New Vocabulary
Commutative Property of Addition
Associative Property of Addition

Properties of Addition

Name _____ Class _____ Date _____

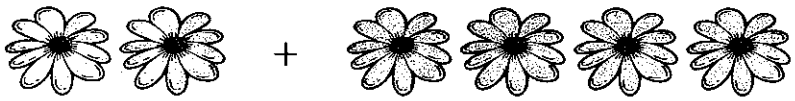
GET STARTED

1. $5 + 2 =$ _____

2. $8 + 6 =$ _____

3. a.  +

_____ + _____ = _____ flowers

b. 

_____ + _____ = _____ flowers

4. a. 

(_____ + _____) + _____ = _____ + _____ = _____ fish

b. 

_____ + (_____ + _____) = _____ + _____ = _____ fish

BUILD THE CONCEPT

★ ★ ★ + ★ ☐ + ☐

3 + 1 = _____ + _____ = _____ + _____

TRY IT TOGETHER

Find each sum. Use the Commutative Property of Addition to write another addition fact.

5. $6 + 3 =$ _____ _____ + _____ = _____

6. $3 + 8 =$ _____ _____ + _____ = _____

Find each sum. Use the Associative Property of Addition to write another addition fact.

7. $4 + (1 + 5) = 4 +$ _____ = _____

   (_____ + _____) + _____ = _____ + _____ = _____

8. $(2 + 7) + 3 =$ _____ + 3 = _____

   _____ + (_____ + _____) = _____ + _____ = _____

WORK ON YOUR OWN

HOW TO

Add Whole Numbers Using the Commutative and Associative Properties of Addition

Using Symbols	Using Words
$6 + 1 = 1 + 6$ $6 + 1 = 7$ $1 + 6 = 7$	**Commutative Property of Addition:** Changing the order of the addends does not affect the sum.
$(4 + 3) + 1 = 4 + (3 + 1)$ $(4 + 3) + 1 = 7 + 1 = 8$ $4 + (3 + 1) = 4 + 4 = 8$	**Associative Property of Addition:** Grouping the addends in any order does not affect the sum.

Adding Three 1-Digit Numbers

Name _____ Class _____ Date _____

GET STARTED

1. **a.** $8 + (4 + 1) = (8 + 4) + 1$

_____

_____

b. $10 + 5 = 5 + 10$

_____

_____

2. $6 + 4 + 3 = (\_\_\_\_ + \_\_\_\_) + \_\_\_\_$

6 →
4 →
+ 3 → + ____

3. $8 + 3 + 3 = (\_\_\_\_ + \_\_\_\_) + \_\_\_\_ = \_\_\_\_ + (\_\_\_\_ + \_\_\_\_)$

8 →
3 →
+ 3 → + ____

4. $4 + 8 + 6 = (\_\_\_\_ + \_\_\_\_) + 6 =$
$(\_\_\_\_ + \_\_\_\_) + 6 = \_\_\_\_ + (\_\_\_\_ + 6)$

8 →
4 →
+ 6 → + ____

BUILD THE CONCEPT

$(4 + 3) + 6$

4 →
3 →
+ 6 → + ____

$(3 + 4) + 6$

3 →
4 →
+ 6 → + ____

$3 + (4 + 6)$

3 →
4 →
+ 6 → + ____

TRY IT TOGETHER

Find each sum.

5 3 + 5 + 9

3 →
5 ↗
+ 9 → + _____

_____

6 5 + 3 + 5 =

(_____ + _____) + _____ =

(_____ + _____) + _____ =

_____ + (_____ + _____)

3 →
5 ↘
+ 5 ↗ +

_____

7 5 + 2 + 8

→
↘
+ ↗ + _____

_____

8 7 + 2 + 9

↘
+ → + _____

_____

WORK ON YOUR OWN

Add Three 1-Digit Whole Numbers

HOW TO

Using Symbols	Using Words
1. (7 + 8) + 2 = **15** + 2 OR 7 + (8 + 2) = 7 + **10**	Add the first two addends, or add the two addends that make a 10.
2. (7 + 8) + 2 = 15 + 2 = 17 OR 7 + (8 + 2) = 7 + 10 = 17	Add that sum to the remaining addend.

Adding 2-Digit Numbers with No Regrouping

Name _____ Class _____ Date _____

GET STARTED

1. 32 _____ tens _____ ones

2. 59 _____

3. 5 + 2 = _____

4. 6 + 3 = _____

5. 65 + 32

$$\begin{array}{r} 65 \\ +\ 32 \\ \hline \end{array}$$

6. 74 + 15

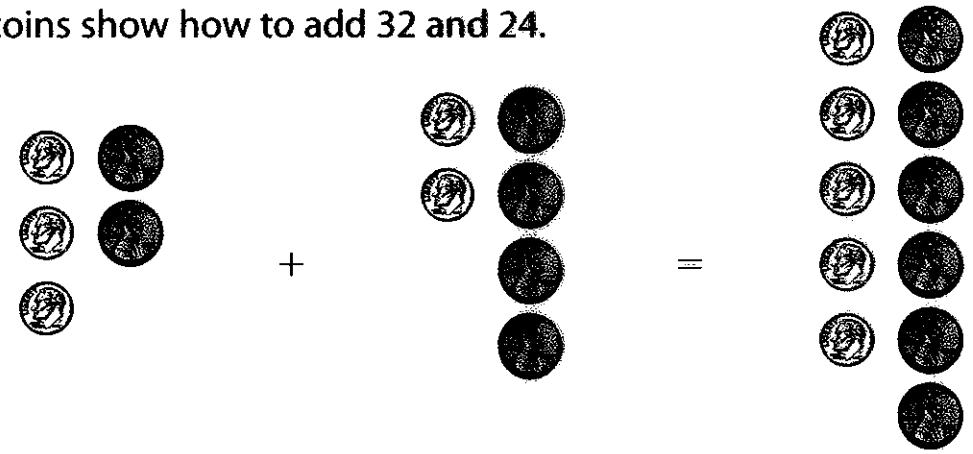
$$\begin{array}{r} 74 \\ +\ 15 \\ \hline \end{array}$$

7. 28 + 41

$$\begin{array}{r} \\ +\ \_\_ \\ \hline \end{array}$$

BUILD THE CONCEPT

The coins show how to add 32 and 24.



Tens	Ones	+	Tens	Ones	=	Tens	Ones
_____	_____		_____	_____		_____	_____

32 + 24 = _____

TRY IT TOGETHER

Find each sum.

8 $\begin{array}{r} 63 \\ +\ 24 \\ \hline \end{array}$

9 $\begin{array}{r} 28 \\ +\ 50 \\ \hline \end{array}$

10 $70 + 14$

$+$ _____

WORK ON YOUR OWN

HOW TO

Add 2-Digit Numbers with No Regrouping

Using Symbols	Using Words
1. $62 + 27$ $\begin{array}{r} 62 \\ +\ 27 \\ \hline \end{array}$	Write the numbers one under the other with the place values lined up.
2. $\begin{array}{r} 62 \\ +\ 27 \\ \hline 9 \end{array}$	Add the digits in the ones column. Write the sum in the ones column under the equal bar.
3. $\begin{array}{r} 62 \\ +\ 27 \\ \hline 89 \end{array}$	Add the digits in the tens column. Write the sum in the tens column under the equal bar.

Adding 2-Digit Numbers with Regrouping

Name _____ Class _____ Date _____

GET STARTED

1. 576 **a.** _____ **b.** _____ **c.** _____

2.
$$\begin{array}{r} 8 \\ 5 \\ +\ 4 \\ \hline \end{array}$$

3. 46 + 43

$$\begin{array}{r} 46 \\ +\ 43 \\ \hline \end{array}$$

4. 27 + 45

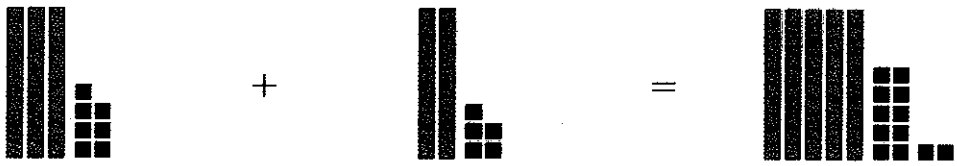
$$\begin{array}{r} {\scriptstyle 1} \\ 27 \\ +\ 45 \\ \hline \end{array}$$

5. 56 + 17

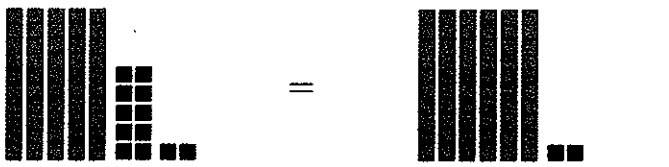
$$\begin{array}{r} \\ +\ \_\_ \\ \hline \end{array}$$

BUILD THE CONCEPT

The base-10 pieces model 37 + 25.



Tens	Ones	+	Tens	Ones	=	Tens	Ones
_____	_____	+	_____	_____	=	_____	_____



Tens	Ones	=	Tens	Ones
_____	_____	=	_____	_____

37 + 25 = _____

TRY IT TOGETHER

Find each sum. Regroup as needed.

6 $\begin{array}{r} 28 \\ +\ 59 \\ \hline \end{array}$

7 $\begin{array}{r} 32 \\ +\ 49 \\ \hline \end{array}$

8 45 + 29

$\begin{array}{r} \\ +\ \\ \hline \end{array}$

WORK ON YOUR OWN

HOW TO

Add 2-Digit Numbers with Regrouping

Using Symbols

1. 58 + 36

$\begin{array}{r} 58 \\ +\ 36 \\ \hline \end{array}$

Using Words

Write the numbers one under the other with the place values lined up.

2. $\begin{array}{r} {\scriptstyle 1} \\ 58 \\ +\ 36 \\ \hline 4 \end{array}$

8 + 6 = 14
14 > 9
14 ones = 1 ten 4 ones

Add the digits in the ones column. If the sum is greater than 9, regroup.

Regroup: Write the ones digit of the sum in the ones column under the equal bar and the tens digit above the tens column.

3. $\begin{array}{r} {\scriptstyle 1} \\ 58 \\ +\ 36 \\ \hline 94 \end{array}$

Add the digits in the tens column. Write the sum in the tens column under the equal bar.

Adding Three 2-Digit Numbers with No Regrouping

Name _____ Class _____ Date _____

GET STARTED

1. 425 **a.** _____ **b.** _____ **c.** _____

2. 5 + 4 + 1 = _____

3. 63 + 25

$$\begin{array}{r} 63 \\ +\ 25 \\ \hline \end{array}$$

4. 25 + 33 + 21

$$\begin{array}{r} 25 \\ 33 \\ +\ 21 \\ \hline \end{array}$$

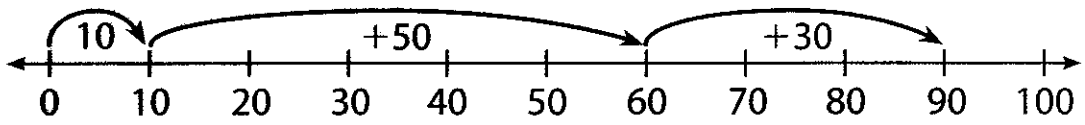
5. 20 + 44 + 32

$$\begin{array}{r} \\ \\ + \\ \hline \end{array}$$

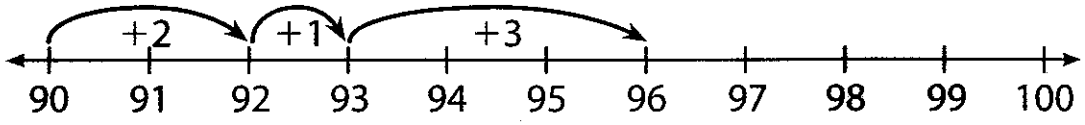
BUILD THE CONCEPT

Use the number lines to find the sum of 12, 51, and 33.

Add the tens: 10 + 50 + 30 = _____



Add the ones to the sum of the tens: 90 + 2 + 1 + 3 = _____



12 + 51 + 33 = _____

TRY IT TOGETHER

Find each sum.

6
$$\begin{array}{r} 13 \\ 31 \\ +\ 55 \\ \hline \end{array}$$

7
$$\begin{array}{r} 24 \\ 42 \\ +\ 20 \\ \hline \end{array}$$

8 $23 + 41 + 25$

$$+ \underline{\qquad}$$

WORK ON YOUR OWN

Add Three 2-Digit Numbers with No Regrouping

HOW TO

Using Symbols	Using Words
1. $42 + 15 + 21$ $\begin{array}{r} 42 \\ 15 \\ +\ 21 \\ \hline \end{array}$	Write the numbers one under the other with the place values lined up.
2. $\begin{array}{r} 42 \\ 15 \\ +\ 21 \\ \hline 8 \end{array}$	Add the digits in the ones column. Write the sum in the ones column under the equal bar.
3. $\begin{array}{r} 42 \\ 15 \\ +\ 21 \\ \hline 78 \end{array}$	Add the digits in the tens column. Write the sum in the tens column under the equal bar.

Adding Three 2-Digit Numbers with Regrouping

Name _____ Class _____ Date _____

GET STARTED

1. 793 **a.** _____ **b.** _____ **c.** _____

2.
$$\begin{array}{r} 9 \\ 6 \\ +\ 4 \\ \hline \end{array}$$

3. 56 + 37

$$\begin{array}{r} 56 \\ +\ 37 \\ \hline \end{array}$$

4. 46 + 32 + 17

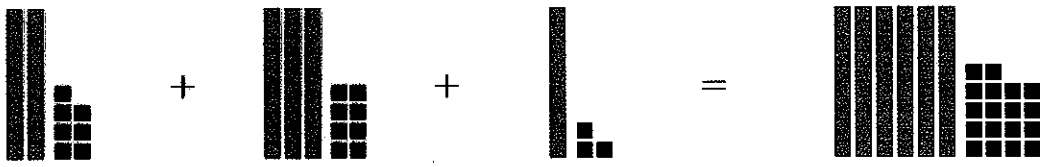
$$\begin{array}{r} {\scriptstyle 1} \\ 46 \\ 32 \\ +\ 17 \\ \hline \end{array}$$

5. 34 + 27 + 32

$$\begin{array}{r} \\ \\ \\ +\ \\ \hline \end{array}$$

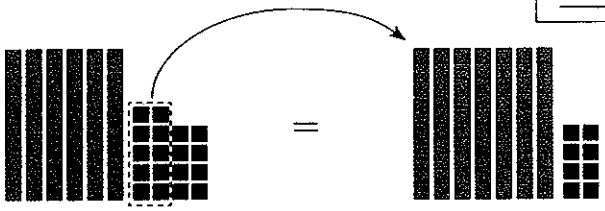
BUILD THE CONCEPT

The base-10 pieces show how to add 27, 38, and 13.



27 + 38 + 13 = _____

Tens	Ones
_____	_____



Tens	Ones		Tens	Ones
_____	_____	=	_____	_____

27 + 38 + 13 = _____

TRY IT TOGETHER

Find each sum. Regroup as needed.

6
$$\begin{array}{r} 17 \\ 46 \\ +\ 25 \\ \hline \end{array}$$

7
$$\begin{array}{r} 38 \\ 46 \\ +\ 19 \\ \hline \end{array}$$

8 $29 + 54 + 12$

$$+ \underline{\qquad}$$

WORK ON YOUR OWN

HOW TO

Add Three 2-Digit Numbers with Regrouping

Using Symbols

1. $48 + 19 + 26$

$$\begin{array}{r} 48 \\ 19 \\ +\ 26 \\ \hline \end{array}$$

Using Words

Write the numbers one under the other lining up the place values.

2.
$$\begin{array}{r} {\scriptstyle 2\ \ \ } \\ 48 \\ 19 \\ +\ 26 \\ \hline 3 \end{array}$$

$8 + 9 + 6 = 23$
$23 > 9$
23 ones = 2 ten 3 ones

Add the digits in the ones column. If the sum is greater than 9, regroup.

Regroup: Write the ones digit of the sum in the ones column under the equal bar and the tens digit above the tens column.

3.
$$\begin{array}{r} {\scriptstyle 2\ \ \ } \\ 48 \\ 19 \\ +\ 26 \\ \hline 93 \end{array}$$

Add the digits in the tens column. Write the sum in the tens column under the equal bar.

Adding 3-Digit Numbers with No Regrouping

Name _____ Class _____ Date _____

GET STARTED

1. 967 **a.** _____ **b.** _____ **c.** _____

2. 23 + 64

$$\begin{array}{r} 23 \\ +\ 64 \\ \hline \end{array}$$

3. 264 + 123

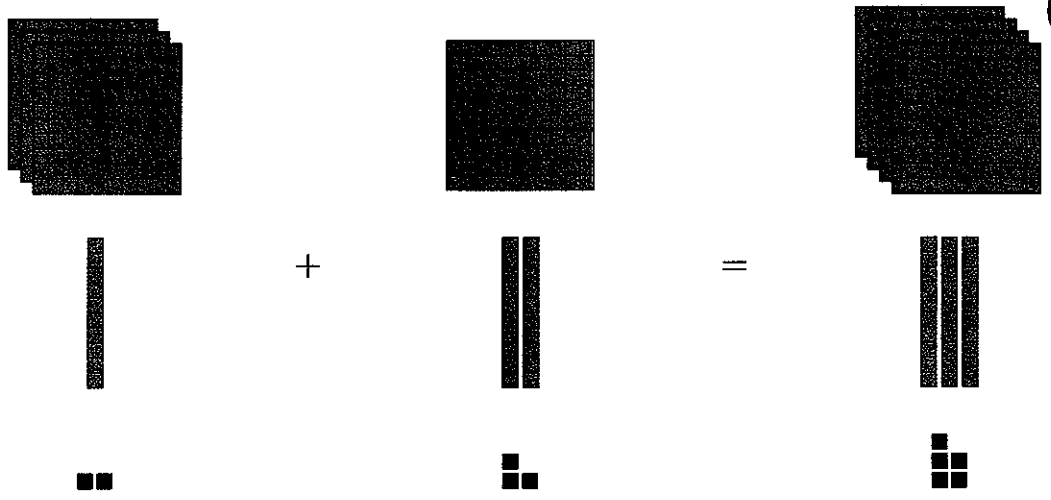
$$\begin{array}{r} 264 \\ +\ 123 \\ \hline \end{array}$$

4. 526 + 372

$$\begin{array}{r} \\ +\ \_\_\_ \\ \hline \end{array}$$

BUILD THE CONCEPT

Use base-10 pieces to add 312 and 123.



Hundreds	Tens	Ones	+	Hundreds	Tens	Ones	=	Hundreds	Tens	Ones
_____	_____			_____	_____			_____	_____	

312 + 123 = _____

TRY IT TOGETHER

Find each sum.

5. 354 + 424 = ____

6. 236 + 602 = ____

7. 227 + 731 = ____

WORK ON YOUR OWN

Add 3-Digit Numbers with No Regrouping

HOW TO

Using Symbols	Using Words
1. 473 + 125 473 + 125	Write the numbers one under the other lining up the place values.
2. 473 + 125 8	Add the digits in the ones column. Write the sum in the ones column under the equal bar.
3. 473 + 125 98	Add the digits in the tens column. Write the sum in the tens column under the equal bar.
4. 473 + 125 598	Add the digits in the hundreds column. Write the sum in the hundreds column under the equal bar.

Adding 3-Digit Numbers with Regrouping

Name _____ Class _____ Date _____

GET STARTED

1. 563 **a.** _____ **b.** _____ **c.** _____

2. 36 + 57

$$\begin{array}{r} 36 \\ +\ 57 \\ \hline \end{array}$$

3. 486 + 249

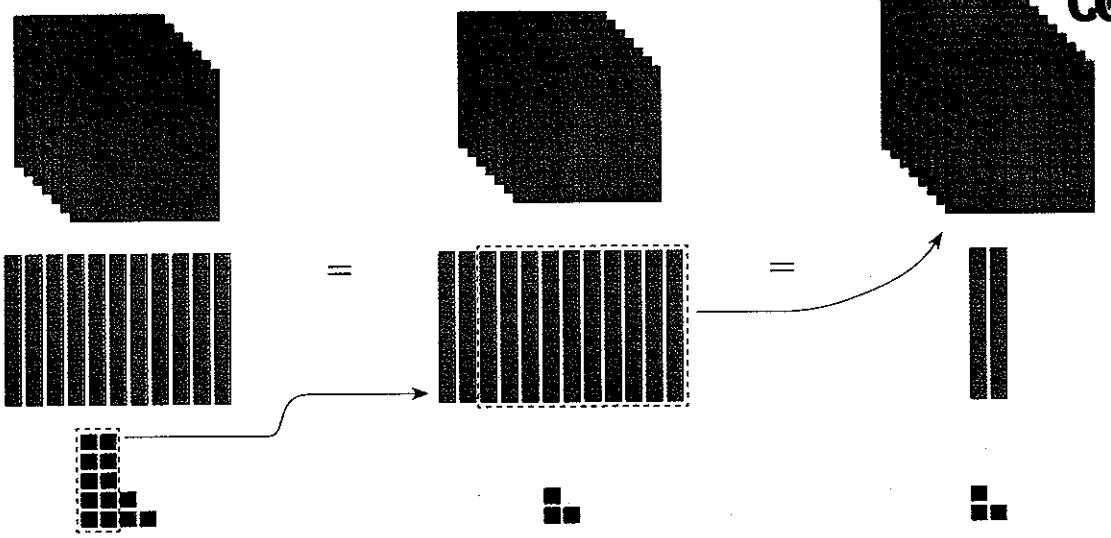
$$\begin{array}{r} 486 \\ +\ 249 \\ \hline \end{array}$$

4. 677 + 193

$$+\ \_\_\_\_$$

BUILD THE CONCEPT

Regroup ones for tens. Then regroup tens for hundreds.



Hundreds	Tens	Ones
_____	_____	

=

Hundreds	Tens	Ones
_____	_____	

=

Hundreds	Tens	Ones
_____	_____	

TRY IT TOGETHER

Find each sum. Regroup as needed.

5. $\begin{array}{r} 265 \\ +\ 458 \\ \hline \end{array}$

6. $\begin{array}{r} 592 \\ +\ 239 \\ \hline \end{array}$

7. 273 + 461

$+$ _____

WORK ON YOUR OWN

HOW TO

Add 3-Digit Numbers with Regrouping

Using Symbols

1. 629 + 184

$\begin{array}{r} 629 \\ +\ 184 \\ \hline \end{array}$

Using Words

Write the numbers one under the other lining up the place values.

2. $\begin{array}{r} {\scriptstyle 1\ \ \ } \\ 629 \\ +\ 184 \\ \hline 3 \end{array}$

$9 + 4 = 13$
$13 > 9$
13 ones = 1 ten 3 ones

Add the digits in the ones column. If the sum is greater than 9, regroup.

3. $\begin{array}{r} {\scriptstyle 1\ 1\ } \\ 629 \\ +\ 184 \\ \hline 13 \end{array}$

$1 + 2 + 8 = 11$
$11 > 9$
11 tens = 1 hundred 1 ten

Add the digits in the tens column. If the sum is greater than 9, regroup.

4. $\begin{array}{r} {\scriptstyle 1\ 1\ } \\ 629 \\ +\ 184 \\ \hline 813 \end{array}$

Add the digits in the hundreds column.

Adding Multi-Digit Numbers with Regrouping

Name _____ Class _____ Date _____

GET STARTED

1. 45
   32
   + 25

2. 742
   107
   + 113

3. 114 + 32 + 47

   114
   32
   + 47

4. 423 + 125 + 70

   +

BUILD THE CONCEPT

A place value chart can be used to add multi-digit numbers. This place value chart is used to add 72, 593, and 265.

	Hundreds	Tens	Ones
	5	9	3
	2	6	5
+		7	2
Sum			

72 + 593 + 265 = _____

TRY IT TOGETHER

Find each sum. Regroup as needed.

5. 92 + 317

+ ____

6. 741 + 89

+ ____

7. 924 + 36 + 608

+ ____

WORK ON YOUR OWN

HOW TO

Add Multi-Digit Numbers with Regrouping

Using Symbols

1. 419 + 378 + 65

```
  419
  378
+  65
-----
```

Using Words

Write the numbers one under the other lining up the place values.

2.
```
  2
  419
  378
+  65
-----
    2
```

9 + 8 + 5 = 22
22 ones = 2 tens 2 ones

Add the digits in the ones column. If the sum is greater than 9, regroup.

3.
```
 1 2
  419
  378
+  65
-----
   62
```

2 + 1 + 7 + 6 = 16
16 tens = 1 hundred 6 tens

Add the digits in the tens column. If the sum is greater than 9, regroup.

4.
```
 1 2
  419
  378
+  65
-----
  862
```

Add the digits in the hundreds column.

Estimating Sums

Name _____ Class _____ Date _____

GET STARTED

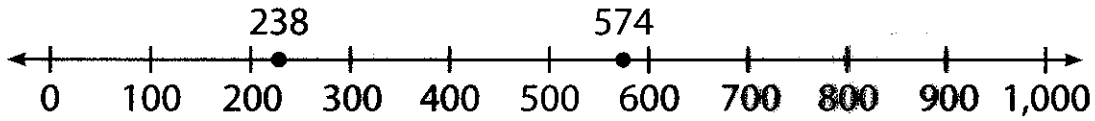
1. 315
   268
   + 124

2. 315 → _____
   268 → _____
   124 → _____

3. 315 → 300
   268 → 300
   + 124 → + 100

BUILD THE CONCEPT

Estimate the sum: 238 + 574.



238 is between 200 and 300.
238 is closer to _____.
238 rounded to the nearest hundred is _____.

574 is between 500 and 600.
574 is closer to _____.
574 rounded to the nearest hundred is _____.

Add the rounded addends.

238 + 574
↓ ↓
_____ + _____ = _____

238 + 574 is about _____.

TRY IT TOGETHER

Estimate each sum.

4
$$\begin{array}{rl} 284 & \longrightarrow \\ 18 & \longrightarrow \\ +\ 47 & \longrightarrow \ + \_\_\_\_ \end{array}$$

5
$$\begin{array}{rl} 245 & \longrightarrow \\ 618 & \longrightarrow \\ +\ 127 & \longrightarrow \ + \_\_\_\_ \end{array}$$

6 $227 + 341 + 456$

$$\begin{array}{rl} 227 & \longrightarrow \\ 341 & \longrightarrow \\ +\ 456 & \longrightarrow \ + \_\_\_\_ \end{array}$$

WORK ON YOUR OWN

HOW TO

Estimate Sums

Using Symbols

1. Estimate the sum of 583, 42, and 250.

$$\begin{array}{rl} 583 & \longrightarrow \ \mathbf{600} \\ 250 & \longrightarrow \ \mathbf{300} \\ +\ 42 & \longrightarrow \ +\ \mathbf{40} \end{array}$$

2.
$$\begin{array}{r} 600 \\ 300 \\ +\ 40 \\ \hline 940 \end{array}$$

583 + 42 + 250 is about 940.

Using Words

Round each number to its greatest place value.

Add the rounded numbers.

Reasonableness and Estimation

Name _____ Class _____ Date _____

GET STARTED

1. 110 →
 187 →
 + 16 → +

2. 345 →
 505 →
 + 169 → +

3. Maria practiced playing the piano for 25 minutes on Monday, 30 minutes on Tuesday, and 40 minutes on Wednesday. In all 3 days, how many minutes did Maria practice playing the piano?

   a. 85 minutes **b.** 65 minutes

   c. 95 minutes **d.** 15 minutes

4. This year, 435 books were sold at the book fair. Last year, 260 books were sold. How many books were sold this year and last year?

   a. 695 books **b.** 795 books

   c. 895 books **d.** 175 books

TRY IT TOGETHER

Eliminate unreasonable answers. Solve each problem.

5. A new bike costs $265. A new helmet costs $97. How much does it cost to buy the bike and helmet?

   a. $362 **b.** $300

   c. $400 **d.** $590

6. Ana's class recycled 247 items. Omar's class recycled 198 items. How many items did both classes recycle?

   a. 247 items **b.** 445 items

   c. 335 items **d.** 49 items

WORK ON YOUR OWN

HOW TO

Use Estimation to Check for Reasonableness in Multiple-Choice Questions

Students used 418 blue balloons and 274 green balloons to decorate their school. How many balloons did the students use in all?

~~**a.** 144 balloons~~ **b.** 692 balloons

c. 682 balloons ~~**d.** 6,812 balloons~~

1. **Find:** the number of balloons the students used in all
2. **How?** Estimate the sum. Eliminate unreasonable answers. Then find the exact sum.
3. **Solve.**

$$\begin{array}{rcr} 418 & \longrightarrow & 400 \\ +\ 274 & \longrightarrow & +\ 300 \\ \hline & & 700 \end{array}$$

144 balloons and 6,812 balloons are unreasonable answers. They are not within 100 of 700.

$418 + 274 = 692$; answer choice b. 692 balloons

4. **Is the answer reasonable? Explain.** Yes, the answer is reasonable; 692 is within 100 of 700.