Math Distance Learning Packet

Grade 4

Student Version

Add and Subtract Whole Numbers

Name: _____

Prerequisite: Add and Subtract Three-Digit Numbers

Study the example showing how to subtract by breaking apart and combining numbers. Then solve problems 1-6.

Example

Solve 852 - 623.

Use place value to write each number as hundreds, tens, and ones.

$$852 = 800 + 50 + 2 \text{ or}$$

 $800 + 40 + 12$
 $623 = 600 + 20 + 3$

Subtract hundreds.

Combine the differences.

$$800 - 600 = 200$$

Subtract tens.

$$40 - 20 = 20$$

 $12 - 3 = 9$

Subtract ones.

$$200 + 20 + 9 = 229$$

$$852 - 623 = 229$$

Show how to use place value to subtract 947 - 586.

2 Show how to use place value to add 354 + 271.

Alice drove 235 miles on Saturday. On Sunday, she drove 68 more miles than on Saturday. How many miles did Alice drive altogether on Saturday and Sunday?

Show your work.

C 1		
Solution:		
DOMINON.		

Kayla solved a subtraction problem. She wrote 490 - 185 = 675. Explain what Kayla did wrong and correctly solve the problem.

Show your work.

Solution:

Ryan has 96 business cards. He buys 225 more cards. He hands out 248 cards at a conference. How many cards does Ryan have left?

Show your work.

Solution:	
SOULTION:	
201411011	

Write each digit in the correct box below. Use each digit only once.



Add Whole Numbers

Study the example showing how to use addition to solve a word problem. Then solve problems 1-6.

Example

On Friday, 1,150 people saw the school play. On Saturday, 987 people saw the play. How many people saw the play on those two days?

1,150
$$+987$$

$$7 \longrightarrow 0 \text{ ones} + 7 \text{ ones} = 7 \text{ ones}$$

$$130 \longrightarrow 5 \text{ tens} + 8 \text{ tens} = 13 \text{ tens or 1 hundred} + 3 \text{ tens}$$

$$1,000 \longrightarrow 1 \text{ hundred} + 9 \text{ hundred} = 10 \text{ hundreds or 1 thousand}$$

$$+ 1,000 \longrightarrow 1 \text{ thousand} + 0 \text{ thousand} = 1 \text{ thousand}$$

$$2,137$$

2,137 people saw the play.

Show two ways to add 7,315 + 1,890.

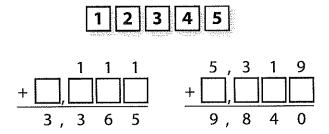
2 Find the sum.

Last summer, Mia's family drove 1,024 miles from Grand Canyon National Park to Mount Rushmore National Memorial. Then they drove 1,389 miles from Mount Rushmore to Yosemite National Park. How many miles did they drive in all?

Show your work.

Solution:	

4 Use the tiles to create a number that makes each addition problem true. You may use a tile more than once.



On Monday, Calvin ran 4,250 meters. On Tuesday, he ran 4,980 meters. How many meters did he run altogether on Monday and Tuesday?

Show your work.

Solution:	

Sam added 6,152 and 379 and got a sum of 9,942. Explain why Sam's addition is incorrect and find the sum of 6,152 + 379.

Salatraria Whole Numbers

Study the example showing how to use subtraction to solve a word problem. Then solve problems 1-6.

Example

In one day, Pete took 7,192 steps. Joe took 5,210 steps. How many more steps did Pete take than Joe?

Regroup.

Thousands	Hundreds	Appropriate and the second sec	Ones
7	1	9	2
6	10 + 1 = 11	9	2

6 11 *71*92 -5,210

1,982

Subtract.

	housands	#Jumdreals	and the same of th	Ones
	6	11	9	2
_	5	2	1	0
	. 1	9	8	2

Pete took 1,982 more steps than Joe.

1 Subtract.

2 Find the difference.

3 The table below shows the number of seats in two basketball arenas. How many more seats does Arthur Arena have than Griffin Fieldhouse?

Number of	Seats
Griffin Fieldhouse	22,826
Arthur Arena	44,750

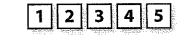
Show your work.

Solution:	

A city has a population of 289,000 people. Ten years ago, the population was 259,500 people. How many more people does the city have now?

Solution:

Use the tiles below to create a number that makes each subtraction problem true. You may use a tile more than once.



Peter listed his car for sale at \$21,550. After a week, he dropped the sale price by \$1,650. When the car sold, the sale price was another \$1,955 less. What was the final sale price of the car?

Show your work.

Solution:

Add and Subtract Whole Numbers

Solve the problems.

Jake has 1,326 songs on his music player. Kyle has 795 more songs than Jake. How many songs does Kyle have?

A 2,021

2,121

В 631 531

Do you add or subtract to solve this problem? 🗣

2 A school's goal is to raise \$5,000 to donate to charity. The school has raised \$2,157. How much more money does the school need to raise?

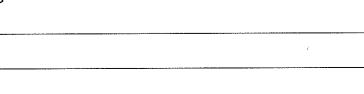
\$2,843

\$2,953

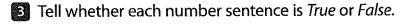
\$7,157

\$3,843

Sonya chose C as the correct answer. How did she get that answer?



What do you need to do before you can subtract ones?



a. 908 + 1,725 = 2,633

True **False**

b. 17,625 - 2,460 = 5,245

False True

c. 112,950 + 32,408 = 45,358

False True

d. 43,900 - 17,825 = 26,075

False True

What symbols tell you whether to add or subtract?

Use the information below to fill in the missing data in the table.

The height of Willis Tower is 325 feet less than the height of One World Trade Center.

The height of Trump Tower is 139 feet more than the height of the Empire State Building.

The height of Bank of America Tower is 576 feet less than the height of One World Trade Center.

How do you know
when to add and
when to subtract?

Five Tallest Buildings in the U.S.

Rank	Name	Location	Height (ft)
1	One World Trade Center	New York City	1,776
2	Willis Tower	Chicago	
3	Trump Tower	Chicago	
4	Empire State Building	New York City	1,250
5	Bank of America Tower	New York City	

Use the information in the table below to answer the riddle. Write the the missing data in the table.

I am the tallest building in the world. If you add my height to the height of the next three tallest buildings, the total is 8,132 feet. How tall am I? What operation do you need to do first?



Four Tallest Buildings in the World

Rank	Name	Location	Height (ft)
1	Burj Khalifa	United Arab Emirates	
2	Makkah Royal Clock Tower	Saudi Arabia	1,972
3	One World Trade Center	New York City	1,776
4	Taipei 101	Taipei, Taiwan	1,667

Show your work.

Prerequisite: Use Fact Families

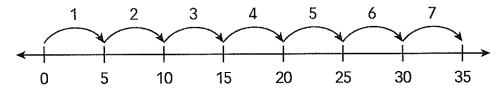
Study the example showing multiplication and division facts in a fact family. Then solve problems 1–6.

Example

Write the missing number in the multiplication fact.

$$5 \times \boxed{7} = 35$$

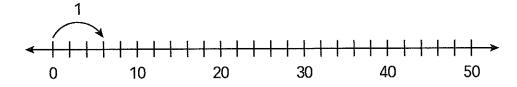
7 jumps of 5



Write the multiplication and division facts in the fact family.

$$5 \times \boxed{7} = 35 \quad \boxed{7} \times 5 = 35 \quad 35 \div \boxed{7} = 5 \quad 35 \div 5 = \boxed{7}$$

a. Draw and label jumps on the number line.



- **b.** Write the multiplication fact.
- **c.** Write the fact family.

Look at the array at the right.



white the missing number.
$$4 \times 3 = \boxed{}$$



Vocabulary

multiplication an operation used to find the total number of items in equal-sized groups.

$$5 \times 7 = 35$$

Write the multiplication and division facts for the fact family with the numbers 5, 6, and 30.

What two multiplication facts can you use to solve $\div 9 = 7$?

Look at the multiplication and division facts below. Are they a fact family? Explain.

 $4 \times 6 = 24$ $24 = 3 \times 8$ $24 \div 6 = 4$ $8 = 24 \div 3$

6 Complete each fact family. Use the numbers in the tiles below to fill in each box. You may use some tiles more than once.

36 18 12 9 6 4 3 2 1

- 2 × 9 =
- × 2 =
- 18 ÷ 9 =
- | | + | | = | |

- 12 = 4 ×
- $\square = \square \times \square$
- $3 = \boxed{ \div 4}$
- □ × 6 = □
- ____÷___=___

resemblatelas

Study the example showing how to use multiples to solve a word problem. Then solve problems 1–6.

Example

Markers come in boxes of 5. Paul needs 40 markers for students in the art club. Can Paul buy exactly 40 markers in boxes of 5? How many boxes does he need to buy?

Find multiples of 5.

$$5 \times 1 = 5$$

$$5 \times 4 = 20$$

$$5 \times 7 = 35$$

$$5 \times 2 = 10$$

$$5 \times 5 = 25$$

$$5 \times 8 = 40$$

$$5 \times 3 = 15$$

$$5 \times 6 = 30$$

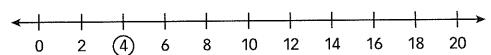
$$5 \times 9 = 45$$

40 is a multiple of 5.

Paul can buy exactly 40 markers in boxes of 5.

Paul needs to buy 8 boxes.

Skip count by 4s to find multiples of 4. Circle the multiples on the number line.



Complete the multiplication facts to find more multiples of 4.

Look at problems 1 and 2. Are these the only multiples of 4? Use words and numbers to explain.



Vocabulary

multiple the product of a number and any other whole number, for example, 3, 6, 9, 12, and 15 are multiples of 3.

501	•							
4	Max ordered 72 mugs. Mugs are packed 8 to a box. How many boxes of mugs did Max order?							
	or s	oose <i>Yes</i> or <i>No</i> to indica statement could be use ove.		-				
	a.	$72 = 8 \times b$	Yes	No				
	b.	$72 \div 8 = b$	Yes	No				
	C.	List multiples of 8: 8, 16, 24, 32, 40,	Yes	☐ No				
	d.	b = 72 + 8	Yes	☐ No				
5	full	pcakes are packed 6 to boxes of cupcakes, giv ocakes that she could b	e two pos	•				
	Sh	ow your work.						
	Sol	<i>lution:</i> Abby could buy	cupo	akes or	cupcakes.			
6	Str. 5-p of: bu	awberries are sold in 1- bound boxes. Stacy war strawberries. What are t y exactly 10 pounds of es of boxes she could b e box.	pound, 2-p nts to buy o two ways t strawberri	oound, an exactly 10 hat Stacy es? Tell wh	d pounds could nich			
	Sh	ow your work.						

Solution: ____

Find Factors and Factor Pairs

Study the example problem about factors and factor pairs. Then solve problems 1-6.

Example

Mr. Kennedy is arranging the 16 chairs in his classroom for a presentation. He wants to put the chairs in rows with an equal number of chairs in each row. Find all the ways he can arrange the chairs.









 $1 \times 16 = 16$

2 rows of 8 chairs

4 rows of 4 chairs

8 rows of

2 chairs

16 rows of 1 chair

 $4 \times 4 = 16$ $8 \times 2 = 16$ $16 \times 1 = 16$ $2 \times 8 = 16$

Factors of 16: 1, 2, 4, 8, 16.

Factor pairs: 1 and 16, 2 and 8, 4 and 4.

Mr. Kennedy can arrange the chairs in 5 ways.

Complete the list to show the factors of 12.

1, _____, 3, _____, 6, _____

Write the factor pairs of 12.

1 and , and _____, ___ and ____

The 20 students in Amanda's class each carved a wooden plate to display on the wall. They want each row to have the same number of plates. Find all the ways to display the plates.

Show your work.

Solution:



Vocabulary

factor pair two numbers that are multiplied together to give a product.

 $2 \times 4 = 8$, so 2 and 4 are a factor pair of 8.

Solve.

	Tell	I whether each sentence about the factor	rs of 18 is <i>Tr</i>	ue or False.		
	a.	All the factors of 18 are 2, 3, 6, 9, 18.	True	False		
	b.	1 and 18 are a factor pair.	True	False		
	c.	180 is a factor because $10 \times 18 = 180$.	True	False		
	d.	An array showing the factor pair of 3 and 6 would have 3 rows of 6 objects.	True	False		
[5]	12 4 b blo	rlos arranged his building blocks into 2 ro blocks. Liz arranged her blocks into 6 rov blocks. If they each use the same number ocks, what two other ways could they arra eir blocks?	vs of of			
	Sh	ow your work.				
	Soi	lution:				
6	Joi to	nah has 100 flowers to arrange into vases. put the same number of flowers in each vertical endings of 100. Then complete the ta	rase. List Ible to			
6	Joi to the	nah has 100 flowers to arrange into vases. put the same number of flowers in each v e factor pairs of 100. Then complete the ta	rase. List able to ers.			
6	Joi to the	nah has 100 flowers to arrange into vases. put the same number of flowers in each v e factor pairs of 100. Then complete the ta ow the different ways to arrange the flowe	rase. List able to ers.			
6	Joi to the she Fac	nah has 100 flowers to arrange into vases. put the same number of flowers in each v e factor pairs of 100. Then complete the ta ow the different ways to arrange the flowe	rase. List able to ers.			

identify Prime and Composite Numbers

Study the example showing how to identify prime and composite numbers. Then solve problems 1-6.

	Example		
	Ms. Morris teaches a morning class w and an afternoon class with 14 stude has a prime number of students?		
	13 has one factor pair: 1 and 13 13 is a prime number.	14 has more than one factor pair: 2 and 7, 1 a 14 is a composite number.	and 14
	The morning class has a prime numb	per of students.	
1	Is the number 2 prime or composite?	Explain.	
2	Kevin ran 23 laps around the track. Is prime or composite? Explain.	the number 23 Vocabul	ary
3	Mae has more than 3 bracelets. She I number of bracelets. Is the number of prime number or a composite numb	of bracelets a and 1.	only rs: itself aber; and 1.
		than one pair of 8 is a composite it has the factors and 8.	numbei



Vocabulary

Solve. Tell whether each sentence is True or False. True **False** a. The number 9 is prime. True **False b**. 2 is the only even prime number. True **False** c. All the odd numbers between 1 and 10 are prime. True **False d**. Some composite numbers have only two factors. The area of a garden is 5 square feet. 1 foot The dimensions of the garden are 1 foot and 5 feet. 1 and 5 are factors 5 feet of the number 5. **a**. Is the number 5 a prime number? _ **b**. If the area of a garden is 11 square feet, what could be the dimensions of the garden? Jordan and Mitchell are planning a graduation party with 45 guests. They want to seat an equal number of guests at each table. Each table should have more than one guest. Answer the questions below. a. List the different ways the guests and tables could be arranged. Tell how many tables are needed for each group of guests.

b. Jordan and Mitchell forgot to include themselves in the seating. They still want to have an equal number of guests at each table. List the ways the guests and tables could be arranged now.

Modification

Solve the problems.

Raffle tickets at a fundraiser are \$5 per ticket. Fiona spent \$40 on tickets. How many tickets did she buy?

Show your work.

Which factor pair of 40 can help solve this problem?

Solution:

Which sentence(s) below are true about the numbers 1, 3, and 9?

Circle the letter for all that apply.

- A Adding 1 to any of the numbers will make a composite number.
- **B** Adding 2 to any of the numbers will make a prime number.
- C 3 and 9 are prime numbers.
- **D** All the numbers are factors of 9.
- **E** All the numbers are factors of any multiple of 3.

How do you know whether a number is prime or composite?



The factors of 6 are also the factors of which number?

A 5

C 20

B 10

D 30

Mike chose **D** as the correct answer. How did he get that answer?

Which number also has 6 as a factor?



If n =any number, what is one factor pair that you know n has?

All numbers have 1 as a factor. What is the greatest factor any number can have?

Solution:

Look at each number sentence below. Tell whether the circled number is a *factor* or *multiple*.

a. $1 \times (4) = 4$

factor

multiple

b. $4 \times 1 = 4$

factor

____ multiple

c. $(5) \times 1 = 5$

factor

multiple

d. $(5) = 5 \times 1$

factor

multiple

Is the number multiplied by another number or is it a product of two numbers?



There are 56 fourth graders going on a field trip. The teacher wants to divide them evenly into groups of at least 4 students and no more than 8 students. What are the ways to divide the students evenly into groups?

Show your work.

How can you use the factor pairs of 56 to find all the possible groups?



Solution:

Lesson 7 Multiples and Factors

Model Multi-Step Problems

Name: _____

Prerequisite: Model Two-Step Problems

Study the example showing how to model a two-step word problem. Then solve problems 1–9.

Example

Mr. Norman's fourth grade class held a pancake breakfast fundraiser. They bought 4 cartons of eggs to use for the pancakes. Each carton has 12 eggs. They have 7 eggs left over. How many eggs were used?

4 groups of 12 is 48.

 $4 \times 12 = 48$

7 eggs are left over.

	4	8		
12	12	12	,	12
	?			7

Subtract 7 from 48 to find how many eggs were used.

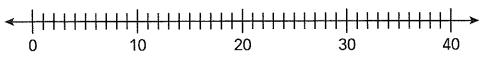
$$48 - 7 = 41$$

41 eggs were used.

Fiona has 6 garden boxes. She wants to plant 3 vegetable seeds and 3 flower seeds in each garden box. How many seeds does Fiona need in all? Draw a picture to model the problem. Then solve the problem.

Solution: Fiona needs _____ seeds in all.

Zander bought 3 hats for \$7 each and 2 shirts for \$9 each. How much did Zander spend? Draw and label jumps on the number line below to show how much Zander spent.

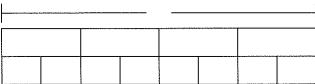


Zander spent _____.

87

Nadia bought 4 bags of popcorn at the movies. She shared the popcorn with her 7 friends. Each bag held 6 cups of popcorn. If everyone had an equal amount, how many cups of popcorn did each person have?

3	Complete	the bar	model	below to	solve the	problem.



- What do the parts of the top bar represent?
- 5 What do the parts of the bottom bar represent?
- 6 Why are there more than 7 parts in the bottom bar?
- Explain how to find the number of cups of popcorn each person had.

Tom buys 5 packs of juice boxes for the class picnic. Each pack has 6 juice boxes.

At the picnic, 18 students take a juice box. How many juice boxes are left?

Show your work.

Solution:

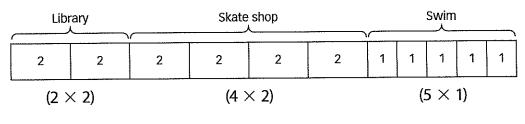
Walted Salver Liber

Study the example showing how to model a multi-step problem and write an equation. Then solve problems 1-4.

Example

The table shows Eli's after-school activities. Write an equation to show how many hours a week Eli spends doing activities.

Activity	How long?	How often?
Volunteer at the library	2 hours	2 times a week
Work at the skate shop	2 hours	4 times a week
Swim practice	1 hour	5 times a week

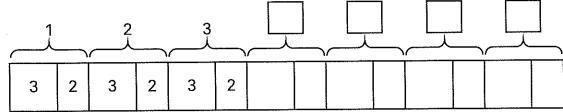


$$A = (2 \times 2) + (4 \times 2) + (5 \times 1)$$

Mia volunteered at the animal shelter on 7 weekends. On Saturdays, she volunteered for 3 hours. On Sundays, she volunteered for 2 hours.

Write an equation to find how many hours Mia volunteered.

a. Complete the bar model.



- **b**. What do the numbers above the bar represent?
- c. What do the numbers in each part of the bar represent?_
- d. Write an equation.

89

2 A bike rental is \$20 for a day and \$3 for an hour. Caroline rented a bike for 2 days and 2 hours. Which equation could you use to find how much money, *M*, Caroline spent? Circle the letter for all that apply.

A
$$M = (2 \times 20) + (2 \times 3)$$

B
$$M = (3 \times 20) + (2 \times 2)$$

c
$$M = (20 \times 2) \times (3 \times 2)$$

D
$$M = (20 \times 2) + (3 \times 2)$$

Zara went to the book fair and bought 3 comic books for \$5 each, 2 chapter books for \$9 each, 4 posters for \$2 each, and 1 picture book for \$7. Write an equation that can be used to find how much Zara spent at the book fair.

Show your work.

Solution:	
JU10110111	

The table below shows clothing sales at a school fair. Use the information in the table to write an expression that equals *T*, the total amount of money spent on clothing.

Item	Price	Number sold
T-shirts	\$12	100
Sweatshirts	\$20	50

Solution:	
JOIG COLL	



Vocabulary

equation a mathematical sentence that uses an equal sign (=) to show that two expressions have the

$$R = (6 \times 3) + 4$$

same value.

expression a group of one or more numbers, unknowns and operations that represents a quantity.

 $5 \times h$

Model Multi-Step Problems

Solve the problems.

Phillip earns \$15 an hour at his tutoring job and \$10 an hour babysitting. Last week, he worked 10 hours tutoring and 4 hours babysitting. Which equation shows how much Phillip earned, *E*?

A
$$E = (15 \times 10) + (10 \times 4)$$

B
$$E = (15 + 10) \times (10 + 4)$$

C
$$E = (15 \times 10) \times (10 \times 4)$$

D
$$E = (15 \times 4) + (10 \times 10)$$

Remember that parentheses tell what to do first.



The table below shows a cell phone plan.

	Cost per month				
Phone	\$22 each				
Unlimited texting	\$30 for a family				
Unlimited data	\$80 for a family				
Insurance	\$3 for each phone				

Lola's family has 4 cell phones. They want to have insurance on each phone. They also want to have texting and data on each phone. Write an equation to show the monthly cost for Lola's family.

Show your work.

What expressions can you write to show the cost of 4 phones and the cost of insurance for 4 phones?



There are 6 friends sharing 3 pizzas. Each pizza is cut into 8 slices. Which equation could be used to find the total number of slices, *P*, each friend will get?

A $(6 \times 3) \div 8 = P$

B
$$(3 \times 8) \div 6 = P$$

c
$$8 \times (6 \div 3) = P$$

D
$$(8 \times 6) \div 3 = P$$

Sadie chose **B** as the correct answer. How did she get that answer?

First, how do you find how many slices there are in all?



Margaret received \$20 each from 3 relatives and \$50 from her parents at graduation. She spent \$30. She saved half of the remaining money and donated the other half. Which equation(s) could you use to find how much money, *S*, she saved? Circle the letter of all that apply.

A
$$S = (3 \times 20 - 50) - 30 \div 2$$

B
$$S = (3 \times 20 + 50) - 30 \div 2$$

$$S = (20 + 20 + 20 + 50 - 30) \div 2$$

D
$$S = (3 \times 20 - 50 + 30) \div 2$$

E
$$S = (3 \times 20 + 50 - 30) \div 2$$

Another way to think of "half" is to think of dividing by 2.

Solve Multi-Step Problems

Name:

Prerequisite: Solve Two-Step Problems:

Study the example showing how to use a model to solve a two-step word problem. Then solve problems 1-5.

Example

Brian and his friends are doing a 200-piece jigsaw puzzle. Each of the 6 friends has placed 12 puzzle pieces. How many pieces have not been placed?

	······································	200	
6 × 12		р	
(6 × 12)	+	p = 200	
72	+	p = 200	
		p = 200 - 72	
		p = 128	

128 pieces have not been placed.

Use estimation to check whether 128 is a reasonable answer in the example above.

$$p = 200 - 72$$

Round to the nearest ten.

Subtract the rounded numbers. $_{--}$ = $_{--}$

is close to 128 so 128 is a reasonable answer.

There are 8 students at each of 4 round tables in the cafeteria. There are 64 students at long tables. Use the bar model to write and solve an equation to find how many students there are in the cafeteria.

		V
4	× 8	64

Show your work.

	V
4 × 8	64



reasonable something

that makes sense when the given facts are taken into account.

Solution: There are ______ in the cafeteria.

So	lve
JU	IVC

The table below shows the cost of admission tickets at a museum. Write and solve an equation to find the cost of tickets for 1 child and 2 adults.

	Child	Adult
Cost of ticket	\$6	\$11

Show your work.

	Solution:
4	Liz is training for a swim meet. Her goal is to swim 100 laps. She swam 12 laps in the pool on each of 3 days. Write and solve an equation to find how many more laps Liz needs to swim to reach her goal.
	Show your work.

Paperbacks sell for \$2 and hardcover books sell for \$4 at the library book sale. The library made \$98 at the sale. There were 25 paperback books sold. Write and solve an equation to find how many hardcover books were sold.

Show your work.

Solution:

C 1 12	
Solution:	Name of the state



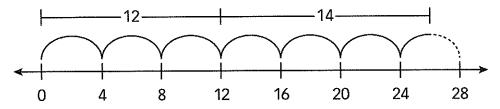
equation a mathematical sentence that uses an equal sign (=) to show that two expressions have the same value.

Solve Multi-Step Problems.

Study the example showing how to model a multi-step problem with a remainder. Then solve problems 1-5.

Example

Mrs. Murray has 12 students in one science class and 14 students in another. She wants to combine both classes to do group work. Each table in the science room can seat 4 students. How many tables does Mrs. Murray need?



Let T equal the number of tables needed.

$$T = (12 + 14) \div 4$$

= 26 ÷ 4
= 6 R2

Mrs. Murray needs 7 tables.

6 R2 means:

- 6 tables with 4 students each
- 2 more students need another table

Check the solution to the equation in the example.

_____ tables × _____ students per table + students = ____ total students

Leticia earns \$8 each time she rakes the yard. She has earned \$24 so far. Write and solve an equation to show how many more times Leticia needs to rake the yard to earn enough to buy a music player that costs \$45.

Show your work.

Solution:



Vocabulary

remainder the amount left over that will not divide equally into the given number of groups.

$$26 \div 4 = 6 R2$$

	-
_	
~ ~	B T / 63

Meghan found 15 pieces of sea glass on the beach. The next day she found 4 more pieces than she found the day before. Write and solve an equation to find how many pieces of sea glass she found altogether.

Show your work.

Solution:	

The table shows ticket prices at a movie theater.

Ticket sales to an afternoon show were \$146. There were 10 child tickets sold. Write and solve an equation to find how many adult tickets were sold.

	Child	Adult
Ticket price	\$5	\$12

Show your work.

Solution:	

Ticket prices for 3-D movies are \$10 for a child and \$15 for an adult. One adult spent \$55 to take a group of children to the movies. Write and solve an equation to find how many children went to the movies.

Show your work.

Solution:

Solve Multi-Step Problems

Solve the problems.

Jensen bought 10 boxes of granola bars. Each box has 8 bars. He wants to share the bars with 6 soccer teams. Which equation can be used to find how many bars each team gets?

A
$$b = (8 \times 10) - 6$$

A
$$b = (8 \times 10) - 6$$
 C $b = (6 + 8) \div 10$

B
$$b = (10 + 6) \div 8$$
 D $b = (10 \times 8) \div 6$

D
$$b = (10 \times 8) \div 6$$

- What operation can you use to put the bars into equal-sized groups?
- 2 Solve the equation in problem 1 to find how many granola bars each team gets. Are bars left over? Show your work.

What does the remainder mean?



The community center used 4 recycling bins one week, twice as many the next week, 7 bins the third week, and 5 bins the last week of the month. Which equation shows how many bins were used for the month?

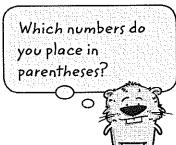
A
$$4 + (2 \times 7) + 7 + 5 = 30$$

B
$$4 + (2 \times 4) + 7 + 5 = 24$$

C
$$(1 \times 4) + (2 \times 4) + (3 \times 7) + 5 = 34$$

D
$$4 + (4 \div 2) + 7 + 5 = 18$$

Mia chose A as the correct answer. How did she get that answer?



The table shows the results of a bake sale. The cost of renting tables for the bake sale was \$100.

Write and solve an equation to show how much money the bake sale made.

Baked item	Number sold	Price
Cookies	90	\$1 each
Brownies	75	\$1 each
Crispy treats	60	\$2 each
Cupcakes	50	\$3 each

How do you show the cost of renting the tables in the equation?

Show your work.

Solution:

Look at the table in problem 4. If 10 fewer cookies and 10 more cupcakes were sold, how much would the bake sale have made?

Show your work.

Which numbers in the equation you wrote in problem 4 do you need to change?



Multiply Whole Numbers

Name:

Prerequisite: Multiply by a Multiple of 10

Study the example showing how to multiply by a multiple of 10. Then solve problems 1-7.

Example

Roy swims for 20 minutes a day, 6 days a week. How many minutes does Roy swim in a week?

Use base-ten blocks.











6 groups of 2 tens is 6×2 tens, or 12 tens.













Change grouping and multiply.

Use factors and

Break down 20

into factors 2 and 10.

 6×20

grouping to multiply.

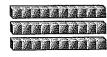
 $6 \times (2 \times 10)$

 $(6 \times 2) \times 10$

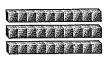
 $12 \times 10 = 120$

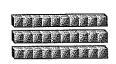
12 tens = 120Roy swims 120 minutes in a week.

11 The base-ten blocks below show 4 imes 30. Fill in the blanks to find the product.





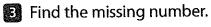




____ groups of ____ tens is ____ imes ____ tens,

or _____ tens = _____.

Show how to use factors and grouping to find the product of 4×30 .



$$\times$$
 3 = 120



Vocabulary

factors numbers that are multiplied together to get a product.

product the result of multiplication.

factors product

S	^	i	v	6	
-	u	1	w	-	

Saundra has 8 folders on her computer. Each folder has 50 files. How many files are on Saundra's computer?

Show your work.

Solution:	
JOIG GOIL	

There are 5 ten-pound bags and 8 twenty-pound bags of rice on a shelf. How many pounds of rice are on the shelf?

Show your work.

Solution:		

Lola gets two 20-minute breaks at work each day. She works 5 days a week. How much time does she spend on break each week?

Show your work.

Solution:	

Andrew wants to buy 3 video games that are \$50 each. He earns \$80 a week. In how many weeks will he have enough money to buy the games?

Show your work.

Solution:	
001410111	

First find the total cost of the video games. Then compare the cost to the amount he earns in a week.



Multiply by a One Digital imber

Study the example showing one way to multiply by a one-digit number. Then solve problems 1–5.

Example

Jesse's family has 4 music players. Each music player can hold 8,352 songs. What is the total number of songs all 4 music players can hold?

Use an area model.

All 4 music players can hold 33,408 songs.

Look at the multiplication above. Use partial products to multiply $4 \times 8,352$. Fill in the blanks.

2 Show how to use partial products to multiply $5 \times 1,643$.



Vocabulary

multiplication an operation used to find the total number of items in equal-sized groups.

product the result of multiplication.



Write $4 \times 3,569$ in expanded form to show the place value of each digit. Then find the product.

4 Lee earns \$1,075 each month. How much does he earn in 6 months?

Show your work.

Solution:	
-----------	--

- Look at Callie's work for solving $3 \times 9,423$.
 - a. Explain what Callie did wrong.

b. What is the correct answer for
$$3 \times 9,423$$
?

Multiply Two-Digit Numbers by Two-Digit Numbers

Study the example showing how to multiply a two-digit number by a two-digit number to solve a word problem. Then solve problems 1–6.

Example

Aaron's guitar lesson is 35 minutes a week.

He has been taking lessons for 12 weeks.

How many minutes has Aaron spent at lessons?

Use an area model to multiply 35×12 .

	30	- 5
	10 × 30	10 × 5
10	1 ten \times 3 tens = 3 hundreds	1 ten \times 5 = 5 tens
	300	50
7-	2 × 30	
2	2×3 tens = 6 tens	$2\times 5=10$
_	60	

300 + 60 + 50 + 10 = 420 minutes

Aaron has spent 420 minutes at lessons.

Look at the example above. Use partial products to multiply 35×12 . Fill in the blanks.

2 Show how to use an area model to multiply 71 \times 48.

3 Show how to use partial products to multiply 48×71 .

48 × 71 = _____

Tell whether each number sentence is *True* or *False*.

a. $18 \times 42 = (10 \times 40) + (10 \times 2) + (8 \times 40) + (8 \times 2)$

True False

b. $60 \times 15 = (6 \times 10) + (6 \times 5)$

____ True ____ False

c. $37 \times 22 = (30 \times 20) + (30 \times 20) + (7 \times 20) + (7 \times 20)$

___ True ____ False

d. $99 \times 11 = (1 \times 9) + (1 \times 90) + (10 \times 9) + (10 \times 90)$

____ True ____ False

Mr. Greene is preparing 28 bags of materials for his art class. Each bag needs 40 glass tiles. How many glass tiles are needed?

Show your work.

Solution:

Stephanie has 6 classes a day at school. Each class is 52 minutes long. She goes to school 5 days a week. How much time does she spend in class each week? Show two different ways to solve this problem.

Show your work.

Solution:

Multiply Whole Numbers

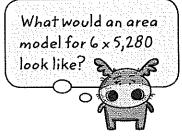
Solve the problems.

- One mile is 5,280 feet. How many feet are in 6 miles?
 - **A** 30,068

C 31,248

B 30,168

D 31,680



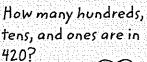
Which of the following are equal to 420 \times 3? Circle the letter for all that apply.

A
$$(3 \times 400) + (3 \times 20)$$

B
$$420 + 420 + 420$$

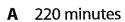
c
$$(3 \times 400) + (3 \times 2)$$

D 1,260





The bell on a clock tower rings every 15 minutes. If the bell has rung 24 times, how many minutes have passed?



B 342 minutes

C 360 minutes

D 380 minutes

Amber chose ${\bf A}$ as the correct answer. How did she get that answer?

What are the partial products of 15 × 24?



The multiplication problem $5 \times 3,000$ can be written in many different ways. One way is $5 \times 3 \times 1,000$. Write 3 more ways.	You can also write 3,000 as 3 × 10 × 100. What other ways can you think of?
A distance race is 42 kilometers. Kylie has completed 16 distance races. How many kilometers has she run? Show your work.	How many tens and ones are in each number?
Solution: Fourth graders are taking a field trip. The cost is \$15	How much does it
for each student and \$18 for each chaperone. There	cost for all the students? All the
for each student and \$18 for each chaperone. There are 94 students and 16 chaperones on the field trip. What is the total cost for all students and chaperones? Show your work.	chaperones?

Divide Whole Numbers

Name:

Prerequisite: Relate Multiplication and Division

Study the example showing how to use multiplication to solve a division problem. Then solve problems 1–7.

Example

The Lin family spent \$800 on 4 airplane tickets. Each ticket was the same price. How much did each ticket cost?

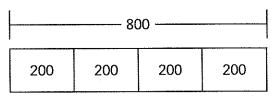
Divide 800 by 4. $800 \div 4 = ?$

Use the related multiplication equation.

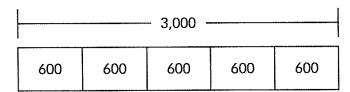
$$4 \times 200 = 800$$

So,
$$800 \div 4 = 200$$

Each ticket cost \$200.



Look at the model below. Write a division equation and a related multiplication equation.



Division equation:

Multiplication equation: ____ × ___ = ___

2 Multiply.

Write the missing numbers in the equation.

Write numbers in the area model below to show 6×925 . Then complete the equation.

Multiply. $3 \times 213 = ?$

Show your work.

Solution:
$$3 \times 213 =$$

For each division equation below, write a related multiplication equation. The first one is done for you.

Heidi drove to visit her grandparents last weekend. She drove 215 miles each way. This weekend she drove to her friend's house. It was 174 miles each way. How many miles did she drive altogether on both weekends?

Show your work.

You can multiply by 2 to find the distance Heidi drove each weekend.

Solution: Heidi drove _____ miles.

Divide Three-Digit Numbers by One-Digit Numbers

Study the example problem showing how to divide a three-digit number by a one-digit number. Then solve problems 1–6.

Example

Muffins are packed and sold in boxes of 4. How many boxes are needed to pack 260 muffins?

$$260 \div 4 = ?$$

Use an area model.

$$260 \div 4 = 65$$

	50 -1	- 10	<u> 5</u>
	$(4 \times 50 = 200)$	$(4 \times 10 = 40)$	$(4 \times 5 = 20)$
_	260	60	20
4	– 200	- 40	<u> </u>
	60	20	0

65 boxes are needed.

Use multiplication to check:

$$4 \times 65 = (4 \times 60) + (4 \times 5)$$

= 240 + 20
= 260

Use the example above. Show how to subtract partial products to divide 260 by 4.

2 Identify the dividend, divisor, and quotient.

a.
$$900 \div 3 = 300$$

dividend: _____ divisor: ____ quotient: ____

b.
$$120 = 600 \div 5$$

dividend: _____ divisor: ____ quotient: ____



65

Vocabulary

dividend the number you divide in a division problem.

divisor the number you divide by in a division problem.

quotient the answer to a division problem.

e -	L
30	ıve.

A health center raised \$476. The money was divided equally among 7 programs. How much did each program get? Use an area model to solve the problem.

Show your work.

	Solution:
4	Mike has 876 building pieces to share among himself and 2 friends. He wants each person to have an equal number of pieces. How many pieces does each person get?
	Show your work.
	Solution:
5	Look at how you solved problem 4. Explain how you could have used estimation before you divided so that you would know whether your answer was reasonable.
(6)	Explain how to use multiplication to check your answer in problem 4.

Divide Four-Digit Numbers by One Digit Numbers

Study the example problem showing how to divide a four-digit number by a one-digit number. Then solve problems 1–5.

Example

A group of hikers plan to take 8 hours to hike a mountain trail 5,380 meters long. If they hike the same distance each hour, how many meters should they hike in an hour?

$$5,380 \div 8 = 672 \, \text{R4}$$

The hikers should hike 672 meters each hour. Then they will need to hike 4 more meters to reach the end of the trail.

The sum of the partial quotients is 600 + 70 + 2, or 672. The remainder is 4.

2 70 600

 $8)\overline{5,380}$ \longrightarrow There are 600 groups of 8 in 5,000.

-4,800 → Subtract 600 groups of 8; 8 × 600.

580 → There are 70 groups of 8 in 580.

- 560 → Subtract 70 groups of 8; 8 \times 70.

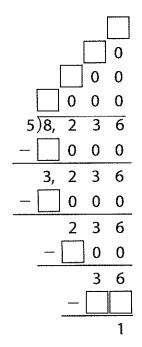
20 \longrightarrow There are 2 groups of 8 in 20.

- 16 → Subtract 2 groups of 8; 8 \times 2.

4

Complete the division problem.

$$8,236 \div 5 =$$



2 Complete the division problem.

4)4, - 4,	5	0	7
- 4,	0	0	0
	5	0	7
g-springs.			
•••			
	_		

One week has 7 days. How many weeks do 1,230 days make? What does the remainder mean?

Show your work.

Solution:	
-----------	--

Mugs are packed 6 to a box. How many boxes are needed to pack 1,524 mugs?

Show your work.

Solution:	

Tyson used a calculator to find the quotient for each of the problems below. Use estimation to tell whether each quotient is *Correct* or *Incorrect*.

a.	4,960	÷	2 =	9.920

b.
$$7,095 \div 5 = 1,419$$

c.
$$9,621 \div 3 = 230 \text{ R7}$$

d.
$$3,875 \div 6 = 645 \text{ R5}$$

6 Explain how you used estimation to tell which quotients were incorrect in problem 5.



Vocabulary

remainder the amount left over that will not divide equally into the given number of groups.

$$5,380 \div 8 = 672 \text{ R4}$$



remainder

DwaleyMaleyOmbas

Solve the problems.

11 Find the quotient.

A 652

625

652 R2

D 625 R2

To check the quotient, multiply it by the divisor and add any remainder.



2 Carter has a pack of 800 rubber bands. Alicia has twice as many rubber bands as Carter. They combine their rubber bands so that they can make bracelets. Fach bracelet needs 100 rubber bands. Which equation below can be used to find how many bracelets they can make?

A
$$(800 \times 2) \div 100$$

c
$$(800 \div 100) \times 2$$

B
$$(800 \times 3) \div 100$$

$$(800 \times 3) \div 100$$
 D $(800 \times 100) \div 3$

Jon chose A as the correct answer. How did he get that answer?

Drawing a model or picture can help make sense of this problem.



Tell whether each sentence is *True* or *False*.

a. $5,497 \div 4 = 1,374$

True

False

b. $4,806 \div 6 = 81$

True

False

c. $955 \div 5 = 191$

d. $642 \div 8 = 82$

True



What does it mean to

have a zero place value in the dividend?

False **False** True

4 Chloe and Ingrid are packing boxes with books. They What does the have 238 books. Each box will fit 8 books. Chloe says remainder mean in 29 boxes is enough to pack all the books. Ingrid this problem? thinks they need 30 boxes. Explain who is correct. Show your work. Solution: Carolyn has 1,090 photos that she wants to organize Divide each place into an album. Each album page holds 6 photos. value in the dividend, How many pages can she fill with 6 photos each? 1,090, by the Show your work. divisor, 6. Solution: ____ 6 In 4 weeks, a school raised \$2,560 for Health and This looks like a Fitness awareness. Students collected donations multi-step problem. 5 days each week. The principal agreed to make one To start, what donation that was the same as the amount collected number do you in a day, If an equal amount was collected each day, divide 2,560 by? how much did the principal donate? Show your work.

Solution:

Understand **Equivalent Fractions**

Name:

Prerequisite: How do you know when fractions are equivalent?



Study the example showing one way to find equivalent fractions. Then solve problems 1-6.

Example

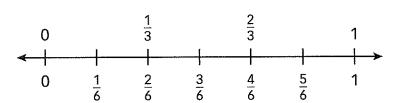
Find a fraction equivalent to $\frac{4}{6}$.

The number line shows both thirds and sixths.

 $\frac{4}{6}$ and $\frac{2}{3}$ are at the same point on the number line.



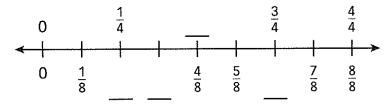
 $\frac{4}{6} = \frac{2}{3}$



Look at the number line in the example above. Write a fraction equivalent to $\frac{2}{6}$.

$$\frac{2}{6}$$
 = _____

[2] Fill in the missing fractions on the number line.

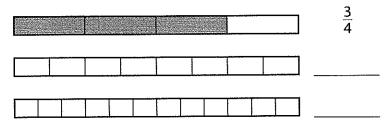


Look at the number line in problem 2.

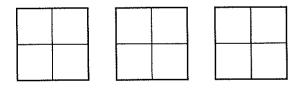
Write equivalent fractions.

$$\frac{1}{4} = \underline{\hspace{1cm}} = \frac{4}{8} \qquad \frac{3}{4} = \underline{\hspace{1cm}}$$

Look at the models below. Shade the models to show two fractions equivalent to $\frac{3}{4}$. Then write the fractions.



Use the models below to complete the sentences. The models show wholes and parts. There are 3 wholes, each divided into fourths.



Each part is	of a whole.		
There are	fourths in all.	=	(1)

6 Look at the models below. Write the fractions they represent. Are the fractions equivalent? Explain.





Show Equivalent Hadrions

Study the example showing one way to model equivalent fractions. Then solve problems 1-8.

Example

A model can show equivalent fractions.

The model has 5 equal parts. It shows $\frac{3}{5}$.

Divide the model into 10 equal parts to show an equivalent fraction.

The model shows $\frac{6}{10}$.

$$\frac{3}{5} = \frac{6}{10}$$





Divide the model below to show $\frac{1}{2} = \frac{5}{10}$.

Draw a model to show $\frac{1}{6}$. Then divide the model into twice as many parts to find an equivalent fraction.

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

Multiply the numerator and denominator of $\frac{1}{6}$ by 2.

$$\frac{1\times2}{6\times2} = \underline{\hspace{1cm}}$$

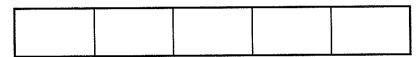
4 Why does it make sense that the fraction you wrote in problems 2 and 3 is the same?

Fill in the missing numbers to find two equivalent fractions to $\frac{4}{5}$.

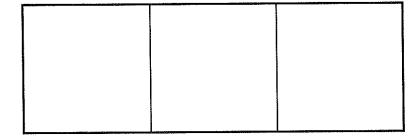
 $\frac{4 \times \square}{5 \times 2} = \frac{\square}{10} \qquad \frac{4 \times 20}{5 \times 20} = \frac{\square}{100}$

6 Look at problem 5. Explain how $\frac{8}{10} = \frac{80}{100}$.

Shade the model below to show $\frac{1}{5}$. Then show 10 equal parts and write an equivalent fraction.



Shade the model below to show $\frac{2}{3}$. Then show 12 equal parts and write an equivalent fraction.



CARTORING MARCO

Study the example. Underline two parts that you think make it a particularly good answer and a helpful example.

Example

Find a fraction equivalent to $\frac{1}{2}$ that has a denominator of 12.

Show your work. Use models, words, and numbers to explain your answer.

I draw a model that shows $\frac{1}{2}$.



To find an equivalent fraction with a denominator of 12, I divide the model into 12 equal parts. The model shows $\frac{6}{12}$. So $\frac{1}{2} = \frac{6}{12}$.



I can also multiply both the numerator and denominator of $\frac{1}{2}$ by 6 to find an equivalent fraction with a denominator of 12.

Where does the

- use models to show equivalent fractions?
- use numbers to write equivalent fractions?
- use words to explain?



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

Solve the problem. Use what you learned from the example.

Find a fraction equivalent to $\frac{2}{5}$ that has a denominator of 20.

Show your work. Use models, words, and numbers to explain your answer.

Did you ...

- use models to show equivalent fractions?
- use numbers to write equivalent fractions?
- · use words to explain?

Compare Fractions

Name:

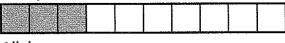
Prerequisite: Model Comparing Fractions

Study the example problem showing ways to compare fractions. Then solve problems 1-9.

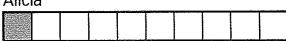
Example

Sandy ran $\frac{3}{10}$ of a mile during gym class. Alicia ran $\frac{1}{10}$ of a mile, and Rosa ran $\frac{3}{8}$ of a mile. Compare the distance Sandy ran to the distances Alicia and Rosa ran.

Sandy



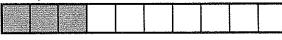
Alicia



 $\frac{3}{10}$ and $\frac{1}{10}$ have the same denominator. $\frac{3}{10}$ and $\frac{3}{8}$ have the same numerator.



Sandy



Rosa

		•••

$$\frac{3}{10} < \frac{3}{8}$$

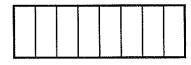
Sandy ran a greater distance than Alicia and a lesser distance than Rosa.

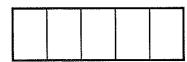
Look at the example problem above. Write each comparison in words. Use greater than and less than.

 $\frac{3}{10} > \frac{1}{10}$ Three tenths is _____ one tenth.

 $\frac{3}{10} < \frac{3}{8}$ Three tenths is ______ three eighths.

Shade the models to show $\frac{2}{8}$ and $\frac{2}{5}$. Then write <, >, or = to compare the fractions.





 $\frac{2}{5} - \frac{2}{8}$

3 Shade the models to show $\frac{5}{12}$ and $\frac{7}{12}$.

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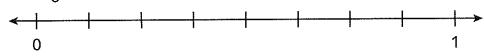
Compare $\frac{5}{12}$ and $\frac{7}{12}$ using symbols and words.

$$\frac{5}{12}$$
 $\frac{7}{12}$

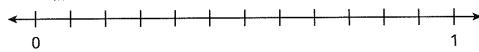
Five twelfths is ______ seven twelfths.

Explain how you used the models in problem 3 to show how the two fractions compare in problem 4.

6 Label $\frac{7}{8}$ on the number line below.



2 Label $\frac{7}{12}$ on the number line below.



8 Compare $\frac{7}{8}$ and $\frac{7}{12}$ using symbols and words.

$$\frac{7}{8}$$
 — $\frac{7}{12}$

Seven _____ is _____ seven twelfths.

2 Explain how you used the number lines in problems 6 and 7 to show how the two fractions compare in problem 8.

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Study the example problem showing how to compare fractions by finding a common denominator. Then solve problems 1-7.

Example

A length of ribbon is $\frac{3}{4}$ foot. Another length of ribbon is $\frac{5}{6}$ foot. Compare the lengths using a symbol.

Find a common denominator.

$$\frac{3\times3}{4\times3} = \frac{9}{12}$$

$$\frac{3 \times 3}{4 \times 3} = \frac{9}{12}$$
 $\frac{5 \times 2}{6 \times 2} = \frac{10}{12}$

Write the equivalent fractions.

$$\frac{3}{4} = \frac{9}{12}$$
 $\frac{5}{6} = \frac{10}{12}$

$$\frac{5}{6} = \frac{10}{12}$$

Compare the numerators.

$$\frac{9}{12} < \frac{10}{12}$$

$$9 < 10 \text{ so } \frac{9}{12} < \frac{10}{12}$$

Shade the models below to show $\frac{3}{4}$ and $\frac{5}{6}$. Fill in the blank to show the comparison. $\frac{3}{4} - \frac{5}{6}$

Divide each model in problem 1 into 12 equal parts to show an equivalent fraction. Write the equivalent fractions and symbol to show the comparison.



- Compare $\frac{2}{3}$ and $\frac{9}{12}$ by finding a common denominator.
 - a. Write a fraction equivalent to $\frac{2}{3}$ with a denominator of 12.

2 ×	
3 ×	12

b. Compare the fractions.

9 6 2 9	- 1		.	` —	
$\frac{1}{12}$ — $\frac{1}{12}$. So, $\frac{1}{3}$ — $\frac{1}{12}$		 12 -	$-\frac{9}{12}$.	So, $\frac{2}{3}$	<u>9</u> 12



Vocabulary

denominator the number below the line in a fraction. It tells how many equal parts are in the whole.

$$\frac{3}{4}$$



4 equal parts

numerator the number above the line in a fraction. It tells how many equal parts are described.



3 parts described

- 4 Compare $\frac{1}{5}$ and $\frac{2}{12}$ by finding a common numerator.
 - a. Write a fraction equivalent to $\frac{1}{5}$ with a numerator of 2. $\frac{1 \times \square}{5 \times \square} = \frac{2}{\square}$
 - **b.** Compare the fractions. $\frac{2}{12}$ So, $\frac{1}{5}$ $\frac{2}{12}$.
- **5** Compare the fractions. Use the symbols <, >, and =.
 - **a.** $\frac{2}{5}$ $\frac{8}{10}$
 - **b**. $\frac{5}{12}$ $\frac{1}{3}$
 - **c.** $\frac{3}{5}$ $\frac{60}{100}$
 - **d.** $\frac{9}{100} \frac{9}{10}$
- 6 Tell whether each sentence is True or False.
 - **a.** $\frac{2}{3} > \frac{5}{6}$
- ___ True ___ False
- **b.** $\frac{4}{10} < \frac{4}{5}$
 - ____ True ____ False
- **c.** $\frac{70}{100} = \frac{7}{10}$ True
 - rue False
- **d.** $\frac{1}{3} > \frac{3}{1}$
- True False
- **e**. $\frac{3}{4} < \frac{2}{3}$
- ____ True ____ False
- Can two fractions with the same numerator and different denominators be equal? Use words and numbers to explain.

Use a Benchmark to Compare Fractions

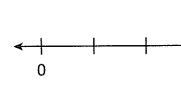
Study the example problem using 1 as a benchmark to compare fractions. Then solve problems 1-4.

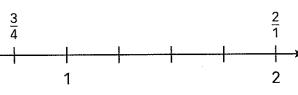
Example

Carol compared $\frac{3}{4}$ and $\frac{2}{1}$. She says $\frac{3}{4} > \frac{2}{1}$ because both the numerator and the denominator in $\frac{3}{4}$ are greater than the numerator and denominator in $\frac{2}{1}$.

3 > 2 and 4 > 1. Is Carol correct?

Compare each fraction to the benchmark 1.



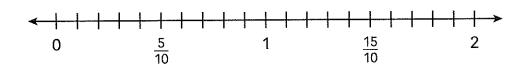


$$\frac{3}{4}$$
 < 1 and $\frac{2}{1}$ > 1.

$$\frac{3}{4} < \frac{2}{1}$$
 and $\frac{2}{1} > \frac{3}{4}$. Carol is not correct.

Compare $\frac{9}{10}$ and $\frac{3}{2}$.

a. Label $\frac{9}{10}$ and $\frac{3}{2}$ on the number line below.



- **b.** Which fraction is greater than 1? _____
- c. Which fraction is less than 1? _____
- **d**. Fill in the blank. Explain how you found your answer. $\frac{9}{10}$ $\frac{3}{2}$

- 2 Compare $\frac{5}{6}$ and $\frac{1}{3}$ using the benchmark fraction $\frac{1}{2}$.
 - **a.** Label $\frac{5}{6}$ and $\frac{1}{3}$ on the number line below.



- **b.** Which fraction is greater than $\frac{1}{2}$?
- **c.** Which fraction is less than $\frac{1}{2}$?
- **d.** Fill in the blank. Explain how you found your answer.

5	1
6	 3

3	Use a benchmark fraction to compare the fractions	7 10
	and $\frac{5}{12}$. Explain how you found your answer.	

4 Tell whether each number sentence is *True* or *False*.

Then write the benchmark you could use to compare the fractions.

Benchmark

- **a.** $\frac{9}{8} > \frac{11}{12}$
- True
- ____ False

False

- **b.** $\frac{2}{5} < \frac{5}{6}$
- True [

- **c.** $\frac{7}{10} < \frac{2}{4}$
- True False
- _____

- **d**. $\frac{4}{5} > \frac{2}{2}$
- True
- False
-

- **e**. $\frac{3}{2} < \frac{9}{10}$
- ____ True
- False

Gomerna actaliones

Solve the problems.

Which of the following is greater than $\frac{2}{3}$? Circle all that apply.

Find a common denominator for each pair of fractions.



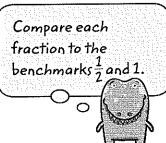
2 Harry ate $\frac{5}{8}$ of a sandwich. Sven ate $\frac{2}{5}$ of a sandwich. Micah ate $\frac{3}{4}$ of a sandwich. Gabe ate $\frac{6}{12}$ of a sandwich. Who ate the most of his sandwich?

Harry

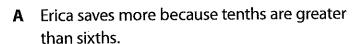
Micah

Sven

Gabe



Erica and Matt earn the same amount of money each month. Erica saves $\frac{3}{10}$ of her earnings. Matt saves $\frac{3}{6}$ of his earnings. Which explanation correctly tells who saves more?

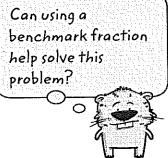


Matt saves less because sixths are less than tenths.

Erica saves more because $\frac{3}{10} < \frac{3}{6}$.

Matt saves more because $\frac{3}{6} > \frac{3}{10}$.

Fran chose C as the correct answer. How did she get that answer?



Melanie read 45 pages of a 100-page book. Her younger sister read $\frac{1}{2}$ of a 10-page book. Who read a greater fraction of her book, Melanie or her sister? **Show your work.**

One fraction has a denominator of 100; the other fraction has a denominator of 10.



Compare $\frac{5}{4}$ and $\frac{9}{10}$. Describe two methods you could use to compare the fractions.

$$\frac{5}{4} - \frac{9}{10}$$

Method A _____

Method B

Some ways to compare fractions are finding a common denominator, finding a common numerator, and using a benchmark.



Understand Fraction Addition and Subtraction

Name: _____

Prerequisite: How do you show fractions with number lines and area models?



Study the example problem showing fractions with number lines and area models. Then solve problems 1–7.

Example

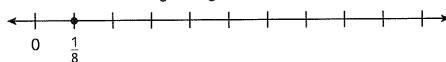
How can you draw two different models to show $\frac{3}{4}$?



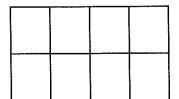
An area model for $\frac{3}{4}$ shows 4 equal parts, and 3 parts shaded.

A number line model for $\frac{3}{4}$ shows each whole cut into 4 equal parts. $\frac{3}{4}$ is the mark at the end of the third part.

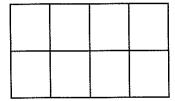
Label the numbers $1, \frac{3}{8}$, and $\frac{4}{8}$ on the number line.



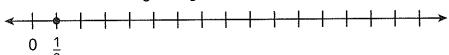
2 Shade the area model to show $\frac{3}{8}$.



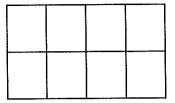
Shade the area model to show $\frac{4}{8}$.



Show the numbers $\frac{8}{8}$ and $\frac{10}{8}$ on the number line.

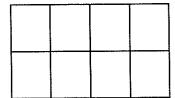


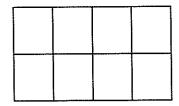
5 Shade the area model to show $\frac{8}{8}$.



6 Why can't you show $\frac{10}{8}$ on the area model above?

Shade the area models below to show $\frac{10}{8}$.





Show Adding and Subtracting Fractions

Study how the example shows adding fractions. Then solve problems 1–12.

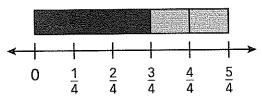
Example

You can count on or count back to add or subtract whole numbers.

You can do the same to add or subtract fractions.

To add fourths, use a number line that shows fourths.

Add
$$\frac{3}{4} + \frac{2}{4}$$
.

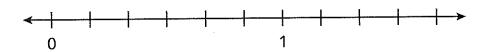


Start at $\frac{3}{4}$. One more fourth is $\frac{4}{4}$, and another fourth is $\frac{5}{4}$.

$$\frac{3}{4} + \frac{2}{4} = \frac{5}{4}$$

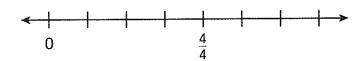
Count by sixths to fill in the blanks:

Now label the number line to show sixths.

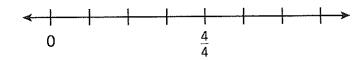


- 3 What is $\frac{1}{6}$ more than $\frac{2}{6}$?
- What is $\frac{1}{6}$ less than $\frac{2}{6}$?
- S What is $\frac{1}{6}$ more than $\frac{6}{6}$?
- 6 What is $\frac{1}{6}$ less than $\frac{6}{6}$?

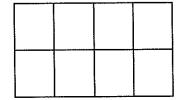
Label the number line to show fourths.

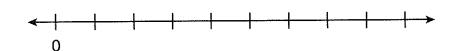


- Now use the number line in problem 7 to show $\frac{2}{4} + \frac{2}{4}$.
- 2 Label the number line to show fourths again.



- Now use the number line in problem 9 to show $\frac{4}{4} \frac{2}{4}$.
- Use the number line and area model below to show $\frac{2}{8} + \frac{1}{8} + \frac{3}{8}$.





Look at the three area models. Which one would you choose to show $\frac{1}{8} + \frac{2}{8}$? Explain how the denominator of the fraction helps you choose the model.

l			



Vocabulary

denominator the number below the line in a fraction. It tells how many equal parts are in the whole.

4 equal parts

numerator the number above the line in a fraction. It tells how many equal parts are described.

$$\longrightarrow \frac{3}{4}$$

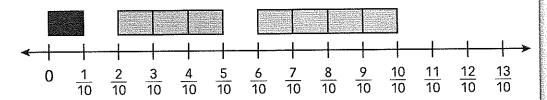


3 parts described

Study the example. Underline two parts that you think make it a particularly good answer and a helpful example.

Example

Rob drew this diagram to show $\frac{1}{10} + \frac{3}{10} + \frac{4}{10}$



Rob says that his picture shows that

$$\frac{1}{10} + \frac{3}{10} + \frac{4}{10} = \frac{10}{10}$$
 or 1 whole.

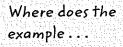
What did Rob do right? What did he do wrong?

Show your work. Use pictures, words, or numbers to explain your answer.

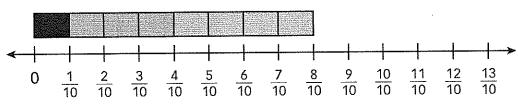
Rob drew the number line the right way. He marked it to show tenths because the fractions in the problem are in tenths. He also showed that $\frac{10}{10}$ is one whole.

He shaded 1 tenth and 3 tenths and 4 tenths because the numbers in the problem are $\frac{1}{10}$ and $\frac{3}{10}$ and $\frac{4}{10}$.

His mistake was leaving spaces between the shaded parts. When you count up on a number line, you can't skip numbers. He should have drawn this.



- answer both parts of the question?
- use a picture to explain?
- use numbers to explain?
- use words to explain?
- · give details?

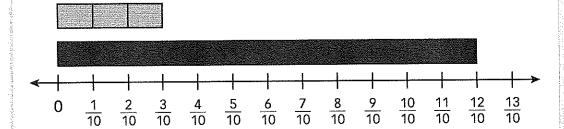


Then he would see that $\frac{1}{10} + \frac{3}{10} + \frac{4}{10} = \frac{8}{10}$.



Solve the problem. Use what you learned from the example.

Paul drew this diagram to show $\frac{12}{10} - \frac{3}{10}$.



Paul says that his picture shows that $\frac{12}{10} - \frac{3}{10} = \frac{3}{10}$.

What did Paul do right? What did he do wrong?

Show your work. Use pictures, words, or numbers to explain your answer.

Did you ...

- · answer both parts of the question?
- · use a picture to explain?
- · use numbers to explain?
- use words to explain?
- · give details?

Add and Subtract Fractions

Name:

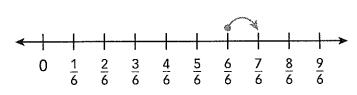
Prerequisite: Model Fraction Addition and Subtraction

Study the example problem showing fraction addition with number line and area models. Then solve problems 1–8.

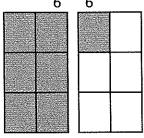
Example

Adding fractions means joining or putting together parts of a whole. On the number line, each whole is divided into 6 equal sections. Each rectangle is divided into 6 equal pieces.

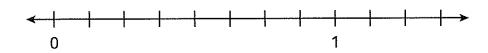
$$\frac{6}{6} + \frac{1}{6}$$



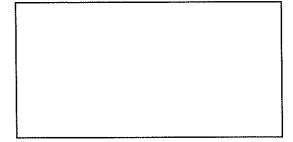




Label the number line to show eighths.

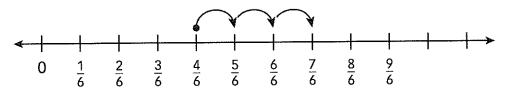


- 2 Use the number line in problem 1 to show $\frac{3}{8} + \frac{2}{8}$.
- 3 Divide the rectangle to show eighths.

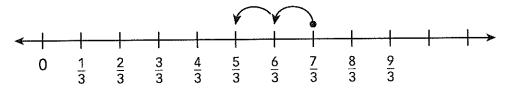


4 Use the rectangle in problem 3 to show $\frac{3}{8} + \frac{2}{8}$.

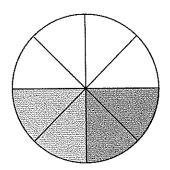
What is the fraction addition problem shown on this number line?



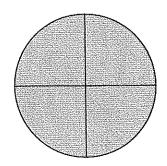
What is the fraction subtraction problem shown on this number line?

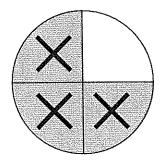


What is the fraction addition problem shown by this area model?



What is the fraction subtraction problem shown by this area model?





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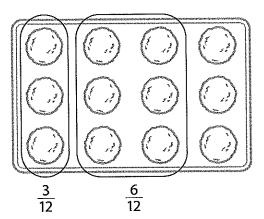
Study the example problem showing one way to add fractions. Then solve problems 1–13.

Example

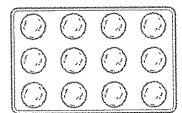
Shrina has a muffin tray that holds 12 muffins. She fills $\frac{3}{12}$ of the tray with apple muffin batter. Then she fills $\frac{6}{12}$ with pumpkin muffin batter. What fraction of the tray is filled?

$$\frac{3}{12} + \frac{6}{12} = \frac{9}{12}$$

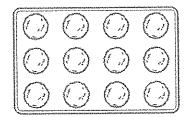
So, $\frac{9}{12}$ of the muffin tray is filled.



Shade $\frac{2}{12}$ of the muffin tray.



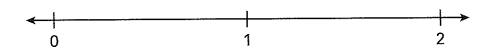
Sam fills $\frac{2}{12}$ of the tray with banana muffin batter. Then she fills $\frac{6}{12}$ with lemon muffin batter. Shade the diagram to show this.



In problem 2, what fraction of the tray is filled? ______
Write an equation for this problem that includes your answer. _____

Kay ran $\frac{6}{8}$ mile and rested. Then she ran another $\frac{6}{8}$ mile.

Divide the number line below to show eighths.



- 5 Label $\frac{6}{8}$ on the number line above.
- 6 Use arrows to show $\frac{6}{8} + \frac{6}{8}$ on the number line.
- What is the total distance Kay ran? _____
- Write an equation for this problem that includes your answer.

Jin cleaned $\frac{1}{10}$ of the patio before lunch and cleaned $\frac{9}{10}$ of the patio after lunch.

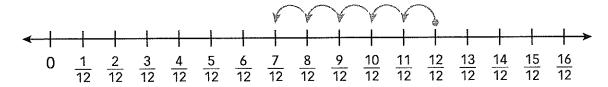
- Divide the rectangle to show tenths.
- Shade the rectangle to show the fraction Jin cleaned before lunch.
- Use a different color to shade the rectangle to show the fraction Jin cleaned after lunch.
- What fraction of the patio did Jin clean altogether?
- Write an equation for this problem that includes your answer.

andianiak betaling

Study the example showing one way to subtract fractions. Then solve problems 1-7.

Example

Ali bought a carton of eggs. He used $\frac{3}{12}$ of the eggs to cook breakfast. He used another $\frac{2}{12}$ to make a dessert for dinner. What fraction of the carton is left?



$$\frac{12}{12} - \frac{3}{12} = \frac{9}{12}$$

$$\frac{9}{12} - \frac{2}{12} = \frac{7}{12}$$

 $\frac{9}{12} - \frac{2}{12} = \frac{7}{12}$ So, $\frac{7}{12}$ of the carton is left.

Keisha is going to her friend's house $\frac{8}{10}$ mile from home. Her mother drives her partway, then she walks the last $\frac{3}{10}$ mile.

Divide the number line below to show tenths. Then label each tick mark.



- Use arrows to show the problem on the number line you drew in problem 1.
- How far did Keisha's mother drive her?
- Write an equation for this problem that includes your answer.

Anna made a quilt by sewing together green, white, and yellow fabric. When she was done, $\frac{2}{6}$ of the quilt was green and $\frac{3}{6}$ was yellow. The rest was white. What fraction of the quilt was white?

Show your work.

Solution:	
20101011	

6 What is $\frac{9}{8} - \frac{8}{8}$?

Use a number line or an area model to show your thinking.

Solution:	
Jointion.	

Shanice had 1 whole pizza. After eating some of it, she had $\frac{4}{6}$ of the pizza left. What fraction of the pizza did she eat?

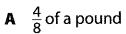
Show your work.

Solution:

Add and Subtract Fraddons

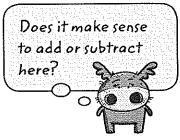
Solve the problems.

Lin bought $\frac{3}{4}$ pound of cheddar cheese and some Swiss cheese. Altogether she bought $\frac{7}{4}$ pounds of cheese. How much Swiss cheese did Lin buy?



 $C = \frac{10}{8}$ pounds

B $\frac{4}{4}$ of a pound **D** $\frac{10}{4}$ pounds



Carrie has 2 meters of ribbon. She cuts off pieces of ribbon that are $\frac{5}{10}$ meter, $\frac{1}{10}$ meter, and $\frac{7}{10}$ meter. How long is the remaining piece of ribbon?

A $\frac{1}{10}$ meter

 $\mathbf{C} = \frac{7}{10}$ meter

B $\frac{3}{10}$ meter

D $\frac{13}{10}$ meters

Lee chose **D** as the correct answer. How did she get that answer?

This problem seems to have more than one step.



3 Ms. Atkins had a basket of tomatoes. She used $\frac{5}{12}$ of the tomatoes to make soup. She used $\frac{2}{12}$ in a salad. What fraction of the tomatoes are left? Show your work.

What fraction can you use to represent all of the tomatoes?



Solution: _

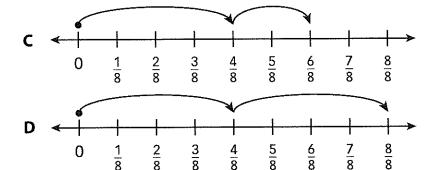
Jo and Kira are raking leaves in the yard. They divide the yard into 8 equal sections. Jo rakes 4 sections. Kira rakes 2 sections. Which model can be used to find the total fraction of the yard they rake? Circle the letter of all that apply.

Two different models could show the same problem.









A pizza is cut into 6 equal pieces. After Eli and Dan eat some, $\frac{1}{6}$ of the pizza is left. What fraction could each boy eat? Give one possible answer.

Show your work.

To find the fraction that was eaten, should you add or subtract?



6 Milo has 2 hours of free time. He spends $\frac{2}{4}$ of an hour with his dog. He spends $\frac{3}{4}$ of an hour drawing. What fraction of an hour does he have left?

Show your work.

How can you write 2 wholes as a fraction?



Solution: