كتيب مراجعة نهاية الفصل



تم تحميل هذا الملف من موقع المناهج الإماراتية
موقع المناهج ⇦ المناهج الإماراتية ⇦ الصف السادس ⇦ رياضيات ⇦ الفصل الأول ⇦ ملفات متنوعة ⇦ الملف
تاريخ إضافة الملف على موقع المناهج: 2026-11-13 20:20:22

المزيد من مادة رياضيات:	ملفات ا كتب للمعلم ا كتب للطالب ا اختبارات الكترونية ا اختبارات ا حلول ا عروض بوربوينت ا أوراق عمل منهج انجليزي ا ملخصات وتقارير ا مذكرات وبنوك ا الامتحان النهائي ا للمدرس

التواصل الاجتماعي بحسب الصف السادس

صفحة المناهج الإماراتية على فيسبوك					
المواد على تلغرام	التربية الاسلامية	اللغة العربية	اللغة الانجليزية	الرياضيات	

المزيد من الملفات بحسب الصف السادس والمادة رياضيات في الفصل الأول

1	المتقدم السادس Math EOT 6 Advanced questions
2	هيكل 6 متقدم ريفيل
3	تجميع هيكل ريفيل 2027 مع حل
4	تجميع هيكل ريفيل 2027 بدون حل
5	تجميع هيكل مع الحل - منهج عربي - 2027

تحميل تطبيق المناهج للهواتف الذكية

تطبيق المناهج على App Store (آبل)	تطبيق المناهج على Play Google (أندرويد)

7 u T M T –T 1 T

· Ntu · u uN N u N 7 u uN m N ut T P T 7T u N u N uN7 u
u N u (u –

– u N uN7 N us 7u – x uu u u – 7N7 N

fi fi fi fW – fv fi fi _ ft fi fi
fi – fW fv fi fi fi _ fi fW fv –

N u6 s N 6

7 T M– M 7 MT

T fi 7T M 7 M– t u N Nt Nu

us 7u ff M M– T M– ff– PT TT M –-T – X 7– T T T T T M–

p 6 2 N u
l mq0 q

Example 2 Part-to-Whole Ratios

A florist is arranging flowers in vases to sell to her customers. She has two sizes of vases available: small and large. She wants the large vase to have the same ratio of flowers as the small vase.

If the large vase has a total of 36 flowers, how many are tulips?

Small Vase	
Flower	Quantity
Carnations	6
Sunflowers	2
Tulips	4

M T

Check

Refer to the table in Example 2. If the large vase has a total of 36 flowers, how many are carnations?

qffTR

l q -q W

1. In Suri's coin purse, she has 6 dimes and 4 quarters. Martha has 5 dimes and 3 quarters. Suri thinks that the ratio of dimes to quarters in both purses is the same because they each have 2 more quarters than dimes. Is the same ratio of dimes to quarters maintained? Justify your response. (Example 1)

2. In a trivia game, Levi answered 8 questions correctly out of 10 turns in the game. He then answered the next three questions correctly. He reasoned that because he added 3 to both the total questions and his correct responses, that the ratio of correct answers to total questions remained the same. Is he correct? Justify your response. (Example 1)

3. Riley needs to make fruit punch for the family reunion. One batch of punch has the ingredients shown. If the punch bowl holds 27 cups, how many cups of orange juice will she need to keep the ratio in a full punch bowl the same? (Example 2)

Item	Cups
Cranberry Juice	4
Lemon Lime Soda	1
Orange Juice	2
Pineapple Juice	2

4. A small fruit basket contains the fruits shown. A large basket has the same ratio of fruits as the small basket. If the large basket has 42 total pieces of fruit, how many are pears? (Example 2)

Type of Fruit	Amount
Apple	6
Orange	5
Pear	3

W

us 7u ff M M– T M– ff– PT TT M –-T – X 7– T T T T T M–

p 6 _ 2 N u –

l mq0 q t

Example 3 Part-to-Part Ratios

A bakery sells fresh-baked muffins, sold in small or large boxes. The manager of the bakery wants to maintain the same ratio of each type of muffin in the large box as in the small box.

If the large box contains 9 chocolate muffins, how many blueberry muffins are in the large box?

Small Box	
Muffin	Quantity
Blueberry	2
Cinnamon	1
Chocolate	3

M T

Check

Refer to the table in Example 3. If the large box contains 9 chocolate muffins, how many cinnamon muffins are in the large box?

qffTR

l q -q- v

5. Mrs. Santiago is buying doughnuts for her office. Each box contains 6 glazed, 4 cream filled, and 2 chocolate flavored doughnuts. If there were 20 total cream filled doughnuts, how many chocolate doughnuts did she buy? (Example 3)

6. A small batch of trail mix contains 2 cups of raisins, 2 cups of peanuts, 1 cup of sunflower seeds, and 1 cup of chocolate coated candies. A large batch has the same ratio of ingredients as a small batch. If the large batch has 8 cups of peanuts, how many cups of sunflower seeds are in a large batch? (Example 3)

v

Test Practice

7. Open Response A football coach needs to divide 48 players into two groups. He wants the ratio of players in Group 1 to players in Group 2 to be 1 to 3. How many players will be in Group 2?

T fi MP T u – MT M– t u N Nt Nu

us 7u ff M M– T M– ff– PT TT M –T – X MP T uT – MT M– M 7 7 P T PT – T

p 6 – 2 N u

l mq0 q v

Example 1 Scale Forward to Find Equivalent Ratios

M T

To make yellow icing, Amida mixes 6 drops of yellow food coloring with 2 cups of white icing.

How many drops of yellow food coloring should Amida mix with 8 cups of white icing to get the same shade of yellow?

Check

qffTR

In a batch of trail mix, there are 3 tablespoons of peanuts for every 2 tablespoons of sunflower seeds. How many tablespoons of sunflowers seeds are needed if you have 18 tablespoons of peanuts?

l q -q

Use any strategy to solve each problem.

1. Jayden's snow cone machine makes 3 snow cones from 0.5 pound of ice. How many snow cones can be made with 5 pounds of ice? (Example 1)

2. Nyoko is having a pizza party. Two large pizzas serve 9 people. How many large pizzas should she order to serve 36 guests at the party? (Example 1)

W us 7u ff M M– T M– ff– PT TT M –T – X MPT uT – MT M– M 7 7 PT PT – T

p 6 2 N u n _

W l mq0 q

Example 2 Scale Backward to Find Equivalent Ratios

Akeno mixes three sample containers of yellow paint with four sample containers of red paint to create his favorite shade of orange paint. His little sister Aiko wants to create the same shade of orange paint, but she only has two sample containers of red paint.



What should Aiko do to create the same shade of orange paint?

M T

Check

To make three loaves of banana bread, you need 9 bananas. How many bananas are needed to make one loaf of banana bread?

qffTR

W l mq0 q

Example 3 Scale in Both Directions

Natasha made raspberry punch for a party by mixing 9 fluid ounces of fruit punch, 3 liters of soda, and 6 scoops of raspberry ice cream. Halfway through the party, the punch bowl was empty.

If Natasha only has 6 fluid ounces of fruit punch left, how much ice cream does she need to make another batch of punch?

M T

Check

Refer to Example 3. How many liters of soda should Natasha mix with the 6 fluid ounces of fruit punch?

qffTR

W l q -q- t

3. The world record for the most number of speed skips in 60 seconds is 332 skips. If the record holder skipped at a constant ratio of seconds to skips, how many skips did she make in 15 seconds? (Example 2)

4. A recipe for homemade clay calls for 6 cups of water for every 12 cups of flour. How many cups of water are needed when 4 cups of flour are used? (Example 2)

W

W

5. Adrian decorated 16 cupcakes in 28 minutes. If he continues at this pace, how many minutes will it take him to decorate 56 cupcakes? (Example 3)

6. A comic book store is having a sale. You can buy 20 comic books for $35. What is the cost of 8 comic books during the sale? (Example 3)

v

W

Test Practice

7. A certain store is selling packages of 10 pencils and 4 pens for back to school. The store manager wants to make a larger package in the same ratio. If the large package has 10 pens, how many pencils are in the large package? (Example 4)

8. Open Response Ben made trail mix for his camping trip that contained 8 ounces of peanuts, 6 ounces of raisins, and 10 ounces of chocolate candies. He wants to make a larger batch for his next camping trip with 28 ounces of peanuts. How many ounces of raisins will he need?

t

T fi w M ff u – MT M– t u N Nt Nu

x uu u u T T T MR TR– uT – MT M– M 7T T7 M– w M ff M M– T M– ff– ffT R 7– MT M T

p 6 2 N u

I W

Example 1 Graph Ratio Relationships

Tamara is making charm bracelets for several friends. She uses 6 beads for every charm.

Generate the set of ordered pairs for the ratio relationship between the number of beads *y* and the number of charms *x* for a total of 1, 2, 3, and 4 charms. Then graph the relationship.

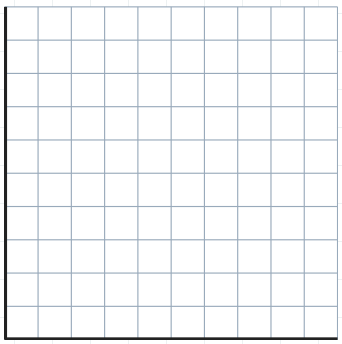
Part A Create a table of ordered pairs.

Let the *x*-coordinates represent the number of charms and the *y*-coordinates represent the number of beads.

Charms, *x*	Beads, *y*
1	6
2	
3	
4	

Part B Graph the ordered pairs on the coordinate plane.

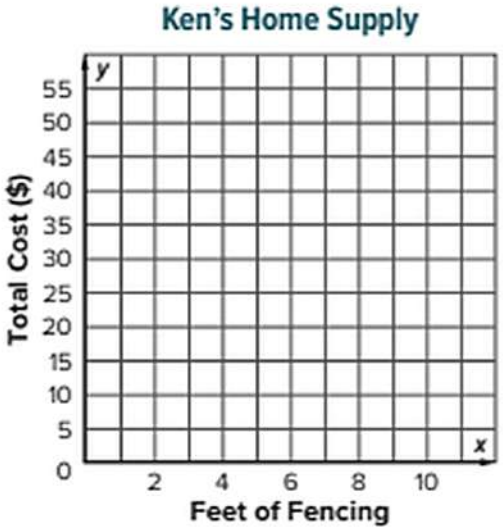
M 1



q0 q W

Check

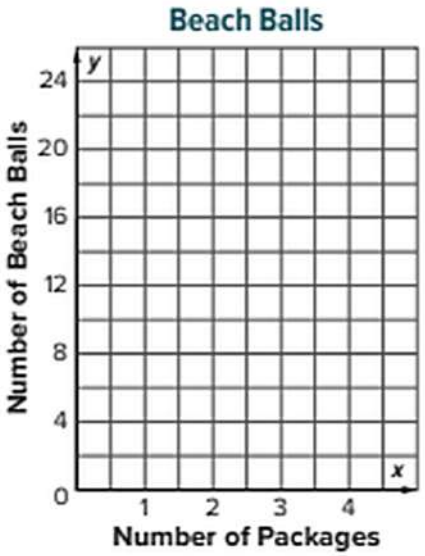
Ken's Home Supply sells fencing that costs $14 for every 3 feet. Generate the set of ordered pairs for the ratio relationship between the cost *y* and the number of feet of fencing *x* for a total of 3, 6, 9, and 12 feet of fencing. Then graph the relationship.



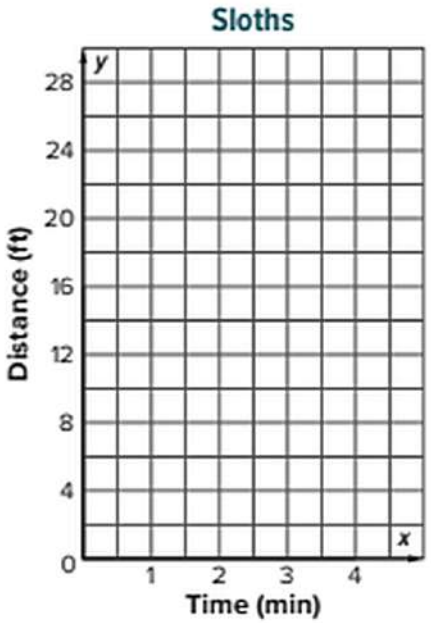
qffTR

l q -ɕ

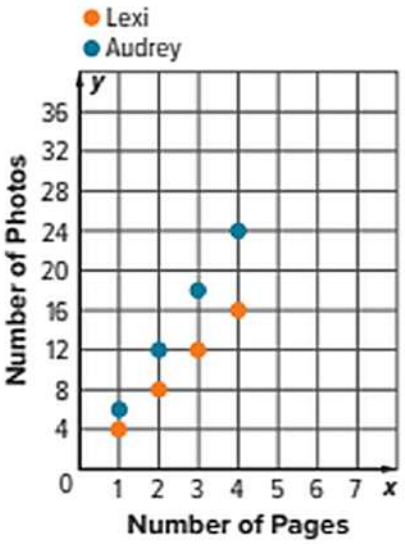
1. Lulah is buying beach balls for her beach themed party. Each package contains 6 beach balls. Generate the set of ordered pairs for the ratio relationship between the number of beach balls *y* and the number of packages *x* for a total of 1, 2, 3, and 4 packages. Then graph the relationship on the coordinate plane and describe the pattern in the graph. (Examples 1 and 2)



2. A sloth travels about 7 feet every minute. Generate the set of ordered pairs for the ratio relationship between the total distance traveled *y* and the number of minutes *x* for a total of 1, 2, 3, and 4 minutes. Then graph the relationship on the coordinate plane and describe the pattern in the graph. (Examples 1 and 2)



3. Two friends are making scrapbooks. The number of photos Lexi and Audrey place on each page of their scrapbooks is shown in the graph. Describe the ratio relationship for each person.



Learn Use Tables to Compare Ratio Relationships

Another way to compare ratio relationships is to use tables. For example, a comparison of three smoothie recipes shows that Recipe A has a blueberry to strawberry ratio of 8 to 2, Recipe B has a ratio of 5 to 1, and Recipe C has a ratio of 10 to 3. You can use tables of equivalent ratios to determine which recipe has the greatest ratio of blueberries to strawberries.

Recipe A

Blueberries	8	16	24
Strawberries	2	4	6

Recipe B

Blueberries	5	10	15	20	25	30
Strawberries	1	2	3	4	5	6

Recipe C

Blueberries	10	20	30
Strawberries	3	6	9

Use scaling to write equivalent ratios for each recipe. You can compare the ratios when one of the quantities in each relationship is the same.

Recipe B has a ratio of 30 blueberries for every 6 strawberries, followed by Recipe A with a ratio of 24 to 6, and Recipe C with a ratio of 20 to 6. So, Recipe B has the greatest ratio of blueberries to strawberries.

T

I

Example 2 Use Tables to Compare Ratio Relationships

Roman is considering different bird seeds to fill his bird feeder. Measured in ounces, Recipe A has a sunflower seed to peanut ratio of 2 to 3, Recipe B has a ratio of 3 to 4, and Recipe C has a ratio of 5 to 6.

Which recipe has the greatest ratio of ounces of sunflower seeds to ounces of peanuts?

Step 1 Create a ratio table for each recipe. Find equivalent ratios to compare the relationships.

Recipe A

Sunflower Seeds (oz)	2			
Peanuts (oz)	3			

Recipe B

Sunflower Seeds (oz)	3			
Peanuts (oz)	4			

Recipe C

Sunflower Seeds (oz)	5			
Peanuts (oz)	6			

M T

v q0 q

Check

When working on homework, Bailey spends 15 minutes reading for every 20 minutes spent on math, Aisha spends 12 minutes reading for every 15 minutes of math, and Tyler spends 7 minutes reading for every 10 minutes of math. Which person has the greatest ratio of minutes spent on reading to minutes spent on math?

Bailey

Reading (min)						
Math (min)						

Aisha

Reading (min)						
Math (min)						

Tyler

Reading (min)						
Math (min)						

qffTR

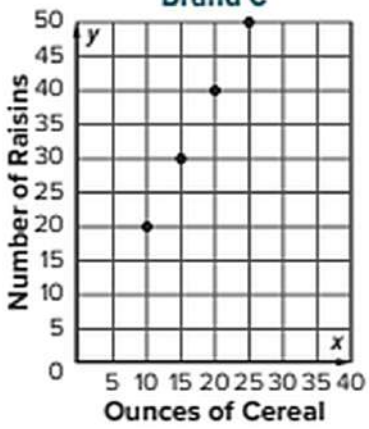
v lq -ɵ v

1. Cereal Brand A advertises that they have 60 raisins in their 24-ounce box of cereal. The advertised ratio of raisins to ounces for two other cereal brands are shown in the table and graph. Which brand advertises the greatest ratio of raisins to ounces of cereal? Justify your response. (Example 1)

Brand B

Ounces of Cereal	6	12	20	24
Raisins	18	36	60	72

Brand C



2. At the gym, Alex spends 24 minutes doing resistance training for every 30 minutes spent doing cardio exercises, Carisa spends 15 minutes on resistance for every 20 minutes on cardio, and Manuel spends 14 minutes on resistance for every 15 minutes on cardio. Which person has the greatest ratio of minutes spent on resistance to minutes spent on cardio? (Example 2)

Alex

Resistance (min)			
Cardio (min)			

Carisa

Resistance (min)			
Cardio (min)			

Manuel

Resistance (min)			
Cardio (min)			

v

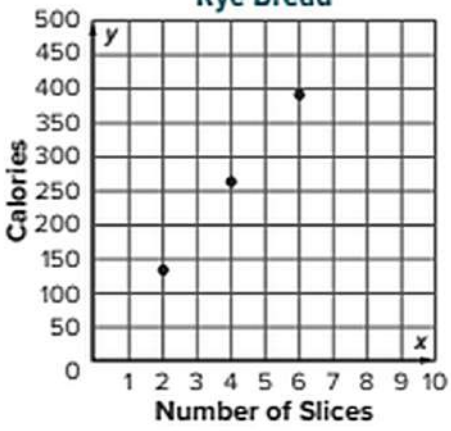
Test Practice

3. Open Response Mrs. Quinto is comparing the Calories in different types of bread. Wheat bread has 150 Calories for every 2 slices. The Calories in two other types of bread are shown in the table and graph. Which bread has the greatest ratio of Calories to slices?

White Bread

Slices	Calories
2	160
4	320
6	480

Rye Bread



T fiv T M– P T t u N Nt Nu

x uu u u T TMfi 7 P T – – X M– T M– ff– P – X PM 7-MK M S7 P T PT – T SM 7 T – MT M–

p 6 – _
l q -q t W

Use any strategy to solve each problem. (Examples 1–3)

1. A survey showed that 4 out of 5 students own a bicycle. Based on this result, how many of the 800 students in a school own a bicycle?

2. A survey of Mr. Thorne's class shows that 5 out of 8 students will buy lunch today. Based on this result, how many of the 720 students in the school will buy today?

3. The ratio of the number of baskets made by Tony to the number of baskets made by Colin is 2 to 3. Tony made 10 baskets. How many baskets did Colin make?

4. In the school choir, there is 1 boy for every 4 girls. There are a total of 11 boys. How many girls are in the choir?

W

5. Liberty Middle School has 600 students. In Anna's class, 3 out of 8 students walk to school. How many students at the school can be expected to walk to school?

v

6. Pine Hill Middle School has 300 students. In Zoey's class, 2 out of 5 students belong to a club. How many students at the school would you expect belong to a club?

Test Practice

7. In a survey, the ratio of students who prefer popcorn to potato chips is 3 to 4. If the number of students surveyed who prefer popcorn is 360, how many preferred potato chips?

8. Open Response In a neighborhood, the ratio of houses with swing sets to houses without swing sets is 3 to 5. If the number of houses with swing sets is 270, how many houses do not have swing sets?

t

T fi q T q M TM T T – t u N Nt Nu

us 7u T M– TM – X R T PT TT R M – u TM T T

p 6 _ uN n 2 N u —

I W W I s

Learn Convert Larger Units to Smaller Units

You can use reasoning about ratios to convert a measurement from a larger unit to a smaller unit. The numerical value of the measurement is greater when a smaller unit is used. To see why, consider the following problem. Suppose you want to know how many fluid ounces are in 6 pints.

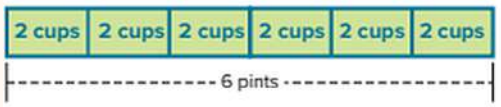
Method 1 Use a bar diagram.

Step 1 Draw a bar to represent 6 pints.



Divide the bar into six equal sections. Each section represents 1 pint.

Step 2 Find the number of cups.



Label each section as 2 cups, because there are 2 cups for every 1 pint.

Step 3 Find the number of fluid ounces.



For every 1 cup, there are 8 fluid ounces. This means that for every 2 cups, there are 16 fluid ounces.

Multiply 6 by 16 to find the number of fluid ounces that are in 6 pints. Because $6 \times 16 = 96$, there are 96 fluid ounces in 6 pints.

Method 2 Use unit ratios and equivalent ratios.

Step 1 Convert 6 pints to cups.

There are 2 cups in every 1 pint. The unit ratio of cups to pints is 2 : 1. Let c represent the unknown number of cups that are in 6 pints.

cups → $\frac{2}{1} = \frac{c}{6}$ ← cups
pints → pints

$\times 6$

$\frac{2}{1} = \frac{12}{6}$

$\times 6$

Because $1 \times 6 = 6$, multiply 2 by 6 to find the value of c. There are 12 cups.

Step 2 Convert 12 cups to fluid ounces.

There are 8 fluid ounces in every 1 cup. The unit ratio of fluid ounces to cups is 8 : 1. Let f represent the unknown number of fluid ounces.

fluid ounces → $\frac{8}{1} = \frac{f}{12}$ ← fluid ounces
cups → cups

$\times 12$

$\frac{8}{1} = \frac{96}{12}$

$\times 12$

Because $1 \times 12 = 12$, multiply 8 by 12 to find the value of f. There are 96 fluid ounces.

Using either method, there are _____ fluid ounces in 6 pints.

T

l W mq0 q v

Example 1 Convert Larger Units to Smaller Units

Marco needs to mix $\frac{1}{2}$ gallon of fertilizer with some soil before planting his tulip bulbs.

How many cups of fertilizer should Marco use?

M T

Check

How many ounces are in $\frac{1}{4}$ pound?

qffTR

us 7u T M– TM – X R T PT TT R M – u TM T T

p 6 – – uN n 2 N u —

l v v l s

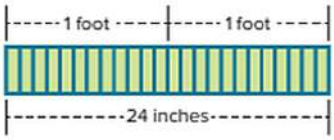
Learn Convert Smaller Units to Larger Units

You can use reasoning about ratios to convert a measurement from a smaller unit to a larger unit. The numerical value of the measurement is less when a larger unit is used. To see why, consider the following problem. Suppose you want to convert 24 inches to yards.

Method 1 Use a bar diagram.

Step 1 Find the number of feet.

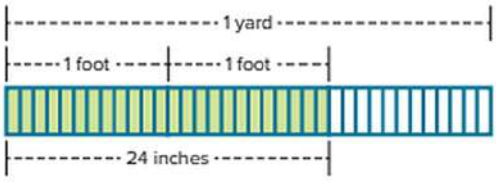
Draw a bar with 24 equal sections to represent 24 inches. For every 12 inches, there is 1 foot. Mark equal increments of 12 inches.



There are 2 whole feet in 24 inches.

Step 2 Find the number of yards.

For every 3 feet, there is 1 yard. There are only 2 feet. Another foot is needed to have 1 whole yard.



There are only two out of three sections shaded. So, there are 24 inches in $\frac{2}{3}$ yard.

Method 2 Use unit ratios and equivalent ratios.

Step 1 Convert 24 inches to feet.

There are 12 inches in every 1 foot. The unit ratio of inches to feet is 12 : 1. Let f represent the unknown number of feet.

inches → $\frac{12}{1} = \frac{24}{f}$ ← inches
feet → feet

$\frac{12}{1} \overset{\times 2}{=} \frac{24}{2}$

Because $12 \times 2 = 24$, multiply 12 by 2 to find the value of f. There are 2 feet.

Step 2 Convert 2 feet to yards.

Because there are 3 feet in every 1 yard, and there are only 2 feet, the number of yards is $\frac{2}{3}$.

So, using either method, there are 24 inches in $\frac{2}{3}$ yard.

T

l mq0 q v

Example 2 Convert Smaller Units to Larger Units

M T

A male hippopotamus can weigh as much as 9,920 pounds.

How much is this weight in tons?

Check

qffTR

How many yards are in 54 inches?

m us 7u MR-RT

p 6 —

m l q -q vv

Use any strategy to solve each problem. (Examples 1 and 2)

1. Mrs. Menary made $4\frac{1}{2}$ quarts of lemonade for a school party. How many fluid ounces of lemonade did she make?

2. A class walked 2.5 miles for a walk-a-thon. How many yards did the class walk?

m

3. The Martinez family has $\frac{3}{4}$ gallon of orange juice in the refrigerator. How many cups of orange juice are in the refrigerator?

4. A grand piano can weigh $\frac{1}{2}$ ton. How many ounces can a grand piano weigh?

W

m

5. A female hippopotamus can weigh 48,000 ounces. How many tons can a female hippopotamus weigh?

6. At soccer practice, Tracey's best kick traveled a distance of 1,200 inches. For how many yards did she kick the ball?

v

m

7. An elephant can drink up to 6,400 fluid ounces of water a day. How many gallons of water can an elephant drink per day?

8. A recipe for ice cream calls for 56 fluid ounces of milk. How many pints of milk are there in the recipe?

t

m

Test Practice

9. One quart of strawberries weighs about 2 pounds. About how many quarts of strawberries would weigh $\frac{1}{4}$ ton?

10. Open Response A mini fruit juice box contains 4 fluid ounces of juice. You need $2\frac{1}{2}$ quarts of fruit juice. How many mini fruit juice boxes will you need?

T fi 7T M 7 MT M 7 – MT t u N Nt Nu

t us 7u 7T M 7 ff M MT– T MT7 M M–

p 6 – –_ uN

t l v vt l s

Learn Understand a Rate and a Unit Rate

Luciana ran 4 laps around the track at her middle school in a total of 6 minutes. Suppose she ran at a constant speed. The bar diagram represents the relationship between the number of minutes and the number of laps.



The ratio of the number of minutes to the number of laps is 6 : 4. Because the units, minutes and laps, are different, this kind of ratio is called a rate. A **rate** is a special kind of ratio in which the units are different. The ratio 6 : 4 has the associated rate *6 minutes for 4 laps*.

To find the number of minutes per lap, find the value of each section. Because 6 ÷ 4 = 1.5, Luciana ran at a rate of 1.5 minutes per lap.



This rate is called a unit rate. A **unit rate** is a rate in which the first quantity is compared to 1 unit of the second quantity. The phrase *per* is used to describe unit rates. It means *for each*.

Luciana ran 4 laps in 6 minutes. Suppose you want to find how many laps she can run in 1 minute, at this same rate. The bar diagram represents the relationship between the number of laps, 4, and the number of minutes, 6.



The ratio of the number of laps to the number of minutes is 4 : 6, because Luciana ran 4 laps in 6 minutes. The ratio 4 : 6 has the associated rate *4 laps in 6 minutes*.

To find the number of laps per minute, find the value of each section. Because $4 \div 6 = \frac{4}{6}$, or $\frac{2}{3}$, Luciana ran at a rate of $\frac{2}{3}$ lap per minute.



The table summarizes ratios, rates, and unit rates.

Ratio		
Words	**Units**	**Examples**
a comparison between two quantities, in which for every *a* units of one quantity, there are *b* units of another quantity	units can be alike or different	6 laps to 4 laps 6 : 4 4 laps in 6 minutes 4 : 6
Rate		
Words	**Units**	**Examples**
a special kind of ratio in which the units are different	units are different	6 minutes for 4 laps 4 laps in 6 minutes
Unit Rate		
Words	**Units**	**Examples**
a rate in which the first quantity is given for every 1 unit of the second quantity	units are different	1.5 minutes per lap $\frac{2}{3}$ lap per minute

T

us 7u T M– M 7 MT TM – X 7 M – MT

p 6 – 2 N u n _

l mq0 q v

Example 1 Find a Unit Rate

A scientist studying hummingbirds recorded that a hummingbird flapped its wings 1,590 times in 30 seconds during normal flight.

Assuming a constant rate, how many times did the hummingbird flap its wings per second?

M T

Check

Refer to Example 1. The scientist also recorded that the hummingbird took 6,250 breaths over a period of 25 minutes. Assuming a constant rate, how many breaths per minute did the hummingbird take?

qffTR

l mq0 q

Example 2 Find a Unit Price

For Carolina's birthday, her mother took her and four friends to a water park. Carolina's mother can pay either $130 for a 5-pack of student tickets, or $28 for each individual student ticket.

Which ticket payment option has the lesser unit price?

M T

Check

A sporting goods store sells a package of twenty baseballs for $25.95 or single baseballs for $1.75 each. Which option has the lesser unit price?

qffTR

l q -q- t

Use any strategy to solve each problem.

1. A hippopotamus can run 6 kilometers in 15 minutes. At this rate, how far can the hippopotamus run in 1 minute? (Example 1)

2. Imena earned $261 last week. If she worked 18 hours and earned the same amount each hour, how much was she paid per hour? (Example 1)

3. A cat's heart beats approximately 45 times in 15 seconds. At this rate how many times does the cat's heart beat per second? (Example 1)

4. Mr. Farley used 4 pounds of hamburger to make 10 hamburger patties of the same size. How many pounds of hamburger did he use per patty? (Example 1)

W

5. At the school festival, Heather can buy 25 game tickets for $10, or she can pay $0.50 per game ticket. Which option has the lesser price per ticket? (Example 2)

v

6. At a toy store, Colton can buy a package of 6 mini footballs for $7.50, or a package of 8 mini footballs for $9.60. Which option has the lesser price per mini football? (Example 2)

7. The table shows the options Zoe's mother has for buying tickets to an adventure day camp for Zoe and 5 of her friends. Which option has the lesser cost per student ticket? (Example 2)

Adventure Camp Tickets	
Option	Cost ($)
6-pack of Student Tickets	126.00
Individual Student Ticket	21.50

Test Practice

8. Multiple Choice Which of the following offers the least price per ounce of shampoo?

(A) $6 for 8 ounces of shampoo

(B) $4 for 5 ounces of shampoo

(C) $8 for 12 ounces of shampoo

(D) $12 for 16 ounces of shampoo

t

T ft T MT P T t u N N t Nu

u s 7u

T TMfi 7 P T – – X MT M 7 – MT P – X PM 7-MK M S7 P T PT – T SM 7 T – MT MT

p 6

l q -q

Use any strategy to solve each problem.

1. Mr. Anderson is ordering pizzas for a class pizza party. Pizza Place has a special where he can buy 3 large pizzas for $18.75. At Mario's Pizzeria, he can buy 4 large pizzas for $22. If he needs to buy 12 pizzas, how much will he save if he buys the pizzas from Mario's Pizzeria instead of Pizza Place? (Example 1)

2. Skylar and Rodrigo each recorded how far they traveled while skateboarding. Skylar traveled 65 feet in 5 seconds and Rodrigo traveled 108 feet in 8 seconds. How much farther did Rodrigo travel per second than Skylar? (Example 1)

3. Melissa is buying party favors to make gift bags. Supplies LTD sells a 5-pack of favors for $11.25 and Parties and More sells a 3-pack of favors for $8.25. At these rates, how much will she save if she buys 15 favors from Supplies LTD than Parties and More? (Example 1)

4. Tara can type 180 words in 4 minutes. At this rate, how many words can she type in 10 minutes? (Example 2)

w

Test Practice

5. A bakery makes 260 donuts in 4 hours. At this rate, how many donuts can they make in 6 hours? (Example 2)

6. Open Response While jumping rope, Juan jumped 24 times in 30 seconds. At this rate, how many times will he jump in 50 seconds?

v

7 T U MR – Ss TR– M SM 7 T RT

T fi 7T M 7 T RT t u x N7 Tu7 N N t u 7u

us 7u 7T T RT – X X –7 M 7 PM 7–MK M

p 6 _ uN _ 2 N u n
l t l s

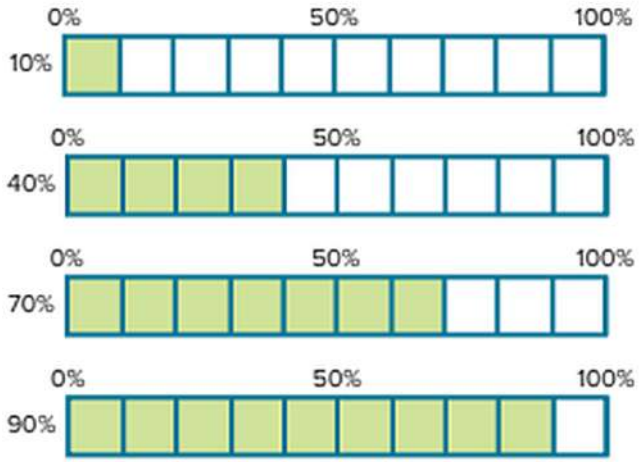
Learn Use Bar Diagrams to Model Percents

You can also use bar diagrams to model percents. A bar diagram can be divided into any number of equal-size sections.

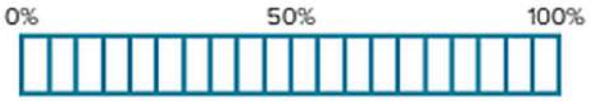
To model 10% or a multiple of 10%, you can divide the bar diagram into 10 equal-size sections.



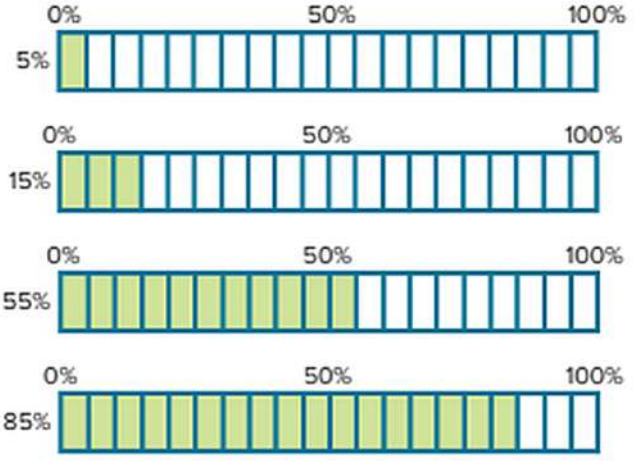
The bar diagrams show representations of several percents that are multiples of 10%.



To model 5% or a multiple of 5%, you can divide the bar diagram into 20 equal-size sections.



The bar diagrams show representations of several percents that are multiples of 5%.



T

l t

Example 3 Identify the Percent

What percent is represented by the bar diagram?



M T

q0 q t

Check

What percent is represented by the bar diagram?



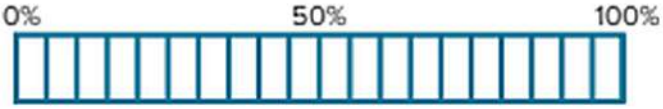
qffTR

l W t

Example 4 Model the Percent

Use a bar diagram to model 65%.

Draw a bar to represent 100%. Divide the bar into 20 equal-size sections because 65% is a multiple of 5.



Each section represents 5%. How many sections should be shaded to represent 65%? _____

Shade those sections on the bar diagram above to model 65%.

M TW

q0 q t

Check

Draw a bar diagram to model 35%.

qffTR 7 M PM

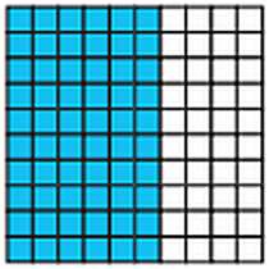
u s 7u 7T T RT – X X –7 M 7 PM 7–MK M

p 6 _ _

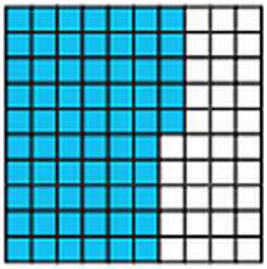
l q -q t t

For Exercises 1 and 2, identify the percent represented by each 10 × 10 grid. (Example 1)

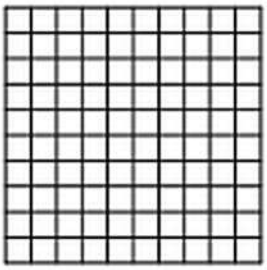
1. _____



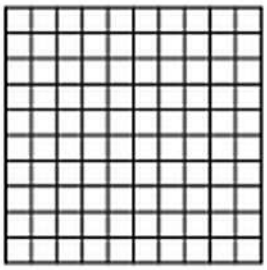
2. _____



3. In a school survey, 12% of the students surveyed said they like camping. Shade the 10 × 10 grid to model 12%. (Example 2)



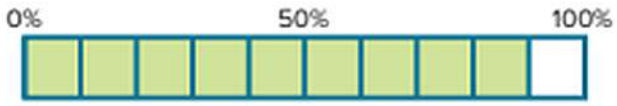
4. Of the students in the lunch line, 9% said they were buying strawberry milk. Shade the 10 × 10 grid to model 9%. (Example 2)



W

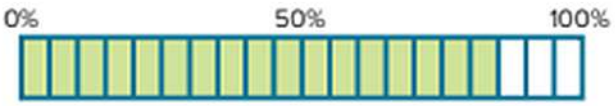
For Exercises 5 and 6, identify the percent represented by each bar diagram. (Example 3)

5. _____



v

6. _____



7. Shade the bar diagram to model 25%. (Example 4)



Test Practice

8. Open Response How can you use a bar diagram to model 45%?

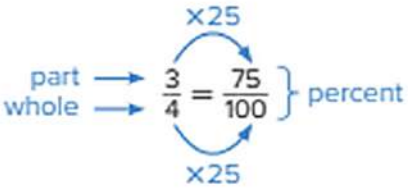
t

Learn Percents Greater Than 100%

The table shows the total rainfall during April for a certain city for three different years.

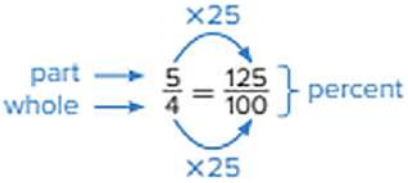
Year	April Rainfall (in.)
2017	4.0
2018	3.0
2019	5.0

In 2018, it rained less than it did in 2017. To compare the rainfall in 2018 to that in 2017, use the ratio 3 : 4. Recall that a *percent* is a ratio that compares a number to 100. You can use equivalent ratios to show that the rainfall in 2018 was 75% of the rainfall in 2017.



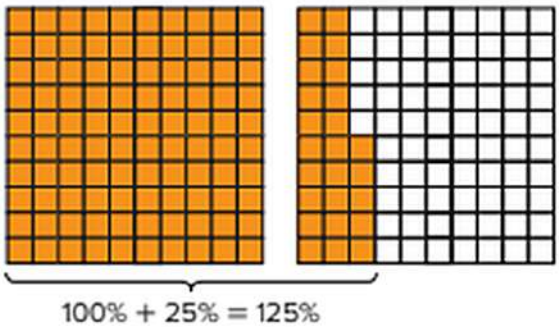
If the number being compared to 100 is less than 100, then the percent is less than 100%.

In 2019, it rained more than it did in 2017. To compare the rainfall in 2019 to that in 2017, use the ratio 5 : 4. You can use equivalent ratios to show that the rainfall in 2019 was 125% of the rainfall in 2017.



If the number being compared to 100 is greater than 100, then the percent is greater than 100%.

Percents are greater than 100% when the number being compared to 100 is greater than 100. When the percent is greater than 100%, the part is greater than the whole.

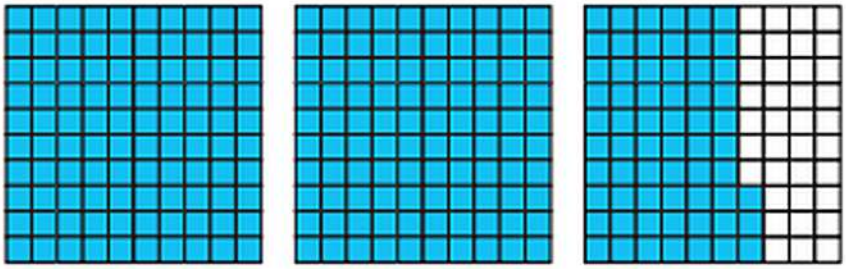
Example	Model
125% means 125 per 100 125 : 100, 125 to 100, or $\frac{125}{100}$ *one hundred twenty-five percent*	 100% + 25% = 125%

T

l t

Example 1 Identify the Percent

What percent is represented by the 10 × 10 grids?

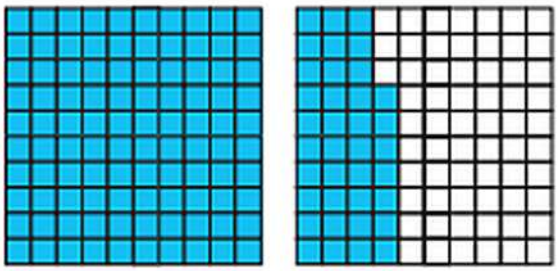


M T

q0 q t

Check

What percent is represented by the 10 × 10 grids?



qffTR

W us 7u 7T M 7 ffM T RT RM PT X TMT ffM T ffM

p 6 __ _ uN

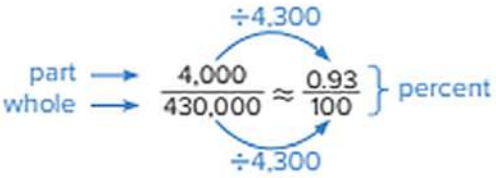
W l tt ls

Learn Percents Less Than 1%

Percents can also be less than 1%. Consider the following situation.

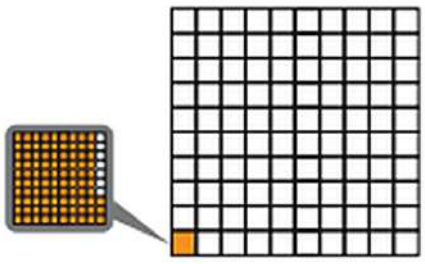
The distance from the center of Earth to the surface is also known as the *radius* of Earth. The radius of Earth is about 4,000 miles. The radius of the Sun is about 430,000 miles.

The ratio of Earth's radius to the Sun's radius is 4,000 : 430,000. You can use equivalent ratios to show that the radius of Earth is about 0.93% of the Sun's radius. Because 430,000 divided by 4,300 is 100, divide 4,000 by 4,300. Round to the nearest hundredth.



Percents are less than 1% when the number being compared to 100 is less than 1. When the percent is less than 1%, the part is significantly less than the whole. The radius of Earth is significantly less than the radius of the Sun.

On a 10 × 10 grid, 0.93% is represented by shading 93% of one grid square. One grid square represents 1% and 0.93% is less than 1%. Compared to 100%, 0.93% is significantly less.

Example	Model
0.93% means 0.93 per 100 0.93 : 100, 0.93 to 100, or $\frac{0.93}{100}$ *ninety-three hundredths of a percent*	

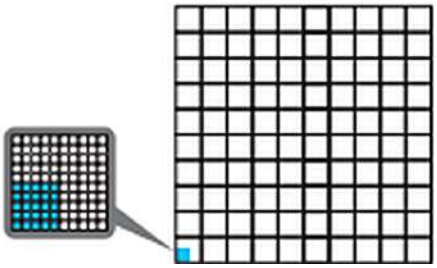
When thinking about how the size of Earth compares to the size of the Sun, it makes sense that Earth's radius is significantly less than the Sun's radius. Earth's radius is a little less than 1% of the Sun's radius.

T

l t

Example 3 Identify the Percent

What percent is represented by the 10 × 10 grid?

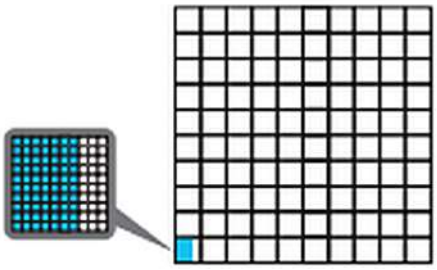


M T

q0 q t

Check

What percent is represented by the 10 × 10 grid?

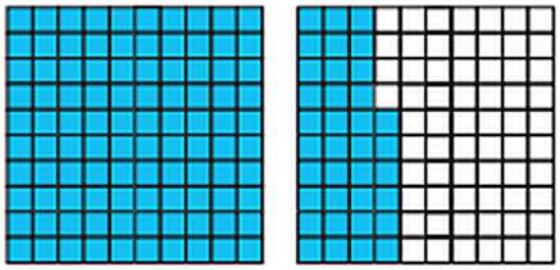


qffTR

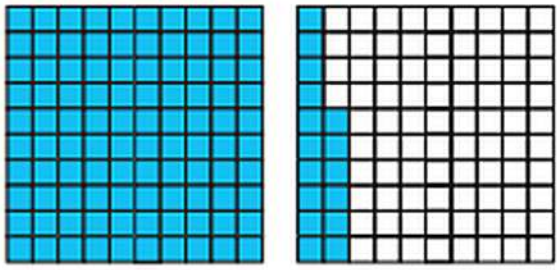
W l q -q

Identify the percent represented by the 10 × 10 grids. (Examples 1 and 3)

1.

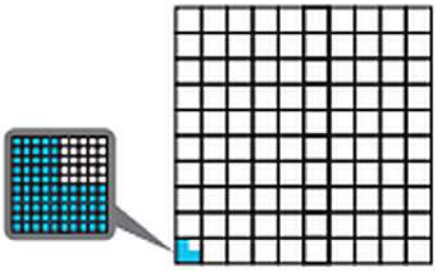


2.

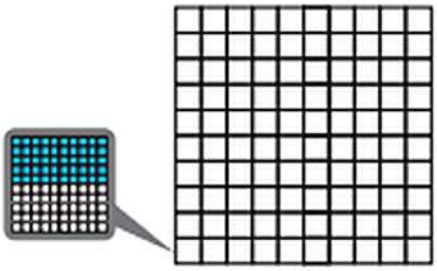


W

3.



4.

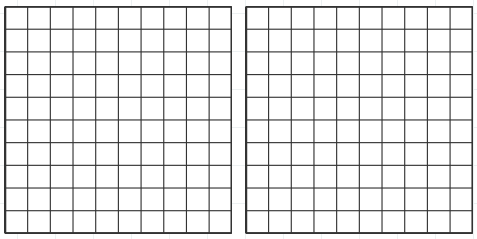


W

W

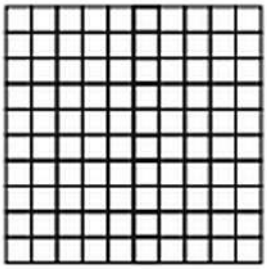
5. The size of a large milkshake is 1.4 times the size of a medium milkshake. Write a percent that compares the size of the large milkshake to the size of the small milkshake. Then draw and shade 10 × 10 grids to model the percent. (Example 2)

v



W

6. The Freedom Tower is 1,776 feet tall. Mr. Feeman's students are building a replica of the tower for a class project that will stand 4.44 feet tall. Write a percent that compares the height of the replica to the height of the actual tower. Then shade the 10 × 10 grid to model the percent.



T fi T MT U MR – Ss TR– M SM 7 T RT

t u x N7 Tu7 N N t u 7u

v u s 7u **T MT uMR – S7TR– M SM 7 T RT P – X MRTfi M T TM – X M 7 7T M 7– X M T RT M M M– ffM R MT M PT**

p 6

v l q -q

Write each percent as a fraction in simplest form and as a decimal. (Example 1)

1. 45%

2. 72%

3. 80%

v

Write each fraction as a percent and as a decimal. (Examples 2 and 3)

4. $\frac{3}{20}$

5. $1\frac{3}{4}$

6. $\frac{5}{8}$

W

v

v

Write each decimal as a percent and as a fraction in simplest form. (Example 4)

7. 0.89

8. 0.82

9. 0.65

v

10. About 0.41 of Hawaii's total area is water. Write 0.41 as a fraction and as a percent.

11. Over the course of the basketball season, Zane's free throw average went up by 30%. Write 30% as a fraction and as a decimal.

v

12. There are 25 students in Muriel's class. Write a percent to represent the number of students that have brown eyes. Then write the percent as a fraction and as a decimal.

Eye Color	Number of Students
Blue	6
Brown	10
Green	7
Hazel	2

Test Practice

13. Multiselect Which of the following are equivalent to 85%? Select all that apply.

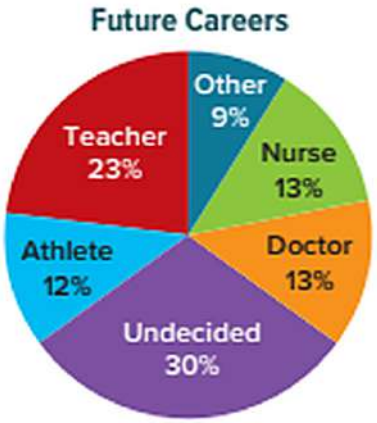
- ☐ 0.85
- ☐ $\frac{85}{100}$
- ☐ 0.8
- ☐ $\frac{17}{20}$
- ☐ 85

T fW U– 7 ffT T RT uM PT t u x N7 Tu7 N N t u 7u

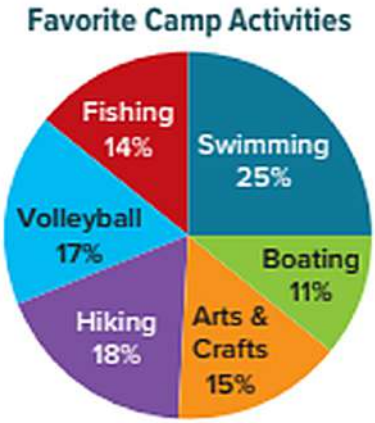
U– 7 ffT T RT uM PT P TM – X MP T RT M M MT T M 7 P – X PM
x uu u u
7-MK M S M– MP T ST – MT M– SM 7 7 P T PT – T

p 6
l q -q

1. The graph shows the career interests of the students at Linda's school. Suppose there are 400 students at the school. How many of them want to be an athlete? (Example 1)



2. The graph shows the favorite activities of campers at a summer camp. Suppose there are 300 campers at the camp. How many campers favor fishing? (Example 1)



Use any method to find the percent of each number. (Examples 2–4)

3. 15% of 240 = _____

4. 65% of 180 = _____

W

5. 250% of 82 = _____

v

6. 150% of 44 = _____

7. 0.15% of 350 = _____

8. 0.4% of 168 = _____

t

Test Practice

9. Open Response Kenzie is putting the family vacation videos onto a flash drive. The flash drive can hold 200 minutes of video. Kenzie has used 45% of the memory space already. How many minutes of the flash drive has she already used?

For Exercises 1–11, estimate each percent. Show your estimation. (Examples 1 and 2)

1. 51% of 62 ≈ _____

2. 26% of 78 ≈ _____

3. 39% of 198 ≈ _____

4. 78% of 148 ≈ _____

W

5. 19% of 103 ≈ _____

v

6. 98% of 59 ≈ _____

7. Emilia and her three sisters went out to dinner. The total cost of their dinner was $38.75. They want to leave a tip that is 23% of the total bill. About how much of a tip should they leave?

8. Karl earned $188 last month doing chores after school. If 68% of the money he earned was from doing yard work, about how much did Karl earn doing yard work?

t

9. The concession stand at a football game served 288 customers. Of those customers, about 77% bought a hot dog. About how many customers bought a hot dog?

10. In a recent season, the Chicago Cubs won 64% of the 161 regular season games they played. About how many games did they win?

Test Practice

11. The table shows how the 515 students at West Middle School get to school. About how many of the students walk to school?

Method	Percent of Students
Bus	53%
Car	21%
Walk	26%

12. Open Response Carolyn's homeroom sold 207 magazine subscriptions. Of the magazine subscriptions sold, 28% were for fashion magazines. About how many fashion magazine subscriptions were sold?

T fi U– 7 ffT ff T t u x N7 Tu7 N N t u 7u

W x uu u u U– 7 ffT ff TSX– T ffT M M 7 ffT T RT SP – X PM 7-MK M S M– MP T S7 P T PT – T SM 7 T – MT M–

p 6 _
W l q -q t

Use any strategy to solve each problem. (Examples 1 and 2)

1. Yolanda's club requires that 80% of the members be present for any vote. If at least 20 members must be present to have a vote, how many members does the club currently have?

2. Action movies make up 25% of Sara's DVD collection. If she has 16 action DVDs, how many DVDs does Sara have in her collection?

W

3. Marcus saved $10 because he bought a baseball glove that was on sale for 40% off. What was the original price of the baseball glove?

4. Of the students in the marching band, 55% plan to go to the school dance. If there are 110 students in the marching band that are going to the dance, how many students are in the marching band?

W

W

5. Melcher used 24% of the memory card on his digital camera while taking pictures at a family reunion. If Melcher took 96 pictures at the family reunion, how many pictures can the memory card hold?

6. Mallorie has $12 in her wallet. If this is 20% of her monthly allowance, what is her monthly allowance?

v

W

Test Practice

7. The table shows the number of minutes Tim has for lunch and study hall. He calculates that these two periods account for 18% of the minutes he spends at school. How many minutes does he spend at school?

Period	Number of Minutes
Lunch	45
Study Hall	45

8. Open Response The number of sixth grade students accounts for 35% of the total number of students enrolled in middle school. There are 245 sixth grade students. How many students are enrolled in the middle school?

t

7 T q T –ff -fis-X– PT M 7 U MR–

T fi s– -7T -fis-X– ff T PT t u s u T (u N t x N7

u s 7u T ffT M 7M7 MX –ff 7– -7T -fi7-X– PT ffT – X P T

p 6

l q -q W

Find each quotient. (Examples 1–3)

1. 52,080 ÷ 15 = _____

2. 38,480 ÷ 26 = _____

3. 648 ÷ 18 = _____

4. 3,409 ÷ 14 = _____

W

5. 8,890 ÷ 40 = _____

v

6. 3,120 ÷ 64 = _____

7. 6,750 ÷ 240 = _____

8. 4,415 ÷ 800 = _____

t

9. 5,777 ÷ 160 = _____

10. The table shows the distances between major cities. Mr. Santiago has a flight from Los Angeles to Toronto. If the plane travels at 520 miles per hour, how many hours long is the flight?

New York to Paris	3,636 miles
Los Angeles to Toronto	2,171 miles



T fi q T –ff –fis–X– s TR– M t u s u T (u N t x N7

t us 7u T P T P – X ffT M 7M7 MX –ff u M77–– S P MR – S – –RM– SM 7
7– – – R T –ff –fi7–X– 7TR– M

p 6 –

t l q –q v

Find each sum. (Example 1)

1. 34.672 + 15.31 = _____



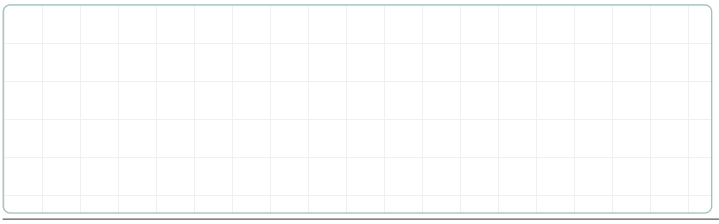
2. 152.875 + 35.4 = _____



t

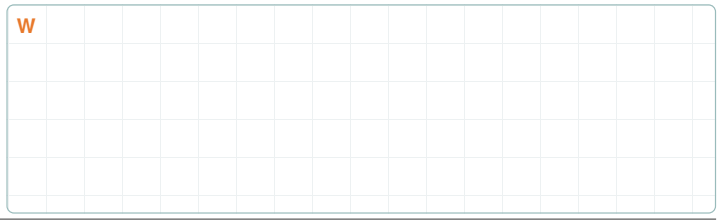
Find each difference. (Examples 2 and 3)

3. 139.65 – 59.623 = _____



4. 352.37 – 231.975 = _____

W

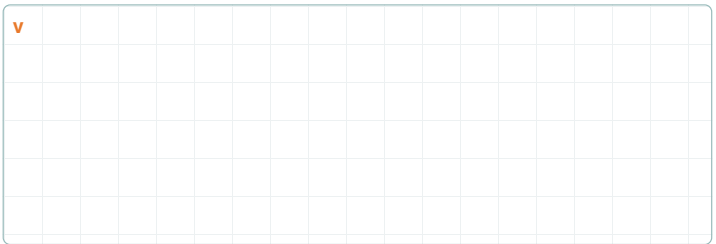


t

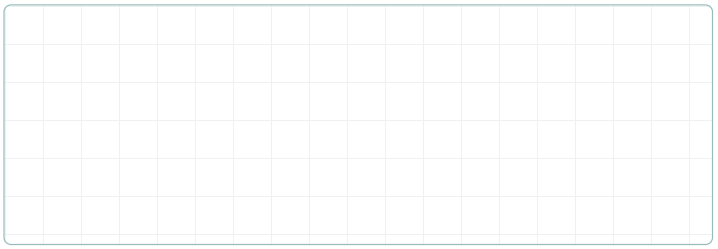
Find each product. (Example 4)

5. 0.025 × 1.24 = _____

v



6. 17.15 × 1.062 = _____



t

Find each quotient. (Example 5)

7. 32.674 ÷ 0.016 =

8. 3.825 ÷ 0.25 =

t

t

Test Practice

9. The table shows the number of miles Roberto hiked each weekend. How many more miles did he hike on weekend two than on weekend one?

Weekend	Miles Hiked
One	21.48
Two	30

10. Equation Editor What is the value of the expression 2,965.7 + 5.8?

T fi s – 7T ff T PT P U MR – t u s u T (u N t x N7

us 7u l – T7XT MP – RM– S7– – – SM 7 T M– fi7X– PT
7– 7T ff T PT P uMR –

p 6 –
l q -q v

Find the reciprocal of each number. (Example 1 and Example 3)

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

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

3. 8

4. What number multiplied by $\frac{3}{5}$ has a product of 1? (Example 2)

W

5. What number multiplied by $\frac{7}{10}$ has a product of 1? (Example 2)

v

Divide. Write in simplest form. (Example 4)

6. $3 \div \frac{1}{4} =$ _____

7. $4 \div \frac{2}{5} =$ _____

8. $6 \div \frac{2}{3} =$ _____

t

9. Marie is making scarves. She has 7 yards of fabric and each scarf needs $\frac{5}{8}$ yard of fabric. Find $7 \div \frac{5}{8}$. Then interpret the quotient. (Example 5)

10. Roberto is at a tennis day camp. The coach has set aside 2 hours to play mini matches that last $\frac{3}{5}$ hour. Find $2 \div \frac{3}{5}$. Then interpret the quotient.

T fW s– –7T U MR– P U MR– t u s u T (u N t x N7

us 7u

l – T7XT MP – –RM– M 7 7– – – –ff ff T PT M 7 ffT 7– – –
u ff T PT P uMR– 7– –7T uMR– P uMR–

p 6 –
l q -q v

Divide. Write in simplest form. (Example 1)

1. $\frac{5}{6} \div \frac{5}{12} =$ _____

2. $\frac{1}{3} \div \frac{1}{9} =$ _____

3. $\frac{3}{7} \div \frac{1}{14} =$ _____

4. Romeo had $\frac{3}{4}$ pound of fudge left. He divided the remaining fudge into $\frac{5}{16}$-pound bags. Write and solve an equation that models the situation. Then interpret the quotient. (Example 2)

5. Chelsea has $\frac{7}{8}$ pound of butter to make icing. Each batch of icing needs $\frac{1}{4}$ pound of butter. Write and solve an equation that models the situation. Then interpret the quotient. (Example 2)

W

v

6. Write a story context for $\frac{5}{6} \div \frac{1}{6}$. Then find the quotient. (Example 3)

7. Equation Editor What is the value of the expression $\frac{2}{5} \div \frac{1}{6}$?

T fiv s – 7T –ff ff T M 7 – T7 PT t u s u T (u N t x N7

v x uu u u I – T7XT MP 7– – – M 7 TR– RM 7– 7T uMR– P ff T M 7 – T7 PT

p 6 _–

v l q -q tv

1. The drama teacher is making bandanas for costumes. She is cutting $\frac{1}{2}$ yard of fabric into 6 bandanas of the same size. Write and solve an equation to find how much fabric there will be for each bandana. (Example 1)

2. A landscape designer has $\frac{4}{5}$ ton of mulch to divide equally among 8 customers. Write and solve an equation to find how much mulch each customer will receive. (Example 1)

v

Divide. Write in simplest form. (Examples 2 and 3)

3. $2\frac{4}{5} \div 4 =$ _____

4. $6\frac{2}{3} \div 8 =$ _____

5. $4\frac{2}{3} \div 6 =$ _____

W

v

v

6. $3\frac{3}{5} \div 1\frac{1}{2} =$ _____

7. $3\frac{3}{4} \div 1\frac{2}{3} =$ _____

8. $4\frac{1}{2} \div 2\frac{7}{10} =$ _____

t

v

Test Practice

9. Jeanne has $3\frac{7}{8}$ yards of fabric. The table shows the amount of fabric she needs for different items. How many pairs of shorts can she make?

Clothing Item	Fabric Needed (yd)
Shirt	$1\frac{3}{4}$
Shorts	$1\frac{1}{4}$

10. Equation Editor What is the value of the expression $5\frac{5}{8} \div 3\frac{3}{4}$?