

Power Up

Work out the hidden digits and complete the puzzle.

Across

1. $5,326 + 2,184$

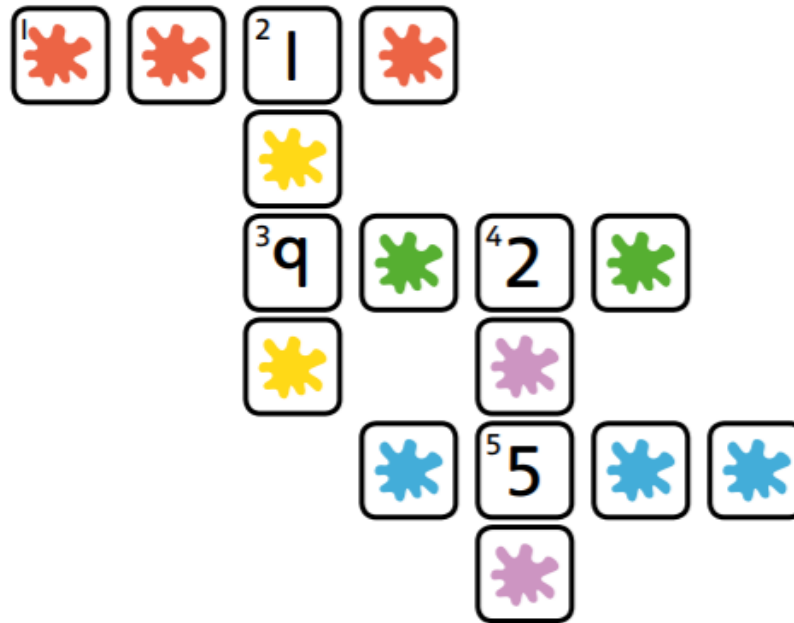
3. $6,520 + 3,000$

5. $3,110 + 2,480$

Down

2. $6,860 - 5,570$

4. $5,710 - 3,560$

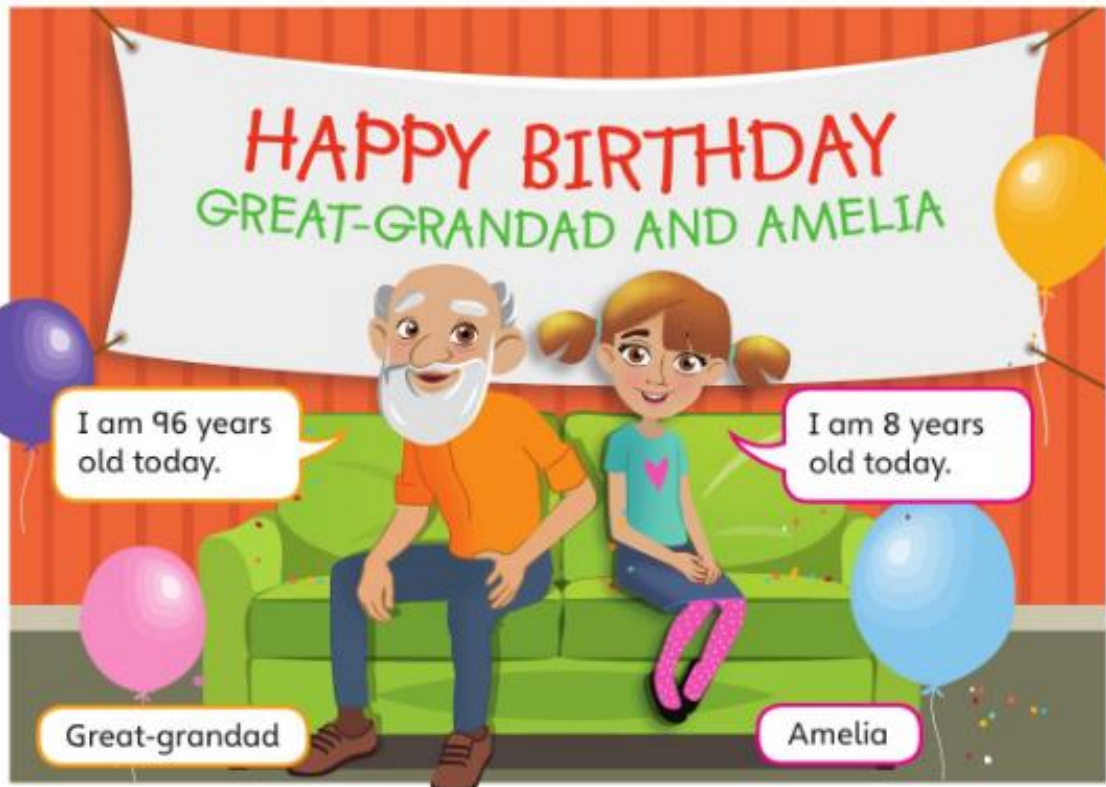


I will check my answers using the inverse operation.



Equivalent difference

Discover



- 1** a) Amelia says that when her great-granddad is 100, there will be even more years between their ages than there is now. Show whether this is true or not.
- b) What will be the difference between their ages when Amelia's great-granddad is 100?

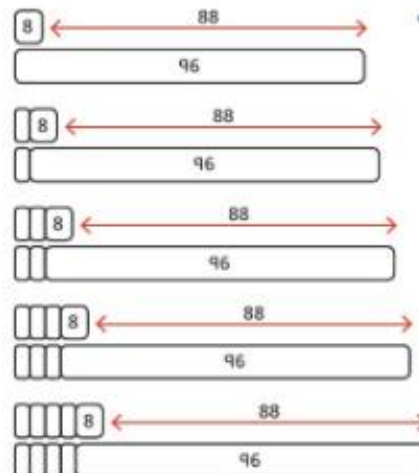
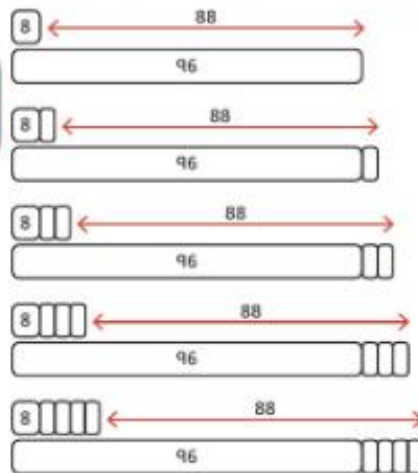
Share



a)

I will show this using two bars. Every time her great-granddad has a birthday, Amelia will too.

I showed this a different way.



The difference between Amelia's age and her great-granddad's age will always be the same.

- b) All of these subtractions find the difference between their ages.

$\begin{array}{r} \text{T O} \\ 96 \\ - 8 \\ \hline \end{array}$	$\begin{array}{r} \text{T O} \\ 97 \\ - 9 \\ \hline \end{array}$	$\begin{array}{r} \text{T O} \\ 98 \\ - 10 \\ \hline 88 \end{array}$	$\begin{array}{r} \text{T O} \\ 99 \\ - 11 \\ \hline 88 \end{array}$	$\begin{array}{r} \text{H T O} \\ 100 \\ - 12 \\ \hline \end{array}$
--	--	--	--	--

The two subtractions without exchanges are the quickest to work out. $98 - 10 = 88$ and $99 - 11 = 88$.

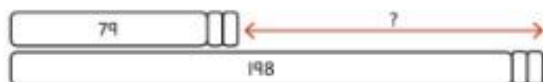
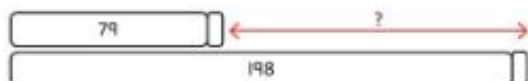
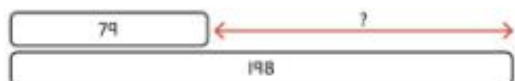
When Great-granddad is 100, Amelia will be 12. The difference between their ages will still be 88 years.

Think together

- 1 An apple tree is 79 years old and an oak tree is 198 years old.

Write a different subtraction for each bar model.

Choose one of the subtractions to find the difference between the ages of the two trees, and then complete all of the subtractions.



H	T	O
1	9	8
-	7	9

-

 =

 The difference is years.

- 2 A giant tortoise is 125 years old and a whale is 97 years old.

Write some subtractions for when they are different ages and choose one to find the difference.



<table style="border-collapse: collapse;"> <tr><td style="padding: 0 5px;">H</td><td style="padding: 0 5px;">T</td><td style="padding: 0 5px;">O</td></tr> <tr><td style="border-bottom: 1px solid black; padding: 0 5px;">1</td><td style="border-bottom: 1px solid black; padding: 0 5px;">2</td><td style="border-bottom: 1px solid black; padding: 0 5px;">5</td></tr> <tr><td style="padding: 0 5px;">-</td><td style="padding: 0 5px;">9</td><td style="padding: 0 5px;">7</td></tr> <tr><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td></tr> </table>	H	T	O	1	2	5	-	9	7				<table style="border-collapse: collapse;"> <tr><td style="padding: 0 5px;">H</td><td style="padding: 0 5px;">T</td><td style="padding: 0 5px;">O</td></tr> <tr><td style="border-bottom: 1px solid black; padding: 0 5px;">1</td><td style="border-bottom: 1px solid black; padding: 0 5px;">2</td><td style="border-bottom: 1px solid black; padding: 0 5px;">6</td></tr> <tr><td style="padding: 0 5px;">-</td><td style="padding: 0 5px;">9</td><td style="padding: 0 5px;">8</td></tr> <tr><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td></tr> </table>	H	T	O	1	2	6	-	9	8				<table style="border-collapse: collapse;"> <tr><td style="padding: 0 5px;">H</td><td style="padding: 0 5px;">T</td><td style="padding: 0 5px;">O</td></tr> <tr><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td></tr> <tr><td style="padding: 0 5px;">-</td><td style="padding: 0 5px;"> </td><td style="padding: 0 5px;"> </td></tr> <tr><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td></tr> </table>	H	T	O				-						<table style="border-collapse: collapse;"> <tr><td style="padding: 0 5px;">H</td><td style="padding: 0 5px;">T</td><td style="padding: 0 5px;">O</td></tr> <tr><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td></tr> <tr><td style="padding: 0 5px;">-</td><td style="padding: 0 5px;"> </td><td style="padding: 0 5px;"> </td></tr> <tr><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td></tr> </table>	H	T	O				-						<table style="border-collapse: collapse;"> <tr><td style="padding: 0 5px;">H</td><td style="padding: 0 5px;">T</td><td style="padding: 0 5px;">O</td></tr> <tr><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td></tr> <tr><td style="padding: 0 5px;">-</td><td style="padding: 0 5px;"> </td><td style="padding: 0 5px;"> </td></tr> <tr><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td><td style="border-bottom: 1px solid black; padding: 0 5px;"> </td></tr> </table>	H	T	O				-					
H	T	O																																																														
1	2	5																																																														
-	9	7																																																														
H	T	O																																																														
1	2	6																																																														
-	9	8																																																														
H	T	O																																																														
-																																																																
H	T	O																																																														
-																																																																
H	T	O																																																														
-																																																																

The _____ is years younger than the _____.

3 a) $1,000 - 245 = \square$

CHALLENGE

I will do this as a column subtraction. First, I will need to exchange 1 thousand for 10 hundreds.

I will just work out $999 - 244$.



Whose method works better? Why?

Try both methods and compare them. Which is more **efficient**?

Th	H	T	O
1	0	0	0
-	2	4	5

Th	H	T	O
	9	9	9
-	2	4	4

- b) Find efficient ways to solve these subtractions.

$1,000 - 542$

$2,001 - 265$

$2,692 - 836$

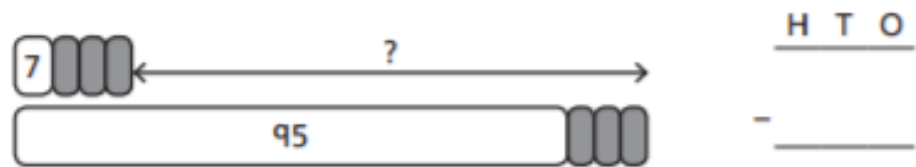
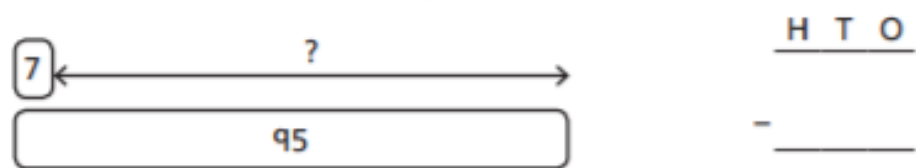
$1,897 - 999$

I wonder if I should use the same way for all of these subtractions.

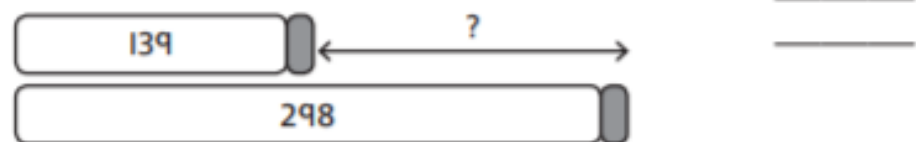
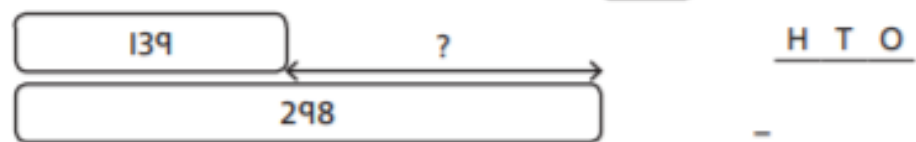


Equivalent difference

- 1 Write a subtraction to go with each model. Complete all the subtractions. Circle the one you chose to solve first.



- 2 Write a subtraction to solve $298 - 139 = \square$.



- 3 Jan's tower is 235 cm tall. Anne's is 98 cm tall. Write subtractions to find the difference between the height of the towers. Circle the one you choose to complete first.



's tower is cm taller.

- 4 a) Ebo solved $2,001 - 567 = \square$ with the calculation $1999 - 565 = \square$.

Th	H	T	O
1	9	9	9
+ 5 6 5			

Complete his calculation to find the answer.

- b) Choose one of these subtractions to solve with a similar method.

$1,507 - 385 = \square$

$1,000 - 518 = \square$

I chose - because _____

Now solve the subtraction. Show your method.



5 Choose a method to use to solve each of these subtractions. Think about which method is the most efficient each time.

$2,950 - 850$

$2,875 - 1,989$

$3,011 - 2,997$

$8,001 - 4,567$

$6,626 - 6,618$

$9,009 - 10$

Reflect

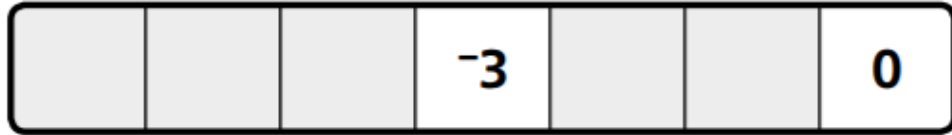
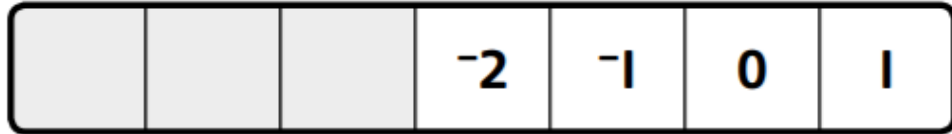
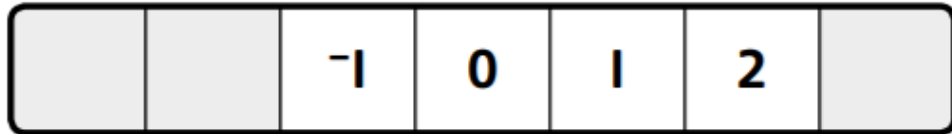
Think of another method to solve $1,000 - 955$. Discuss with your partner which you think is most efficient.

	Th	H	T	O
	1	0	0	0
-		9	5	5
<hr/>				
<hr/>				

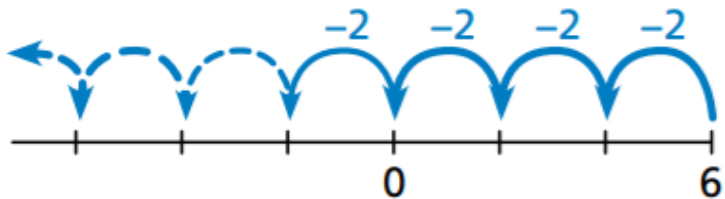
- I think the best method is to _____
- _____
- _____
- because _____
- _____
- _____
- _____

Power Up

Copy the number tracks and fill in the missing numbers.



Count back from 6 in 2s and go past zero.
What numbers do you say?



I wonder if there are more or fewer negative whole numbers than positive whole numbers.



Estimating answers to additions and subtractions



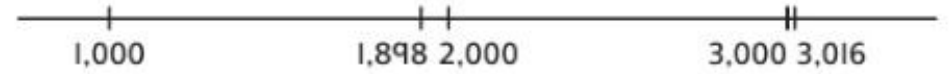
Discover



- 1 a) Is this an **accurate** estimate?
- b) Check if the estimate is close to the **exact** calculation.

Share

a)



1,898 is closer to 2,000 than 1,000.

A better estimate would be $2,000 + 3,000 = 5,000$.



They have sold roughly 5,000 tickets.

I will try rounding 1,898 and 3,016 to the nearest 1,000.



b)

Th	H	T	O
3	0	1	6
+	1	8	9
4	9	1	4

I wonder what estimate I would make if I rounded to the nearest 100.



The exact answer is 4,914 tickets.

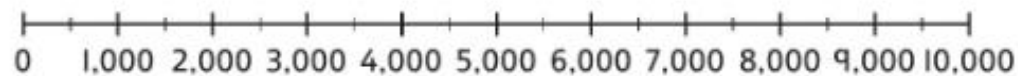
4,914 rounds to 5,000.

5,000 is a good estimate.

Think together

- 1 There were 6,149 people in the audience, but 912 of them left during the interval.

Round to the nearest thousand to estimate how many people stayed.



6,149 rounds to ,000. 912 rounds to ,000.

,000  ,000 =

Roughly ,000 people stayed.

- 2 Make an estimate for each calculation.

Choose whether to round to the nearest 100 or 1,000 for each.

$$2,794 + 3,911$$

2,794 rounds to

3,911 rounds to

$$\square + \square = \square$$

$$9,811 - 2,788$$

rounds to

rounds to

$$\square = \square - \square$$

- 3 Max used a column subtraction to solve

$$5,602 - 2,975 = \square$$

Th	H	T	O
4	5	9	2
-	2	9	7 5
2	6	2	7

Isla and Aki used estimates to check Max's working.

I rounded 2,975 to 3,000, then worked out $5,602 - 3,000 = 2,602$. I think Max's answer is right.



Isla

I rounded both numbers and then worked it out. $6,000 - 3,000 = 3,000$. I think Max's answer is wrong.



Aki

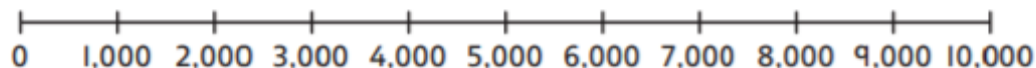
- Explain the differences between Isla's way of estimating and the method that Aki used.
- Which estimate works better?
- How would an estimate have helped Max?

CHALLENGE

Estimating answers to additions and subtractions

1 Round to the nearest 1,000 to estimate these calculations.

a) Max scores 3,987 points in a game. Lexi scores 5,123 points more than Max. Estimate Lexi's score.



3,987 rounds to ,000 5,123 rounds to ,000

,000 \bigcirc ,000 = ,000

Lexi's score is roughly ,000 points.

b) Max loses 3,104 points. Estimate how many points he has now.

,000 - ,000 = ,000 Max has roughly points now.

c) Now work out the exact scores and compare them with your estimates.

Lexi's exact score

Max's exact score

Th H T O

Th H T O

Are your estimates close to the exact answers?

2 Join each calculation to the estimate that best matches it.

Some of the estimates do not have a good match, and some of the estimates match to more than one calculation.

Calculations

2,101 - 998
2,891 - 1,100
1,975 + 2,010
1,998 + 2,101
2,925 - 975
2,998 - 1,998

Estimates

2,000 + 2,000
2,900 - 1,000
3,000 - 2,000
2,100 - 1,000
1,000 + 2,000
3,000 + 2,000

3 a) Complete each calculation. Then write an estimate to check.

6,152 + 3,025 =

6,452 - 2,005 =





Estimate:

+ =

Estimate:

- =

b) Explain why you chose each of your estimation methods.

4 $6,491 - 2,725 = \square$



Try rounding the numbers to the nearest 1,000 to estimate the answer. Then estimate by rounding to the nearest 100. Then estimate by rounding to the nearest 10.

Nearest 1,000	Nearest 100	Nearest 10
Estimate: <input type="text"/>	Estimate: <input type="text"/>	Estimate: <input type="text"/>

Find the exact answer and compare it to each of your estimates.

What do you notice?

Th H T O

Reflect

Explain how you would estimate $1,915 - 1,019$.

- _____
- _____
- _____
- _____