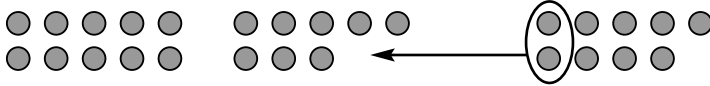


Adding Mentally

Goal Use mental math strategies to add 2-digit numbers.

1. Move counters to make the addition easier.
Then write the answer.



$$18 + 9 = \underline{20 + 7 = 27}$$

Or move 1 counter from 18 to 9 to get $17 + 10 = 27$.

2. Use mental addition.

a) $20 + 30 = \underline{50}$

b) $50 + 20 = \underline{70}$

c) $19 + 31 = \underline{50}$

d) $18 + 32 = \underline{50}$

e) $49 + 21 = \underline{70}$

3. Use mental math to solve these problems.

- a) There are 38 students in Mrs. Jones's classroom and 23 students in Mr. Singh's classroom.

How many students are there altogether? 61

- b) Payden has 48 cents and Jill has 22 cents.

How much money do they have altogether? 70

- c) Avis is 19. Her grandmother is 58 years older.

How old is Avis's grandmother? 77

- d) There are 37 cans on one shelf and 43 on another.

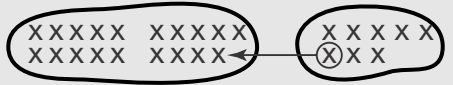
How many cans are there altogether? 80

- e) There are 28 large paper clips and 38 small paper clips.

How many paper clips are there altogether? 66

At-Home Help

Moving counters from one group to another can sometimes make adding easier.



$$19 + 8$$



$$20 + 7$$

$$\begin{array}{r} +1 \\ 19 + 8 = 20 + 7 \\ = 27 \end{array}$$

Estimating Sums

Goal Estimate sums by rounding.

Answers will vary. For example:

1. Estimate. Show your rounded numbers.

a) $1867 + 913$ is about equal to
 $2000 + 1000 = 3000$

b) $3611 + 1489$ is about equal to
 $4000 + 1500 = 5500$

c) $1156 + 2722$ is about equal to
 $1000 + 3000 = 4000$

d) $999 + 1999$ is about equal to
 $1000 + 2000 = 3000$

2. Estimate the answers to these problems. Show your rounded numbers.

- a) Jack's mother drove 1245 km on Saturday and 985 km on Sunday.
About how many kilometres did she drive on those 2 days?

$$1000 + 1000 = 2000$$


- b) 4856 people live in one town. 3345 live in another town.
About how many people live in the 2 towns?


$$5000 + 3000 = 8000$$

- c) 3756 DVDs were rented one week. 4103 DVDs were rented the next week. About how many DVDs were rented those 2 weeks?

$$4000 + 4000 = 8000$$

3. Use rounded numbers to find whether \$5000 is enough to buy both items in each part. Check your answers using a calculator.

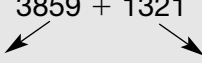
- a)  Not enough because
 $\$1500 + \$4500 = \$6000$,
 which is greater than
 $\$5000$; $\$6215$ is greater
 than $\$5000$.

- b)  Enough because
 $\$2500 + \$1200 = \$3700$,
 which is less than
 $\$5000$; $\$3730$ is less
 than $\$5000$.

At-Home Help

You can use **rounded numbers** to **estimate a sum** (the answer when you add).

$$3859 + 1321$$



close to 4000 close to 1000

The sum is about
 $4000 + 1000 = 5000$.

Communicate About Number Concepts and Procedures

Goal

Explain your thinking when estimating a sum.

Estimates will vary. For example:

1. Is each answer reasonable? Explain.

a) $1899 + 976 = 2875$ Reasonable because
 $2000 + 1000 = 3000$ and 2875 is close to 3000 .

b) $4521 + 2589 = 7110$ Reasonable because
 $4000 + 2000 = 6000$ and $5000 + 3000 = 8000$
 and 7110 is between 6000 and 8000 .

c) $3464 + 1987 = 7451$ Not reasonable
 because $3500 + 2000 = 5500$, which is not
 close enough to 7451 .

d) $1569 + 3750 = 4319$ Not reasonable because $1500 + 4000 = 5500$,
 which is not close enough to 4319 .

e) $3122 + 3179 = 6301$ Reasonable because $3000 + 3000 = 6000$
 and 6301 is close to 6000 .

2. Use a calculator to solve each problem.

Explain why your answer is reasonable.

a) 1517 tickets were sold for blue seats at a hockey game.
 3567 tickets were sold for red seats.
 How many tickets were sold altogether? 5084 is reasonable because
 $1500 + 3500 = 5000$ and 5084 is close to 5000 .

b) 5245 children's tickets were sold for a circus.
 2345 adult tickets were sold.
 How many tickets were sold altogether? 7590 is reasonable because
 $5000 + 2000 = 7000$ and 7590 is close to 7000 .

At-Home Help

Estimation can help you to find out if an answer is **reasonable**.

6332

This answer to $2567 + 3765$

is reasonable because

$2000 + 3000 = 5000$ and

$3000 + 4000 = 7000$.

The answer should be between 5000 and 7000 .

Adding 4-Digit Numbers

Goal Solve addition problems using regrouping.

1. Complete the addition by writing in the spaces in the place value chart.

a)

Thousands	Hundreds	Tens	Ones
1	1	1	
2	7	3	2
2	8	6	9
5	6	0	1

b)

Thousands	Hundreds	Tens	Ones
1		1	
2	7	3	8
6	4	3	9
9	1	7	7

At-Home Help

You can add two 4-digit numbers by **regrouping**.

$$2539 + 1866$$

Thousands	Hundreds	Tens	Ones
1	1	1	
2	5	3	9
1	8	6	6
4	4	0	5

$$\begin{array}{r} 111 \\ 2539 \\ + 1866 \\ \hline 4405 \end{array}$$

The answer seems reasonable because $3000 + 2000 = 5000$ and the answer is close to 5000.

2. Estimate the sum. Then add.

Estimates will vary. For example:

a)

$$\begin{array}{r} 3988 \\ + 2246 \\ \hline \text{about } 6000 \\ 6234 \end{array}$$

b)

$$\begin{array}{r} 3254 \\ + 862 \\ \hline \text{about } 4000 \\ 4116 \end{array}$$

c)

$$\begin{array}{r} 4310 \\ + 3859 \\ \hline \text{about } 8000 \\ 8169 \end{array}$$

3. Estimate. Then solve.

Estimates will vary. For example:

- a) There are 3456 Girl Guides in one area and 1672 in another area. What is the total number of Girl Guides in both areas?
about 5000
5128

- b) There are 1867 Wolf Cubs in one area and 4306 in another area. What is the total number of Wolf Cubs in both areas?
about 6300
6173

Subtracting Mentally

Goal

Develop mental math strategies for subtracting 2-digit numbers.

1. Add the same number to each number to make subtracting easier. Record only the answer.

a) $56 - 18 = \underline{\quad 38 \quad}$

b) $61 - 19 = \underline{\quad 42 \quad}$

c) $45 - 28 = \underline{\quad 17 \quad}$

d) $51 - 39 = \underline{\quad 12 \quad}$

e) $32 - 9 = \underline{\quad 23 \quad}$

f) $75 - 49 = \underline{\quad 26 \quad}$

g) $83 - 28 = \underline{\quad 55 \quad}$

h) $65 - 48 = \underline{\quad 17 \quad}$

At-Home Help

Adding the same number to each number in a subtraction question does not change the answer.

$$\begin{array}{r} 6 + 2 \longrightarrow 8 \\ -1 + 2 \longrightarrow -3 \\ \hline 5 \qquad \qquad \qquad 5 \end{array}$$

Adding the same number can sometimes make it easier to subtract.

$$\begin{array}{r} 37 + 2 \longrightarrow 39 \\ -18 + 2 \longrightarrow -20 \\ \hline \qquad \qquad \qquad 19 \end{array}$$

$$37 - 18 = 39 - 20 \\ = 19$$

2. Use mental math to solve each problem.

- a) It is 33°C in one town and 9°C in another town.
What is the difference in temperature between the towns?

24°

- b) Licorice costs 62 cents. Gumballs cost 39 cents.
How much more does the licorice cost than the gumballs?

23 cents

- c) 19 cm is cut from a 51 cm ribbon.
How many centimetres long is the ribbon now?

32 cm

- d) There are 71 students in grade 4.
39 are girls. How many students are boys?

32

Estimating Differences

Goal Estimate differences by rounding.

Answers will vary. For example:

1. Estimate. Show your rounded numbers.

- a) $2867 - 913$ is about equal to

$$\underline{\hspace{10em}} \quad 3000 - 1000 = 2000$$

- b) $4511 - 1489$ is about equal to

$$\underline{\hspace{10em}} \quad 4500 - 1500 = 3000$$

- c) $6156 - 722$ is about equal to

$$\underline{\hspace{10em}} \quad 6000 - 700 = 5300$$

- d) $4999 - 1099$ is about equal to $\underline{\hspace{10em}}$ $5000 - 1000 = 4000$

- e) $8504 - 2571$ is about equal to $\underline{\hspace{10em}}$ $8500 - 2500 = 6000$

2. Estimate the answers to these problems.

Show your rounded numbers.

- a) A library has 6756 books. 2567 are on loan.

About how many books are left in the library?

$$\underline{\hspace{10em}} \quad 6500 - 2500 = 4000$$

- b) A plane flying at a height of 7458 m drops down 3288 m.

At about what height is it flying now?

$$\underline{\hspace{10em}} \quad 7500 - 3000 = 4500 \text{ m}$$

- c) Mount Logan, the highest point in Canada, is 5959 m tall.

Mount Everest, the highest point in the world, is 8850 m tall.

About how much taller is Mount Everest than Mount Logan?

$$\underline{\hspace{10em}} \quad 9000 - 6000 = 3000 \text{ m}$$

3. Estimate to show if the answer is reasonable.

$$7653 - 2987 = 2666 \quad \text{Not reasonable because } 7500 - 3000 = 4500,$$

$\underline{\hspace{10em}}$ so the answer 2666 is too low.

At-Home Help

You can use rounded numbers to **estimate a difference** (the answer when you subtract).

$$\begin{array}{ccc} & 4859 & - & 2598 & \\ & \swarrow & & \searrow & \\ \text{close to } 5000 & & & & \text{close to } 2500 \end{array}$$

The difference is about $5000 - 2500 = 2500$.

Subtracting from 4-Digit Numbers

Goal

Use a paper and pencil method to subtract from a 4-digit number.

Estimates will vary. For example:

1. Estimate the difference. Then subtract.
Show your work.

$$\begin{array}{r} \text{a)} \quad 3234 \\ - \quad 533 \\ \hline \end{array}$$

$$3200 - 500 = 2700$$

$$2701$$

$$\begin{array}{r} \text{b)} \quad 2045 \\ - \quad 1236 \\ \hline \end{array}$$

$$2000 - 1200 = 800$$

$$809$$

$$\begin{array}{r} \text{c)} \quad 2000 \\ - \quad 621 \\ \hline \end{array}$$

$$2000 - 600 = 1400$$

$$1379$$

$$\begin{array}{r} \text{d)} \quad 8129 \\ - \quad 411 \\ \hline \end{array}$$

$$8000 - 400 = 7600$$

$$7718$$

$$\begin{array}{r} \text{e)} \quad 1566 \\ - \quad 807 \\ \hline \end{array}$$

$$1600 - 800 = 800$$

$$759$$

$$\begin{array}{r} \text{f)} \quad 5003 \\ - \quad 347 \\ \hline \end{array}$$

$$5000 - 300 = 4700$$

$$4656$$

2. Estimate and solve.

- a) The average yearly precipitation (rain and snow) in Toronto is 819 mm. The greatest average yearly precipitation in Canada is 6655 mm in Henderson Lake, B.C. What is the difference in precipitation between Henderson Lake and Toronto?

about 6000 mm

5836 mm

- b) A town has 1100 adults. 589 are women. How many men are there?

about 500 men

511 men

- c) A school is trying to raise \$1000 for a charity. \$795 has already been raised. How much more money must the school raise?

about \$200

\$205

At-Home Help

You can subtract larger numbers by regrouping the top number in several steps.

$$\begin{array}{r} 013516 \\ 1366 \\ - \quad 448 \\ \hline 918 \end{array}$$

The answer seems reasonable because $1400 - 400 = 1000$ and 918 is close to 1000.

Subtracting in a Different Way

Goal Use regrouping to make subtraction easier.

1. Finish each subtraction.

$$\begin{array}{r} \text{a)} \quad 1\ 9\ 9\ 9 + 1 \\ \quad \underline{2000} \\ \quad - 655 \\ \quad \hline \quad 1345 \end{array}$$

$$\begin{array}{r} \text{b)} \quad 2\ 9\ 9\ 9 + 4 \\ \quad \underline{3003} \\ \quad - 635 \\ \quad \hline \quad 2368 \end{array}$$

$$\begin{array}{r} \text{c)} \quad 4\ 9\ 9\ 9 + 2 \\ \quad \underline{5001} \\ \quad - 1872 \\ \quad \hline \quad 3129 \end{array}$$

2. Estimate each difference. Then subtract.

Show your work.

Estimates will vary. For example:

$$\begin{array}{r} \text{a)} \quad 3000 \\ \quad - 533 \\ \quad \hline 3000 - 500 = 2500 \\ \quad 2467 \end{array}$$

$$\begin{array}{r} \text{c)} \quad 2005 \\ \quad - 621 \\ \quad \hline 2000 - 600 = 1400 \\ \quad 1384 \end{array}$$

$$\begin{array}{r} \text{e)} \quad 1000 \\ \quad - 807 \\ \quad \hline 1000 - 800 = 200 \\ \quad 193 \end{array}$$

$$\begin{array}{r} \text{b)} \quad 2000 \\ \quad - 1236 \\ \quad \hline 2000 - 1200 = 800 \\ \quad 764 \end{array}$$

$$\begin{array}{r} \text{d)} \quad 8000 \\ \quad - 411 \\ \quad \hline 8000 - 400 = 7600 \\ \quad 7589 \end{array}$$

$$\begin{array}{r} \text{f)} \quad 5003 \\ \quad - 1347 \\ \quad \hline 5000 - 1000 = 4000 \\ \quad 3656 \end{array}$$

3. Correct any unreasonable answers.

$$\begin{array}{l} \text{a)} \quad 8000 - 178 = 7822 \\ \quad \text{reasonable} \end{array}$$

$$\begin{array}{l} \text{b)} \quad 3000 - 488 = 2812 \\ \quad \text{not reasonable} \\ \quad 2512 \end{array}$$

At-Home Help

If the top number in a subtraction has many zeroes, you can regroup in 1 step.

$$\begin{array}{r} 1\ 9\ 9\ 9 + 1 \\ \underline{2000} \\ - 755 \\ \hline 1244 + 1 = 1245 \end{array}$$

The answer is reasonable because $2000 - 800 = 1200$ and 1245 is close to 1200.

Making Change

Goal Make purchases and change for money amounts.

1. Finish the steps to find the change.



$$\$1.55 + 5 \text{ cents} = \$1.60$$

$$\$1.60 + \underline{40 \text{ cents}} = \$2.00$$

The change is 45 cents.



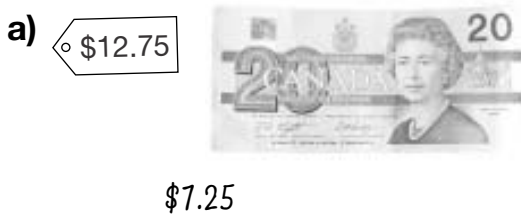
$$\$3.48 + 2 \text{ cents} = \$3.50$$

$$\$3.50 + \underline{50 \text{ cents}} = \$4.00$$

$$\$4.00 + \underline{\$6.00} = \$10.00$$

The change is \$6.52.

2. Find the change.



At-Home Help

You can **count on from a price** to determine the amount of change after buying something.

The item costs \$12.35 and you have a \$20 bill.

$$\$12.35 + 5 \text{ cents} = \$12.40$$

$$\$12.40 + 60 \text{ cents} = \$13.00$$

$$\$13.00 + \$7.00 = \$20.00$$

The change is $\$7.00 + 60 \text{ cents} + 5 \text{ cents} = \7.65 .

Adding and Subtracting Money

Goal Use different methods to add and subtract money.

1. Add or subtract one way.

Use another way to check your answer.

a) $\$10.99 + \15.67

$$\$26.66$$

b) $\$30.00 - \16.95

$$\$13.05$$

c) $\$4.99 + \4.99

$$\$9.98$$

d) $\$15.00 - \9.98

$$\$5.02$$

e) $\$14.25 + \5.75

$$\$20.00$$

f) $\$20.00 - \14.25

$$\$5.75$$

2. Find the total cost of the items.
Then find the change from \$10.00.

cost: \$6.96

change: \$3.04



At-Home Help

There are many ways to add and subtract prices ending in 98 or 99.

To add \$9.99 and \$8.56, take 1¢ from \$8.56, add 1¢ to \$9.99, and add the new amounts.

$$\begin{aligned} & \$9.99 + \$8.56 \\ & \$10.00 + \$8.55 = \$18.55 \end{aligned}$$

Or to add \$9.99 and \$8.56, add 1¢ to \$9.99 to get \$10, add \$10.00 and \$8.56, and subtract 1¢ from the total.

$$\begin{aligned} & \$9.99 + \$8.56 \\ & \$10.00 + \$8.56 = \$18.56 \\ & \$18.56 - 1¢ = \$18.55 \end{aligned}$$

To subtract \$9.99 from \$20, add 1¢ to each amount, and subtract the new amounts.

$$\begin{aligned} & \$20.00 - \$9.99 \\ & \$20.01 - \$10.00 = \$10.01 \end{aligned}$$

Or to subtract \$9.99 from \$20, add 1¢ to \$9.99 to get \$10, subtract \$10.00 from \$20.00, and add 1¢ to the answer.

$$\begin{aligned} & \$20.00 - \$9.99 \\ & \$20.00 - \$10.00 = \$10.00 \\ & \$10.00 + 1¢ = \$10.01 \end{aligned}$$

Test Yourself

Circle the correct answer.

1. Use mental math to find which answer is equal to 21.

A. $69 - 40$

B. $45 - 26$

C. $70 - 49$

D. $50 - 38$

2. Use estimation to find which answer is greater than 2000.

E. $2988 - 1875$

F. $7345 - 5988$

G. $998 + 869$

H. $6134 - 3978$

3. Which answer is equal to $4567 + 2366$?

A. $2188 + 4114$

B. $2620 + 3373$

C. $5065 + 937$

D. $4829 + 2104$

4. Which answer is equal to 481?

E. $1050 - 669$

F. $1300 - 809$

G. $1230 - 649$

H. $1000 - 519$

5. There are 3456 people watching a parade on one side of a street and 2859 watching on the other side. How many people are watching the parade?

A. 5315

B. 4315

C. 6315

D. 597

6. One plane is flying at a height of 5000 m. Another plane is flying at a height of 599 m. What is the difference in height between the planes?

E. 4403 m

F. 4401 m

G. 3401 m

H. 5599 m

7. A DVD costs \$19.95 and a book costs \$8.95. How much less than \$40 is the total cost of the items?

A. \$11.10

B. \$10.10

C. \$12.10

D. \$28.90

8. Which pair of items costs the most?

E.



G.



F.



H.

