt Lekòl Voye Lakay Elèv

Modil 3: Konprann Adisyon ak Soustraksyon Nonb Rasyonèl

Chè Fanmi,

Nan 6 pwochen jou lekòl k ap vini yo, nou pral aprann kijan pou itilize yon liy nimerik pou adisyone epi soustrè nonb rasyonèl pozitif ak negatif.

Etan n ap aprann, poze kesyon sou konsèp sa yo. Lè elèv yo esplike oswa montre kijan pou rezoud yon pwoblèm, li ede yo konprann Matematik epi apwofondi konpreyansyon yo. Ale nan *Resous Fanmi yo* epi itilize resous dijital ak pitit ou a pou nou aprann ansanm.

Vokabilè

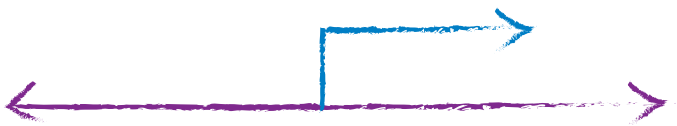
Pwopriyete Adisyon pou Opoze yo

Leson		Sipò pou Resous Fanmi Sou Entènèt
3.1	Adisyone oswa Soustrè yon Nonb Antye Relatif Pozitif sou yon Liy Nimerik	Re-ansèyman Entè-aktif Leson 3.1
3.2	Adisyone oswa Soustrè yon Nonb Antye Relatif Negatif sou yon Liy Nimerik	Plis Pratik/Devwa Pou Fè Lakay, Pwoblèm 2, Videyo "Math on the Spot"
3.3	Itilize yon Liy Nimerik pou Adisyone epi Soustrè Nonb Rasyonèl	Re-ansèyman Entè-aktif Leson 3.3

Aktivite pou Fè Lakay

Fè rechèch pou jwenn relve tanperati ki wo ak ba pou yon varyete sit atravè lemonn. Asire w li gen ladan sit ki genyen tanperati negatif. Nan travay avèk pitit ou a, itilize yon vre tèmomèt, yon tèmomèt sou entènèt, oswa desen yon tèmomèt pou reprezante epi jwenn diferans nan tanperati pou chak sit.

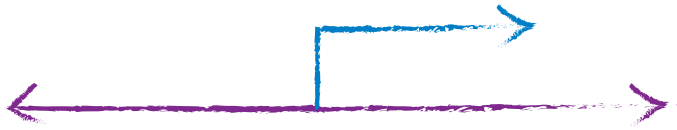
Adding & Subtracting Rational Numbers



Adding a positive number

Subtracting a positive number

Adding a negative number



Subtracting a negative number

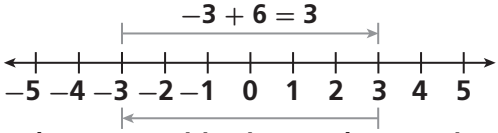
Add or Subtract a Positive Integer on a Number Line

A number line can be used to add or subtract a positive integer.

To **add** a positive integer on a number line, begin at the first addend and count forward by the second addend.

To **subtract** a positive integer, begin at the minuend and count back by the subtrahend.

Add a positive integer by counting forward on the number line.



Subtract a positive integer by counting back on the number line.

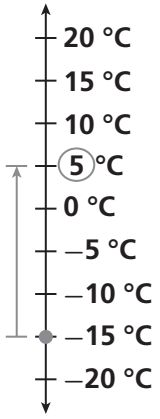
3 − 6 = −3

In the morning, the temperature was −15 °C. During the day, the temperature rose 20 °C. What is the temperature now?

A. Begin at the first addend. Make a mark on the number line at −15 °C.

B. Count forward by the second addend. Draw an arrow to represent counting forward by 20. Circle the ending number.

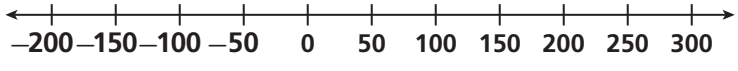
C. Use what you did to answer the question. The temperature now is 5 °C.



Use the number line. Solve. Draw to show what you did.

1. Erin buys a used boat for $1,200. She had an unused fishing reel that she gave to the seller who gave her a discount of $100. She also purchased a used motor for the boat for $400. How much did Erin pay for her boat and its motor?

2. Russell deposited $200 to open a new bank account before he paid $250 for his portion of the rent. His bank charged him a $50 overdraft fee. Then he deposited his paycheck of $400. How much money is in Russell's account now?



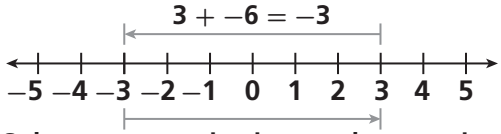
Add or Subtract a Negative Integer on a Number Line

A number line can be used to add or subtract a negative integer.

When using a number line, the negative sign in front of the integer is an indicator to move in the **opposite** direction than you would for a positive number.

To **add** a negative integer, begin at the first addend and count back by the second addend.

Add a negative integer by counting back on the number line.

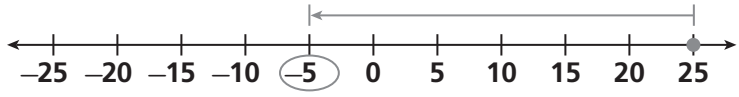


Subtract a negative integer by counting forward on the number line.

−3 − −6 = 3

To **subtract** a negative integer, begin at the minuend and count forward by the subtrahend.

Kayla is playing a game in which players spin a spinner and add the number of points shown on the spinner to their score. On her next turn, Kayla starts with 25 points and spins −30. How many points does Kayla have now?



A. Begin at Kayla's starting score. Make a mark on the number line at 25.

B. Count back by the negative amount being added. Draw an arrow to represent counting back by 30. Circle the ending number.

C. Use what you did to answer the question. Kayla has −5 points.

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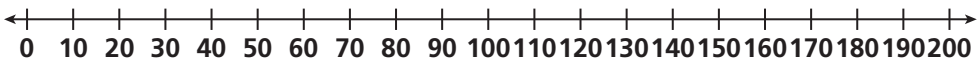
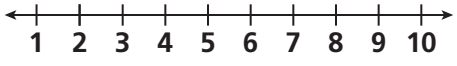
1. Luis has $80 in his checking account. He makes a deposit of $100, and then writes a check for $40. Then he uses his check card to buy a bicycle for $40 and makes a withdrawal of $70 at an ATM. Use the number line and complete the equation to find his final balance.



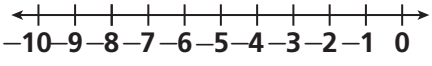
80 + ____ + _____ + _____ + _____ = ___

Use a number line to add or subtract.

2. 3 − (−4) = _____



3. −7 + (−3) = _____

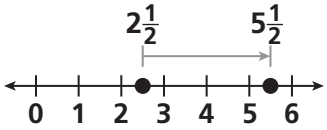


Use a Number Line to Add and Subtract Rational Numbers

A number line can be used to add and subtract rational numbers.

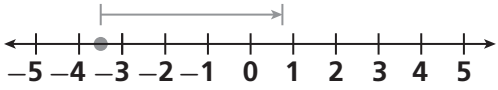
Decimal fractions (0.25) and **common fractions** $\left(\frac{1}{4}\right)$ are rational numbers.

Not all rational numbers will have tick marks on the number line. In some cases, you will have to use your knowledge of rational numbers to know where the rational number appears on the number line.



$2\frac{1}{2} + 3 = 5\frac{1}{2}$

Use a number line to add: $-3\frac{1}{2} + 4\frac{1}{4}$



A. Begin at the first addend. Make a mark on the number line at $-3\frac{1}{2}$.

B. Count forward by the second addend. Draw an arrow to represent counting forward by $4\frac{1}{4}$. Draw an ending line and label the point on the number line.

C. Use what you did to write the sum. $\frac{3}{4}$

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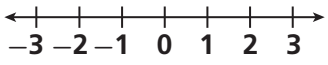
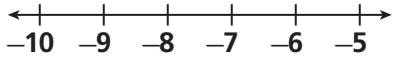
1. A ball falls from the ground into a pit that is 2.5 feet deep, and then bounces to a height of 2.5 feet above ground. Use the number line to complete the expression that represents the situation.



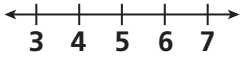
$0 + -2\frac{1}{2} + \_\_\_\_\_ = 2\frac{1}{2}$

Use a number line to add or subtract.

2. $(-7.5) + (-2.5) = \_\_\_\_\_$



3. $6\frac{1}{4} - 2\frac{3}{4} = \_\_\_\_\_$



School Home Letter

Module 4: Add and Subtract Rational Numbers

Dear Family,

During the next 8 school days, we will be learning how to add and subtract positive and negative rational numbers, and we will solve real-world problems using these operations.

Along the way, ask about these concepts. When students explain or show how to solve a problem, it helps them make sense of the mathematics and deepens their understanding. Go to the *Family Resources* and use digital resources with your child to learn together.

Lesson		Family Resources Online Support
4.1	Compute Sums of Integers	More Practice/Homework, Problem 3, Math on the Spot Video
4.2	Compute Differences of Integers	More Practice/Homework, Problems 4–6, Math on the Spot Video
4.3	Compute Sums and Differences of Rational Numbers	Interactive Reteach, Lesson 4.3
4.4	Apply Properties to Multi-step Addition and Subtraction Problems	Interactive Reteach, Lesson 4.4

Home Activity

Use the business section from a newspaper or go online to find the opening and closing prices for six different stocks on a recent day. Include three stocks whose prices went up and three stocks whose prices went down. Work with your child to find the amount by which each stock's price changed. Discuss how to use negative and positive rational numbers to describe the price changes.

Carta a la familia

Módulo 4: Suma y resta números racionales

Estimada familia:

Durante los próximos 8 días escolares, aprenderemos a sumar y restar números racionales positivos y negativos, y resolveremos problemas del mundo real usando estas operaciones.

En ese tiempo, pregunten acerca de estos conceptos. Cuando los estudiantes explican o muestran cómo resolver un problema, les ayuda a encontrarles sentido a las matemáticas y a profundizar su comprensión. Ingrese en *Recursos familiares*y utilice los recursos digitales con su hijo(a) para aprender juntos.

Lección		Apoyo en línea para recursos familiares
4.1	Calcula las sumas de enteros	Más práctica/Tarea, Problema 3, Video de Matemáticas al instante
4.2	Calcula las restas de enteros	Más práctica/Tarea, Problemas 4, 5 y 6, Video de matemáticas al instante
4.3	Calcula las sumas y las restas de los números racionales	Refuerzo interactivo, Lección 4.3
4.4	Aplica las propiedades a problemas de suma y resta de varios pasos	Refuerzo interactivo, Lección 4.4

Actividad para la casa

Utilice la sección comercial de un periódico o consulte en internet para buscar los precios de apertura y de cierre de seis acciones diferentes en un día reciente. Incluya tres acciones cuyos precios subieron y tres acciones cuyos precios bajaron. Calcule con su hijo(a) el importe por el cual cambió el precio de cada acción. Analice cómo usar números racionales positivos y negativos para describir los cambios de precios.

Carta da Escola para Casa

Módulo 4: Adicionar e subtrair números racionais

Prezada Família,

Durante os próximos oito dias de aulas, aprenderemos a adicionar e subtrair números racionais positivos e negativos, e resolveremos problemas do mundo real usando estas operações.

Enquanto isso, pergunte sobre esses conceitos. Quando os alunos explicam ou mostram como resolver um problema, isto os ajuda a compreender a matemática e aprofunda sua compreensão. Vá para *Recursos da Família* e use os recursos digitais com seu filho para que aprendam juntos.

Lição		Recursos da Família - Suporte Online
4.1	Calcular somas de inteiros	Mais Prática/Dever de Casa, Problema 3, Vídeo "Math on the Spot"
4.2	Calcular diferenças de inteiros	Mais Prática/Dever de Casa, Problemas 4-6, Vídeo "Math on the Spot"
4.3	Calcular somas e diferenças de números racionais	Reensino interativo, Lição 4.3
4.4	Aplicar propriedades a problemas de adição e subtração com múltiplas etapas	Reensino interativo, Lição 4.4

Atividade de casa

Use a seção de negócios de um jornal ou vá à internet para encontrar os preços de abertura e fechamento de diferentes ações em um dia recente. Inclua três ações cujos preços subiram e três ações cujos preços caíram. Trabalhe com seu filho para encontrar o valor da variação de cada preço. Discuta como usar números racionais negativos e positivos para descrever as mudanças nos preços.

Lèt Lekòl Voye Lakay Elèv

Modil 4: Adisyone epi Soustrè Nonb Rasyonèl

Chè Fanmi,

Nan 8 pwochen jou lekòl k ap vini yo, nou pral aprann kijan pou adisyone epi soustrè nonb rasyonèl pozitif ak negatif, epi nou pral rezoud pwoblèm lavi reyèl lè w itilize operasyon sa yo.

Etan n ap aprann, poze kesyon sou konsèp sa yo. Lè elèv yo esplike oswa montre kijan pou rezoud yon pwoblèm, li ede yo konprann Matematik epi apwofondi konpreyansyon yo. Ale nan *Resous Fanmi yo* epi itilize resous dijital ak pitit ou a pou nou aprann ansanm.

Leson		Sipò pou Resous Fanmi Sou Entènèt
4.1	Kalkile Sòm Nonb Antye Relatif	Plis Pratik/Devwa Pou Fè Lakay, Pwoblèm 3, Videyo "Math on the Spot"
4.2	Kalkile Diferans Nonb Antye Relatif	Plis Pratik/Devwa Pou Fè Lakay, Pwoblèm 4-6, Videyo "Math on the Spot"
4.3	Kalkile Sòm ak Diferans Nonb Rasyonèl	Re-ansèyman Entè-aktif Leson 4.3
4.4	Aplike Pwopriyete nan Pwoblèm Adisyon ak Soustraksyon ki gen Plizyè Etap	Re-ansèyman Entè-aktif Leson 4.4

Aktivite pou Fè Lakay

Itilize seksyon biznis nan yon jounal oswa ale sou entènèt pou jwenn pri ouvèti ak fèmti pou sis diferan estòk nan yon jou resaman. Mete ladan twa estòk ki gen pri ki monte epi twa estòk ki gen pri ki desann. Travay avèk pitit ou pou jwenn montan ki egal ak chanjman nan pri estòk la. Diskite sou kijan pou itilize nonb rasyonèl negatif ak pozitif pou dekri chanjman nan pri yo.

Add and Subtract Rational Numbers

Rational Numbers

Can be expressed as a fraction with **NONZERO** denominator.

$\frac{3}{4}$ -1.5 0 $-\frac{1}{3}$ -12

Integers
positive & negative whole numbers and zero
... -3, −2, −1, 0, 1, 2, 3, ...

Operations with Signed Numbers

Adding

Same sign: Add their absolute values, use the same sign for the sum.

Different signs: Subtract their absolute values, use the sign of the one with greater absolute value for the difference.

Subtracting

To subtract, add the opposite.

Properties of Addition

Commutative	$2 + 5 = 5 + 2$
Associative	$4 + (9 + 11) = (4 + 9) + 11$
Identity	$-24 + 0 = -24$
Inverse	$12 + (-12) = 0$

Real-World Applications for Adding & Subtracting Rational Numbers:

change in temperature
gain/loss money
gain/loss points
gain/loss yardage
earn/spend money
change in elevation

Compute Sums of Integers

To add integers, first look at the signs of the addends. If the signs are the same, add as you would with whole numbers. If the addends are positive, the sum will be positive. If the addends are negative, the sum will be negative.

Adding Integers

Adding integers with the same signs: Add the absolute value of both numbers and use the sign of the addends.

Adding integers with different signs: Subtract the absolute value of both numbers and use the sign of the addend with the greater absolute value.

If the signs are different, the sum will have the sign of the addend with the greater **absolute value**. Absolute value is the distance a number is from 0 on a number line. For example, the absolute value of -3 is 3 because -3 is 3 units from 0.

A golfer is 6 strokes under par in the first round. In the second round, she shoots 3 strokes over par. Write an addition sentence to show this and find her total score.

A. Write an addition expression. $-6 + 3$

B. Compare the absolute values of the addends to determine the sign of the sum. Because $|-6| > |3|$, the sum is negative.

C. Find the sum. $-6 + 3 = -3$

Solve.

1. The greatest temperature ever recorded in the United States occurred at an elevation of 178 feet below sea level. The greatest temperature ever recorded in Africa occurred at an elevation of 545 feet greater than in the United States. At what elevation, in feet, did the greatest temperature in Africa occur?

_____

Find each sum.

2. $-18 + 12 =$ _____

3. $37 + (-64) =$ _____

4. $-26 + (-19) =$ _____

Compute Differences of Integers

Subtracting Integers

If subtracting a positive integer, the difference will be less than the minuend.

If subtracting a negative integer, the difference will be greater than the minuend.

To subtract integers, rewrite the problem as addition using the opposite of the subtrahend. Then add using the rules for adding integers. Opposites are a positive and a negative number that are the same distance from 0 on a number line.

A quarterback rushes for 24 yards in his first game. In his second game, he rushes for 36 fewer yards. How many yards does he rush in the second game?

A. Write a subtraction expression. 24 (minuend) − 36 (subtrahend)

B. Rewrite as addition using the opposite of the subtrahend. $24 - 36 = 24 + (-36)$

C. Find the sum. $24 + (-36) = -12$ yards

Solve.

1. A diver is at an elevation of 18 feet below sea level. He descends another 16 feet. Write and evaluate a subtraction expression to determine the new position of the diver.

_____

2. The high temperature was 6 °C and the low temperature was −8 °C on Monday. Write and evaluate a subtraction expression to determine the difference between the high and low temperature.

_____

Write each subtraction expression as an equivalent addition expression and evaluate it.

3. $-21 - (-14) =$

_____

4. $-15 - (-27) =$

_____

5. $19 - 32 =$

_____

6. $-28 - 16 =$

_____

Compute Sums and Differences of Rational Numbers

To add and subtract rational numbers, follow the same rules as for adding and subtracting integers.

For addition of numbers with different signs, the sum will have the sign of the addend with the greater absolute value.

For subtraction, rewrite the problem as addition using the opposite of the subtrahend.

The temperature inside Scott's refrigerator is 3.6 °C. The temperature inside Scott's freezer is 19.5 °C cooler. What is the temperature, in °C, inside Scott's freezer?

A. Write a subtraction expression. $3.6 - 19.5$

B. Rewrite as addition using the opposite of the subtrahend. $3.6 + (-19.5)$

C. Find the sum. $3.6 + (-19.5) = -15.9$ °C

Solve.

1. Nora jogs $4\frac{1}{4}$ miles on Monday. She jogs $1\frac{1}{2}$ miles fewer on Tuesday. Write and evaluate an addition expression to find how many miles Nora jogs on Tuesday.

_____

2. The shallow end of a swimming pool is 3.75 feet below the pool's surface. The deep end of the pool is 5.75 feet deeper. Write and evaluate a subtraction expression to find the depth of the deep end of the swimming pool.

_____

3. Alex bought a T-shirt for $24.25. This week, the T-shirt costs $5.95 less. Write and evaluate an addition expression to find the this week's cost of the T-shirt.

_____

Evaluate the expression.

4. $\frac{5}{12} + \left(-\frac{3}{4}\right)$ _____

5. $-7.16 - (-10.51)$ _____

6. $-3\frac{2}{3} - \frac{5}{6}$ _____

7. $-6.84 + 4.97$ _____

Apply Properties to Multi-Step Addition and Subtraction Problems

The properties of addition can be used to add and subtract rational numbers.

The **Commutative Property of Addition** states that the order of the addends does not change the sum. The **Associative Property of Addition** states that the way the addends are grouped does not change the sum.

Emily rides her bike each of the first 5 days of her vacation. She bikes the following distances, in miles, each day: $8\frac{3}{4}$, 12.45, $10\frac{1}{2}$, $7\frac{7}{8}$, and 15.6. What is her total mileage?

A. Use the Commutative Property to rearrange the addends.

$8\frac{3}{4} + 12.45 + 10\frac{1}{2} + 7\frac{7}{8} + 15.6 =$
$8\frac{3}{4} + 10\frac{1}{2} + 7\frac{7}{8} + 12.45 + 15.6$

B. Use the Associative Property to group the addends.

$8\frac{3}{4} + 10\frac{1}{2} + 7\frac{7}{8} + 12.45 + 15.6 =$
$\left(8\frac{3}{4} + 10\frac{1}{2} + 7\frac{7}{8}\right) + (12.45 + 15.6)$

C. Add inside each pair of parentheses.

$27\frac{1}{8} + 28.05$

D. Rename the first addend as a decimal and add.

$27\frac{1}{8} + 28.05 = 27.125 + 28.05 = 55.175$ miles

Solve.

1. The precipitation, in inches, Tampa normally receives each month for the last four months of the year is as follows: 6.3, $2\frac{3}{10}$, 1.6, and $2\frac{1}{2}$. Write and evaluate an expression to determine how much precipitation, in inches, Tampa receives from September through December.

_____

_____

Evaluate the expression.

2. $4.7 + (-7.2 - (-3.4))$

_____

3. $-2\frac{3}{4} - 4\frac{7}{10} + 2.6 - (-1.9)$

_____

4. $8\frac{1}{2} - (-3.68) + \left(-2\frac{5}{8}\right)$

_____

School Home Letter

Module 5: Multiply and Divide Rational Numbers

Dear Family,

During the next 6 school days, we will be learning how to multiply and divide positive and negative integers, fractions, and decimals.

Along the way, ask about these concepts. When students explain or show how to solve a problem, it helps them make sense of the mathematics and deepens their understanding. Go to the *Family Resources* and use digital resources with your child to learn together.

Lesson		Family Resources Online Support
5.1	Understand Multiplication and Division of Rational Numbers	Interactive Reteach, Lesson 5.1
5.2	Multiply Rational Numbers	Interactive Reteach, Lesson 5.2
5.3	Write Fractions as Decimals and Divide Integers	Interactive Reteach, Lesson 5.3
5.4	Multiply and Divide Rational Numbers in Context	More Practice/Homework, Problem 1, Math on the Spot Video

Home Activity

Discuss a somewhat expensive item of interest to your child, such as a skateboard or a video game. Work together to find the cost of the item (preferably not a whole dollar amount). Then ask, "If you wanted to buy the item in 5 weeks, how much money would you have to save each week?" Repeat for various lengths of time, and use multiplication to check the answers.

Carta a la familia

Módulo 5: Multiplica y divide números racionales

Estimada familia:

Durante los próximos 6 días escolares, aprenderemos a multiplicar y dividir número enteros positivos y negativos, fracciones y decimales.

En ese tiempo, pregunten acerca de estos conceptos. Cuando los estudiantes explican o muestran cómo resolver un problema, les ayuda a encontrarles sentido a las matemáticas y a profundizar su comprensión. Ingrese en *Recursos familiares*y utilice los recursos digitales con su hijo(a) para aprender juntos.

Lección		Apoyo en línea para recursos familiares
5.1	Comprende la multiplicación y la división de números racionales	Refuerzo interactivo (Lección 5.1)
5.2	Multiplica números racionales	Refuerzo interactivo (Lección 5.2)
5.3	Escribe fracciones como decimales y divide enteros	Refuerzo interactivo (Lección 5.3)
5.4	Multiplica y divide números racionales en contexto	Más práctica/Tarea, Problema 1, Video de Matemáticas al instante

Actividad para la casa

Hable con su hijo(a) sobre un artículo que le interese y que sea relativamente costoso, como una patineta o un videojuego. Calculen juntos el costo del artículo (preferentemente que no sea un importe entero en dólares). Luego pregúntele: «Si quisieras comprar el artículo en 5 semanas, ¿cuánto dinero deberías ahorrar por semana?» Repita el ejercicio con diferentes períodos de tiempo y use la multiplicación para controlar las respuestas.

Carta da Escola para Casa

Módulo 5: **Multiplicar e dividir números racionais**

Prezada Família,

Durante os próximos seis dias de aulas, aprenderemos a multiplicar e dividir números inteiros positivos e negativos, frações e decimais.

Enquanto isso, pergunte sobre esses conceitos. Quando os alunos explicam ou mostram como resolver um problema, isto os ajuda a compreender a matemática e aprofunda sua compreensão. Vá para *Recursos da Família* e use os recursos digitais com seu filho para que aprendam juntos.

Lição		Recursos da Família - Suporte Online
5.1	Entender multiplicação e divisão de números racionais	Reensino interativo, Lição 5.1
5.2	Multiplicar números racionais	Reensino interativo, Lição 5.2
5.3	Escrever frações e decimais e dividir números inteiros	Reensino interativo, Lição 5.3
5.4	Multiplicar e dividir números racionais no contexto	Mais Prática/Dever de Casa, Problema 1, Vídeo "Math on the Spot"

Atividade de casa

Discuta um item mais ou menos caro que seja de interesse de seu filho, como uma prancha de skate ou um vídeo game. Trabalhem juntos para encontrar o custo do item (de preferência, um valor com dólares e centavos). Em seguida, "Se você quisesse comprar o item em 5 semanas, quanto dinheiro você teria de poupar por semana?" Repita para vários períodos de tempo e use multiplicação para conferir as respostas.

Lèt Lekòl Voye Lakay Elèv

Modil 5: Miltipliye epi Divize Nonb Rasyonèl

Chè Fanmi,

Nan 6 pwochen jou lekòl k ap vini yo, nou pral aprann kijan pou nou miltipliye epi divize nonb antye relatif pozitif ak negatif, fraksyon ak desimal.

Etan n ap aprann, poze kesyon sou konsèp sa yo. Lè elèv yo esplike oswa montre kijan pou rezoud yon pwoblèm, li ede yo konprann Matematik epi apwofondi konpreyansyon yo. Ale nan *Resous Fanmi yo* epi itilize resous dijital ak pitit ou a pou nou aprann ansanm.

Leson		Sipò pou Resous Fanmi Sou Entènèt
5.1	Konprann Miltiplikasyon ak Divizyon Nonb Rasyonèl	Re-ansèyman Entè-aktif Leson 5.1
5.2	Miltipliye Nonb Rasyonèl yo	Re-anséyman Enté-aktif Leson 5.2
5.3	Ekri Fraksyon antanke Desimal epi Divize Nonb Antye Relatif	Re-ansèyman Entè-aktif Leson 5.3
5.4	Miltipliye epi Divize Nonb Rasyonèl nan Kontèks	Plis Pratik/Devwa Pou Fè Lakay, Pwoblèm 1, Videyo "Math on the Spot"

Aktivite pou Fè Lakay

Diskite sou yon atik ki relativman chè ke pitit ou renmen, tankou yon esketbòd oswa yon jwèt videyo. Travay ansanm pou jwenn pri atik la (de preferans ki pa yon montan dola antye). Apresa mande, "Si ou ta vle achte atik la nan 5 semèn, konbyen kòb ou dwe ekonomize chak semèn?" Repete kesyon an avèk plizyè kantite tan diferan, epi itilize miltiplikasyon pou verifye repons yo.

Multiplication and Division Rules

Same sign:

The product or quotient is positive.

Examples:

$(-5)(-4) = 20$ $\quad -28 \div (-7) = 4$

Different signs:

The product or quotient is negative.

Examples:

$(-6)(3) = -18$ $\quad 81 \div (-9) = -9$

Even number of negatives:

The product or quotient is positive.

Examples:

$(-7)(6)(-2) = 84$ $\quad -50 \div (-2) \div 5 = 5$

Odd number of negatives:

The product or quotient is negative.

Examples:

$(-4)(-2)(-1) = -8$ $\quad -42 \div 7 \div 3 = -2$

Multiply and Divide Rational Numbers

When multiplying rational numbers, the signs of the factors determine the sign of the product.

Products of Rational Numbers		
Sign of factor p	Sign of factor q	Sign of product pq
+	−	−
−	+	−
+	+	+
−	−	+

The same rules apply for dividing p by q.

Determine the sign of the product.

$4(-2)$

Sign of first factor: positive

Sign of second factor: negative

Sign of product: negative

Identify the sign of the product or quotient without calculating the value of the expression.

1. $584 \times (-34)$ _____

2. $-564 \times (-71)$ _____

3. -62×83 _____

4. $-297 \div (-45)$ _____

5. $415 \div (-65)$ _____

6. $7{,}730 \div 82$ _____

7. $-6{,}142 \div 22$ _____

8. -881×207 _____

9. $-213 \times (-814)$ _____

Multiply Rational Numbers

When multiplying three or more rational numbers, use the Commutative Property and the Associative Property to make the multiplication easier.

$(-5)(3)(-6) = (-15)(-6)$
$= 90$

$(8)(-7)(5) = (8)(5)(-7)$
$= (40)(-7)$
$= -280$

Make sure to use the rules for the sign of the product of rational numbers to write the products with the correct sign.

A. Find the product.

$\left(\frac{2}{3}\right)(-7)(9) = \left(\frac{2}{3}\right)(9)(-7)$
$= (6)(-7)$
$= -42$

B. Explain how you used the Commutative Property or the Associative Property to make the multiplication easier.

It is easier to multiply a fraction with a denominator of 3 by a number that is divisible by 3, so I used the Commutative Property to change the order of 9 and -7.

Find each product.

1. $(-4)(7)(-2)$ _____

2. $(-2)(6)(5)$ _____

3. $(-3)(-4)(-2)(6)$ _____

4. $(9)(-0.6)(-4)$ _____

5. $(3)(0.\ 1)(-15)$ _____

6. $(8)(-0.2)(0.5)(4)$ _____

7. $(-15)\left(\frac{1}{4}\right)(-2)$ _____

8. $(-4)\left(-\frac{2}{5}\right)\left(-\frac{1}{2}\right)$ _____

9. $\left(-\frac{1}{3}\right)\left(-\frac{3}{5}\right)\left(-\frac{2}{3}\right)$ _____

Write Fractions as Decimals and Divide Integers

You can use long division to convert a fraction to a decimal.

$\frac{5}{8} = 5 \div 8$

$$\begin{array}{r} 0.625 \\ 8\overline{)\,5.000} \\ -48 \\ \hline 20 \\ -16 \\ \hline 40 \\ -40 \\ \hline 0 \end{array}$$

$\frac{5}{8} = 0.625$

Write $-\frac{14}{3}$ as a decimal. The negative sign may be placed with either the numerator or the denominator.

$-\frac{14}{3} = -14 \div 3 = 4.\overline{6}$

$$\begin{array}{r} -4.66 \\ -3\overline{)\,14.00} \\ -12 \\ \hline 20 \\ -18 \\ \hline 2 \end{array}$$

Express each fraction or quotient as a decimal.

1. $\frac{2}{5}$ _____

2. $\frac{7}{8}$ _____

3. $\frac{8}{9}$ _____

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

5. $5\frac{3}{4}$ _____

6. $12\frac{2}{15}$ _____

7. $-\frac{8}{5}$ _____

8. $-4\frac{3}{4}$ _____

9. $-\frac{17}{3}$ _____

10. $27 \div -8$ _____

11. $-50 \div -11$ _____

12. $-23 \div 25$ _____

Multiply and Divide Rational Numbers in Context

The altitude of an airplane changes −12,600 feet in 35 minutes. What is the change in altitude in one minute?

Change in Altitude in One Minute = Change in Altitude ÷ Time

= −12,600 ÷ 35

= −360

The altitude changes −360 feet every minute.

Bart is cooking chicken. He checks the internal temperature of the chicken and finds the temperature is 120 °F. He checks the temperature again 20 minutes later and it is 165 °F. What is the change in temperature in one minute?

A. Write a model for the problem and solve.

Change in Temperature in One Minute
= Total Change in Temperature ÷ Time

= (165 − 120) ÷ 20

= 45 ÷ 20

= 2.25

B. Restate your answer. The temperature changes 2.25 °F every minute.

---

1. Denise makes 21 quarts of ice cream. She stores the ice cream in containers that hold $1\frac{3}{4}$ quarts of ice cream. How many containers does she need?

_____

2. Mara is draining her swimming pool. The depth of the water in the pool changes by $-\frac{3}{4}$ foot every hour. The depth of the water was 5 feet when she started draining. What is the depth of the water after 5 hours?

_____

3. A scientist drops a probe in the water. The depth of the probe changes $-1\frac{1}{2}$ feet every second. How many seconds will it take for the probe to reach the bottom at a depth of −114 feet?

_____

School Home Letter

Module 6: Solve Multi-step Problems Using Rational Numbers

Dear Family,

During the next 4 school days, we will be learning how to apply properties, strategies, and estimation to solve problems with rational numbers, including real-world problems.

Along the way, ask about these concepts. When students explain or show how to solve a problem, it helps them make sense of the mathematics and deepens their understanding. Go to the *Family Resources* and use digital resources with your child to learn together.

Lesson		Family Resources Online Support
6.1	Apply Properties and Strategies to Operate with Rational Numbers	Interactive Reteach, Lesson 6.1
6.2	Estimate to Check Reasonableness	Interactive Reteach, Lesson 6.2
6.3	Solve Multi-step Problems with Rational Numbers in Context	More Practice/Homework, Problem 1, Math on the Spot Video

Home Activity

Together, choose a rectangular wall in your home and measure its width and height. Imagine that you will buy wallpaper to cover this wall. First, use estimation to determine how many square feet of wallpaper to buy. (If necessary, measure to find the areas of any doors or windows that will not be covered.) Then, using the exact measurements, find how much wallpaper you will have left over after covering the wall.

Carta a la familia

Módulo 6: Resuelve problemas de varios pasos con números racionales

Estimada familia:

Durante los próximos 4 días escolares, aprenderemos a aplicar propiedades, estrategias y estimaciones para resolver problemas con números racionales, incluidos problemas del mundo real.

En ese tiempo, pregunten acerca de estos conceptos. Cuando los estudiantes explican o muestran cómo resolver un problema, les ayuda a encontrarles sentido a las matemáticas y a profundizar su comprensión. Ingrese en *Recursos familiares*y utilice los recursos digitales con su hijo(a) para aprender juntos.

Lección		Apoyo en línea para recursos familiares
6.1	Aplica las propiedades y estrategias para operar con números racionales	Refuerzo interactivo (Lección 6.1)
6.2	Estima para comprobar la razonabilidad	Refuerzo interactivo (Lección 6.2)
6.3	Resuelve problemas de varios pasos con números racionales en contexto	Más práctica/Tarea, Problema 1, Video de Matemáticas al instante

Actividad para la casa

Juntos elijan una pared rectangular en su hogar y midan el ancho y la altura. Imaginen que van a comprar papel para empapelar esa pared. Primero, use la estimación para calcular cuántos pies cuadrados de papel debe comprar. (Si fuese necesario, mida las áreas de las puertas o ventanas que no estarán cubiertas). Luego, usando las medidas exactas, calcule cuánto papel le sobrará después de cubrir la pared.

Carta da Escola para Casa

Módulo 6: Resolver problemas de várias etapas usando números racionais

Prezada Família,

Durante os próximos quatro dias de aulas, aprenderemos a aplicar propriedades, estratégias e estimativas, para resolver problemas com números racionais, incluindo problemas do mundo real.

Enquanto isso, pergunte sobre esses conceitos. Quando os alunos explicam ou mostram como resolver um problema, isto os ajuda a compreender a matemática e aprofunda sua compreensão. Vá para *Recursos da Família* e use os recursos digitais com seu filho para que aprendam juntos.

Lição		Recursos da Família - Suporte Online
6.1	Aplicar propriedades e estratégias para operar com números racionais	Reensino interativo, Lição 6.1
6.2	Estimar para verificar a razoabilidade	Reensino interativo, Lição 6.2
6.3	Resolver problemas de várias etapas com números racionais no contexto	Mais Prática/Dever de Casa, Problema 1, Vídeo "Math on the Spot"

Atividade de casa

Juntos, escolham uma parede retangular na sua casa e meça sua largura e altura. Imagine que você vai comprar papel de parede para cobrir esta parede. Primeiro, use estimativa para determinar quantos pés quadrados de papel de parede comprar. (Se necessário, meça para encontrar as áreas de quaisquer portas ou janelas que não serão cobertas.) Em seguida, usando as medidas exatas, descubra quanto papel de parede vai sobrar depois que você cobrir a parede.

Lèt Lekòl Voye Lakay Elèv

Modil 6: Rezoud Pwoblèm ki gen Plizyè Etap Lè w Itilize Nonb Rasyonèl

Chè Fanmi,

Nan 4 pwochen semèn lekòl k ap vini yo, nou pral aprann kijan pou nou aplike pwopriyete, estrateji epi estimasyon pou rezoud pwoblèm avèk nonb rasyonèl, ki gen ladan pwoblèm lavi reyèl.

Etan n ap aprann, poze kesyon sou konsèp sa yo. Lè elèv yo esplike oswa montre kijan pou rezoud yon pwoblèm, li ede yo konprann Matematik epi apwofondi konpreyansyon yo. Ale nan *Resous Fanmi yo* epi itilize resous dijital ak pitit ou a pou nou aprann ansanm.

Leson		Sipò pou Resous Fanmi Sou Entènèt
6.1	Aplike Pwopriyete ak Estrateji pou Fonksyone avèk Nonb Rasyonèl	Re-ansèyman Entè-aktif Leson 6.1
6.2	Fè Estimasyon pou Tcheke Rezonabilite	Re-ansèyman Entè-aktif Leson 6.2
6.3	Rezoud Pwoblèm ki gen Plizyè Etap avèk Nonb Rasyonèl nan Kontèks	Plis Pratik/Devwa Pou Fè Lakay, Pwoblèm 1, Videyo "Math on the Spot"

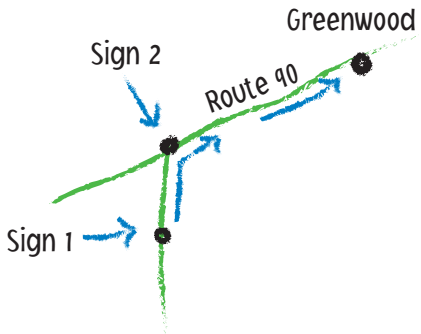
Aktivite pou Fè Lakay

Ansanm, chwazi yon mi rektangilè nan kay ou epi mezire lajè ak wotè li. Imajine ou pral achte papye penti pou kouvri mi sa a. An premye, itilize estimasyon pou detèmine konbyen pye kare papye penti pou w achte. (Si li nesesè, mezire pou jwenn sipèfisi nenpòt pòt oswa fenèt ki pa p kouvri.) Apresa, itilize mezi egzat, jwenn ki kantite papye penti w ap rete apre w fin kouvri mi an.

Converting Forms

Sign 1
Route 90
$2\frac{1}{2}$ mi

Sign 2
Greenwood
7.9 mi

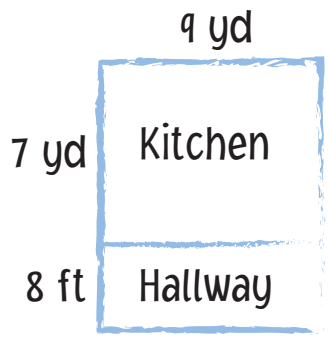


How far is it from Sign 1 to Greenwood and back?

$2\frac{1}{2} + 7.9 + 7.9 + 2\frac{1}{2}$
$= 2.5 + 7.9 + 7.9 + 2.5$
$= 2(2.5 + 7.9)$
$= 2(10.4)$
$= 20.8$ mi

Converting Units

How many square yards of flooring are needed to cover the kitchen and hallway?



Convert 8 feet to yards.

$8\,\text{ft}\left(\frac{1\text{ yd}}{3\,\text{ft}}\right) = \frac{8}{3}$ yd

Flooring needed:

$A = 9(7 + \frac{8}{3}) = 9 \cdot 7 + 9 \cdot \frac{8}{3}$
$= 63 + 24 = 87$ yd^2

Order of Operations

$7(3 + 5)^2 + 64 \div 2^3 - 72 \div (5 - 8)$
$= 7(8)^2 + 64 \div 2^3 - 72 \div (-3)$ ← Parentheses
$= 7(64) + 64 \div 8 - 72 \div (-3)$ ← Exponents
$= 448 + 8 - (-24)$ ← Mult. + Div. (left → right)
$= 448 + 8 + 24 = 480$ ← Add + Subt. (left → right)

Estimating for Reasonableness

Overestimate - Better to overestimate the amount of paint needed than to run out of paint

Underestimate - Better to underestimate the distance you can travel on a tank of gas than to run out before reaching your destination

Apply Properties and Strategies to Operate with Rational Numbers

The properties of addition and multiplication can be used to evaluate expressions with multiple operations. The properties allow for an expression to be broken into smaller pieces that can often be solved mentally.

Evaluate. $\frac{3}{8}\left(-\frac{2}{3}\right) \cdot \frac{3}{2}\left(-\frac{3}{4} + \frac{1}{2}\right)$

A. Use the Associative Property of Multiplication. $\frac{3}{8}\left(-\frac{2}{3} \cdot \frac{3}{2}\right)\left(-\frac{3}{4} + \frac{1}{2}\right)$

B. Use the Inverse Property of Multiplication. $= \frac{3}{8}(-1)\left(-\frac{3}{4} + \frac{1}{2}\right)$

C. Use the Identity Property of Multiplication. $= -\frac{3}{8}\left(-\frac{3}{4} + \frac{1}{2}\right)$

D. Add. $= -\frac{3}{8}\left(-\frac{1}{4}\right)$

E. Multiply. $= \frac{3}{32}$

Solve.

1. Caroline scored 8 more than three times the number of points that Kamila scored. Kamila scored 8 fewer points than Megan who scored 40 points.

A. Write and evaluate an expression that shows the number of points Kamila scored.

_____

B. Use the number of points Kamila scored to write and evaluate an expression for the number of points Caroline scored.

_____

2. Greg has $\frac{1}{4}$ as many songs on his computer as Mark. Raj has 6 fewer than 60% of the songs that Mark has. Mark has 720 songs on his computer. Write and evaluate an expression that shows the number of songs that the group has.

_____

Estimate to Check Reasonableness

Use estimation to check that answers are reasonable.

Ellie says the value of $-6.23 \cdot \frac{16}{5} + \frac{47}{8}$ is -14.061. Estimate using compatible numbers to determine if Ellie's answer is reasonable. Is your estimate an overestimate or an underestimate?

A. Round -6.23 to the nearest integer. -6.23 rounds to -6.

B. Use compatible numbers to round each fraction greater than 1 to the nearest whole. $\frac{16}{5}$ rounds to 3 and $\frac{47}{8}$ rounds to 6.

C. Rewrite the expression using the compatible numbers. Then evaluate. $-6 \cdot 3 + 6 = -12$

D. Compare. The estimate is -12, which is an overestimate, because $-6 > -6.23$. Since 6 is an overestimate of $\frac{47}{8}$, the estimate must be an overestimate.

Solve.

1. The Drama Club sold 415 matinee tickets to the school play for $7.95 each. Eighteen of those tickets were refunded. Estimate the ticket sales. Is your estimate an overestimate or an underestimate?

_____

_____

_____

2. For one of the evening performances, 84 student tickets and 60 adult tickets were sold. Student tickets cost $6.25 and adult tickets cost $9.25. Estimate the amount made from tickets sold. Is your estimate an overestimate or an underestimate?

_____

_____

_____

3. Linn evaluated $(40.2)(\frac{1}{8}) + (2.1)(-\frac{56}{5})$ and said the answer was 18.495. Is Linn's answer reasonable? Estimate using compatible numbers.

_____

_____

Solve Multi-step Problems with Rational Numbers in Context

To solve multi-step problems, break the problem into smaller parts. It may be necessary to rename numbers to put them into the same form.

Stella types a report for 1.2 hours at an average rate of 47.5 words per minute. Rich's paper was the same number of words as Stella's. Rich can type 38 words per minute. How long did it take Rich to type his report?

A. Multiply to find the number of minutes in 1.2 hours. $60(1.2) = 72$ minutes

B. Multiply to find the number of words in Stella's report. $72(47.5) = 3{,}420$ words

C. Divide to find the length of the time it took Rich to write the paper, in minutes. $\frac{3{,}420}{38} = 90$ minutes $= 1.5$ hours

---

Solve.

1. The distance between two train stops is 160 miles. The train will travel $\frac{3}{4}$ mile per minute. How long will it take the train to reach its destination?

A. What will be the train's speed in miles per hour?

_____

B. How many hours will it take the train to reach its destination? Round to the nearest tenth hour, if necessary.

_____

2. The value of a vinyl record that Katie purchased in 2016 was $42.20. The value of the record was expected to increase by 3.25% per year. How much more is the projected value of the record in 2018 than 2017? Use the compound interest formula $A = P(1 + r)^t$.

_____

3. A soccer team has 2 sports coolers that hold 5 gallons each. Coach Fenimore has 12-fluid-ounce cups for the team to drink from. How many 12-fluid-ounce cups can be filled?

_____