

Estimating Differences



Quick Review

Here are some strategies for estimating differences.

- Estimate: $513 - 289$

Write each number to the nearest 100 and subtract.

$$500 - 300 = 200$$

So, $513 - 289$ is about 200.

To get a closer estimate, write only one number to the closest 100.
 $513 - 300 = 213$.
 So, $513 - 289$ is about 213.

- Estimate: $4592 - 2369$

Use front-end estimation.

$$4592 \rightarrow 4000$$

$$2369 \rightarrow 2000$$

$$4000 - 2000 = 2000$$

So, $4592 - 2369$ is about 2000.

Use the digits in the thousands place. Replace the other digits with zeros.

Try These

1. Estimate each difference.

a) $749 - 263$

b) $504 - 327$

c) $988 - 214$

Estimate: _____

Estimate: _____

Estimate: _____

d) $4580 - 1235$

e) $677 - 48$

f) $6896 - 1583$

Estimate: _____

Estimate: _____

Estimate: _____

2. Natalie estimated $584 - 126$ as 400. Is her estimate high or low? Explain.

Practice

1. Use the data in the chart to estimate each difference.

School Lunches Served

| Day | Number Served |
|-----------|---------------|
| Monday | 286 |
| Tuesday | 327 |
| Wednesday | 489 |
| Thursday | 417 |
| Friday | 648 |

- a) About how many more lunches were served on Friday than on Monday? _____
- b) About how many more lunches were served on Thursday than on Tuesday? _____
- c) About how many more lunches were served on Wednesday than on Tuesday? _____
2. Laleh estimated the difference of 7654 and 4111 as 4000, and Sam estimated the difference as 3500.
- a) How might Laleh have estimated?

- b) How might Sam have estimated?

- c) Whose estimate is better? Explain.

Stretch Your Thinking

Find a pair of 3-digit numbers that have an estimated difference of 520.

Using Mental Math to Subtract



Quick Review

Here are some strategies for using mental math to subtract.

- Use the strategy of “make a friendly number.”

Subtract: $719 - 398$

Add 2 to 398 to make 400.

Add 2 to 719 to make 721.

$721 - 400 = 321$

So, $719 - 398 = 321$

Subtract: $437 - 103$

Subtract 100 instead of 103.

$437 - 100 = 337$

Then subtract 3.

$337 - 3 = 334$

So, $437 - 103 = 334$

- Use the strategy of “counting on.”

Subtract: $441 - 230$

Count: $230 \xrightarrow{+100} 330 \xrightarrow{+100} 430 \xrightarrow{+10} 440 \xrightarrow{+1} 441$

$+100 \quad +100 \quad +10 \quad +1 \quad = \quad 211$

So, $441 - 230 = 211$

Try These

1. Use mental math to subtract.

a) $427 - 299 =$ _____ **b)** $625 - 495 =$ _____ **c)** $586 - 397 =$ _____

d) $256 - 101 =$ _____ **e)** $748 - 403 =$ _____ **f)** $462 - 202 =$ _____

g) $4272 - 2150 =$ _____ **h)** $7758 - 3547 =$ _____ **i)** $6894 - 1673 =$ _____

2. Laslo travelled 637 km on Saturday and 402 km on Sunday.
How much farther did he travel on Saturday than on Sunday?
Use mental math to find out. _____

3. The hot dog stand served 250 hot dogs on Friday and 481 on Saturday.
How many more hot dogs were served on Saturday than on Friday?
Use mental math to find out. _____

Practice

1. Use mental math to find each difference.
Then use the letters next to the differences to solve the riddle.

What did King Tut say
when he was scared?

$543 - 260 = \underline{\hspace{2cm}} \text{ (B)}$

$622 - 415 = \underline{\hspace{2cm}} \text{ (E)}$

$894 - 517 = \underline{\hspace{2cm}} \text{ (N)}$

$583 - 298 = \underline{\hspace{2cm}} \text{ (I)}$

$499 - 354 = \underline{\hspace{2cm}} \text{ (M)}$

$314 - 189 = \underline{\hspace{2cm}} \text{ (U)}$

$532 - 220 = \underline{\hspace{2cm}} \text{ (T)}$

$847 - 606 = \underline{\hspace{2cm}} \text{ (Y)}$

$684 - 302 = \underline{\hspace{2cm}} \text{ (W)}$

$717 - 402 = \underline{\hspace{2cm}} \text{ (Z)}$

$536 - 199 = \underline{\hspace{2cm}} \text{ (C)}$

$632 - 421 = \underline{\hspace{2cm}} \text{ (F)}$

$947 - 624 = \underline{\hspace{2cm}} \text{ (L)}$

$231 - 111 = \underline{\hspace{2cm}} \text{ (A)}$

285

382

120

377

312

145

241

145

125

145

145

241

Stretch Your Thinking

Describe two ways to find $4000 - 3894$.

Practice

1. Subtract. Check your answers.

a)
$$\begin{array}{r} 836 \\ - 451 \\ \hline \end{array}$$

Check:

b)
$$\begin{array}{r} 726 \\ - 538 \\ \hline \end{array}$$

Check:

c)
$$\begin{array}{r} 736 \\ - 528 \\ \hline \end{array}$$

Check:

2. Use mental math to find each difference.

a) $400 - 263 = \underline{\hspace{2cm}}$

b) $501 - 248 = \underline{\hspace{2cm}}$

c) $450 - 231 = \underline{\hspace{2cm}}$

3. Estimate first. Then subtract the numbers for which the difference will be less than 300.

a)
$$\begin{array}{r} 591 \\ - 375 \\ \hline \end{array}$$

b)
$$\begin{array}{r} 436 \\ - 168 \\ \hline \end{array}$$

c)
$$\begin{array}{r} 624 \\ - 235 \\ \hline \end{array}$$

d)
$$\begin{array}{r} 716 \\ - 371 \\ \hline \end{array}$$

e)
$$\begin{array}{r} 327 \\ - 79 \\ \hline \end{array}$$

4. Ms. Green's class collected 600 cans for recycling.
Mr. Hso's class collected 427 cans.
How many more cans did Ms. Green's class collect?

5. Sanil's school had a book sale.
On Monday they sold 697 books.
On Tuesday they sold 842 books.
How many more books did they sell on Tuesday?

Stretch Your Thinking

The difference of two numbers is 329.

What might the numbers be? Find two pairs of numbers.

Subtracting 4-Digit Numbers



Quick Review

Subtract: $2053 - 997$

You can use place value to subtract from right to left.

Regroup 1 ten as 10 ones.

Subtract the ones.

$$\begin{array}{r} 413 \\ 20\cancel{5}\cancel{3} \\ - 997 \\ \hline 6 \end{array}$$

Regroup 1 thousand as 10 hundreds.

Regroup 1 hundred as 10 tens.

$$\begin{array}{r} 94 \\ 1\cancel{1}\cancel{0}\cancel{4}13 \\ 20\cancel{5}\cancel{3} \\ - 997 \\ \hline 6 \end{array}$$

Subtract the tens.

Subtract the hundreds.

Subtract the thousands.

$$\begin{array}{r} 94 \\ 1\cancel{1}\cancel{0}\cancel{4}13 \\ 20\cancel{5}\cancel{3} \\ - 997 \\ \hline 1056 \end{array}$$

Check.

► By adding:

$$\begin{array}{r} 997 \\ + 1056 \\ \hline 2053 \end{array}$$

The sum should be the number you started with.

► By estimating:

$$2000 - 1000 = 1000$$

1000 is close to 1056.

So, the answer is reasonable.

Try These

1. Subtract.

a)
$$\begin{array}{r} 4532 \\ - 2121 \\ \hline \end{array}$$

b)
$$\begin{array}{r} 5726 \\ - 248 \\ \hline \end{array}$$

c)
$$\begin{array}{r} 7243 \\ - 5685 \\ \hline \end{array}$$

d)
$$\begin{array}{r} 4029 \\ - 388 \\ \hline \end{array}$$

2. Subtract. Check your answer.

a)
$$\begin{array}{r} 9354 \\ - 3287 \\ \hline \end{array}$$

Check:

b)
$$\begin{array}{r} 7600 \\ - 1452 \\ \hline \end{array}$$

Check:

Practice

1. Estimate. Then subtract.

a)
$$\begin{array}{r} 3059 \\ - 2298 \\ \hline \end{array}$$

b)
$$\begin{array}{r} 5138 \\ - 4479 \\ \hline \end{array}$$

c)
$$\begin{array}{r} 8209 \\ - 5919 \\ \hline \end{array}$$

d)
$$\begin{array}{r} 5439 \\ - 3216 \\ \hline \end{array}$$

Estimate: _____ Estimate: _____ Estimate: _____ Estimate: _____

2. Manjit and Irene like to collect acorns.

Manjit collected 1286 acorns and Irene collected 898.

How many more acorns did Manjit collect than Irene? _____

3. Play this game with a partner.

You will need:

1 number cube

paper

pencils

➤ Each player draws a subtraction grid like this:

| | | | | |
|---|--|--|--|--|
| — | | | | |
| | | | | |

➤ Take turns rolling the number cube.

After each turn, both players record the digit rolled in any box in their grid.

➤ After 8 rolls, players subtract.

The player with the greater difference wins.

Play 5 or more games.

Stretch Your Thinking

A 3-digit number is subtracted from a 4-digit number.

The difference is 426. What could the two numbers be? Give two answers.

Solving Addition and Subtraction Problems



Quick Review

Jakob delivered 2472 flyers in March, 3854 in April, and 1962 in May. How many flyers did Jakob deliver in all?

► Add: $2472 + 3854 + 1962$

| | |
|--|----------------------------|
| $\begin{array}{r} 2472 \\ 3854 \\ + 1962 \\ \hline 8288 \end{array}$ | Add the ones. |
| | Add the tens. Regroup. |
| | Add the hundreds. Regroup. |
| | Add the thousands. |

Jakob delivered 8288 flyers.

Jakob was paid \$165 for his work. He bought a pair of skates for \$119. Later, he bought a hockey stick for \$18. How much money did Jakob have left?

► Subtract: $\begin{array}{r} 165 \\ - 119 \\ \hline 46 \end{array}$ Then subtract 18 from the result: $\begin{array}{r} 46 \\ - 18 \\ \hline 28 \end{array}$

Jacob has \$28 left.

Try These

1. Add.

a) $\begin{array}{r} 4723 \\ 6415 \\ + 3027 \\ \hline \end{array}$

b) $\begin{array}{r} 8962 \\ 3471 \\ + 536 \\ \hline \end{array}$

c) $\begin{array}{r} 1357 \\ 2468 \\ + 2389 \\ \hline \end{array}$

d) $\begin{array}{r} 4572 \\ 3002 \\ + 5679 \\ \hline \end{array}$

2. Estimate to check each answer in question 1. Show your work.

a) _____

b) _____

c) _____

d) _____

Practice

1. Maddy had \$1467 in her bank account.
She withdrew \$247 one week and \$135 the next week.
How much money did Maddy have left in her account?

2. Play this game with a partner.
You will need a number cube labelled 1 to 6.
 - Take turns to roll the number cube.
On each roll, both players record the digit rolled in one of the boxes in the first addition grid.
 - After 12 rolls, add.
The player with the greater sum wins.
 - Repeat with the other grids.

| Player A | | Player B | |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| $\square \square \square \square$ | $\square \square \square \square$ | $\square \square \square \square$ | $\square \square \square \square$ |
| $\square \square \square \square$ | $\square \square \square \square$ | $\square \square \square \square$ | $\square \square \square \square$ |
| + $\square \square \square \square$ | + $\square \square \square \square$ | + $\square \square \square \square$ | + $\square \square \square \square$ |
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| | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| $\square \square \square \square$ | $\square \square \square \square$ | $\square \square \square \square$ | $\square \square \square \square$ |
| $\square \square \square \square$ | $\square \square \square \square$ | $\square \square \square \square$ | $\square \square \square \square$ |
| + $\square \square \square \square$ | + $\square \square \square \square$ | + $\square \square \square \square$ | + $\square \square \square \square$ |
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Stretch Your Thinking

The sum of three 4-digit numbers is 5638.

What might the numbers be? _____