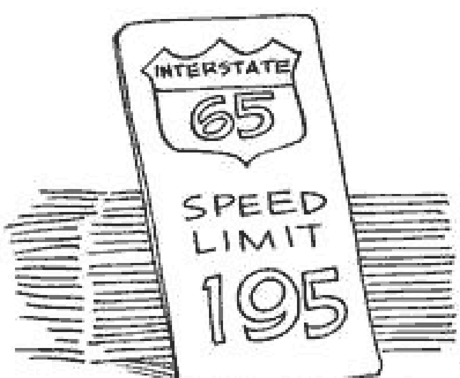
Strategies for CMT 4th Gen.
Objective 11A
Grades 3 – 5

Identify a reasonable estimate to a problem.

Estimation is one part of Number Sense. Never underestimate the importance of Number Sense.



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Identify a reasonable estimate to a problem. [Identify = Multiple Choice]

NUMERICAL ESTIMATION is very difficult for many children.

They **don't want to** estimate; they want the "real answer."

More practice with **mental computation** will improve number sense and, consequently, numerical estimation.

Estimation requires **strong number sense**, something that is often very weak for many years and many children.

NUMBER SENSE is an intuitive feel for numbers and a common sense approach to using them.

- It is comfort with what numbers represent.
- It comes from investigating numbers' characteristics.
- It comes from using numbers in diverse situations.
- It involves, most critically, an understanding of:
  - ~ how different types of numbers, such as fractions and decimals, are related to each other, and
  - ~ how different types of numbers can be used to describe a particular situation.

When a student understands that an approximation rather than an exact number might have been used, that reflects good number sense.

Types of Problems (or Types of Estimation) found in Obj. 11A:

1. Simple Rounding
2. A little less/A little more
3. Range in the Choices (Between ___ and ___)
4. "Ball Park" Problems

Types of Strategies:

- Do not overwhelm children with many strategies. Even 4 strategies is a lot for some children. With too many strategies, some children will spend all their time trying to decide on the best strategy if they do not have strong number sense that will take care of that.

- On the other hand, children need to develop flexibility in their choosing of strategies. Some strategies are definitely better suited to use with some numbers than other strategies.

Addition of Two-Digit Numbers
Which strategy or strategies would be best?

1) 28 + 47

$28 + $47

50
60
70
80

Best Strategy: **Round both numbers**

Why: Multiple Choice Responses indicate this
Rounding not as useful as other 2 strategies on this page

2) 58 + 37 (or $58 + $37)

Change one number only: 58 → 60
Why? One of the numbers is very close to the nearest ten

58 + 37 → 60 + 37 = 97

Rounded Answer: 100
In the range of 90 – 100
A little less than 100
This strategy has limited use.

3) 44 + 27 or $44 + $27

Front-End Estimation with Adjustment
Why? Neither number is close enough to the nearest 10

Add the tens first: 44 + 27 →
40 + 20 = 60
Keep 60 and look at the ones:
60 + 7 = 67; 67 + 4 = more than 70
OR 60 + 11 = 70 and a little more

Rounded Answer: 70
In the range of 70 to 80
A little more than 70

4	4
+2	7

60 + more than 10 =
a little more than 70

This strategy is useful in the most situations.

Addition of Two-Digit Numbers (Continued)
Which strategy or strategies would be best?

4) 24 + 18 or $24+ $18

OBJ 4D: Identify 2- and 3-digit numbers on number line.

"Number Line and Count By" Strategy

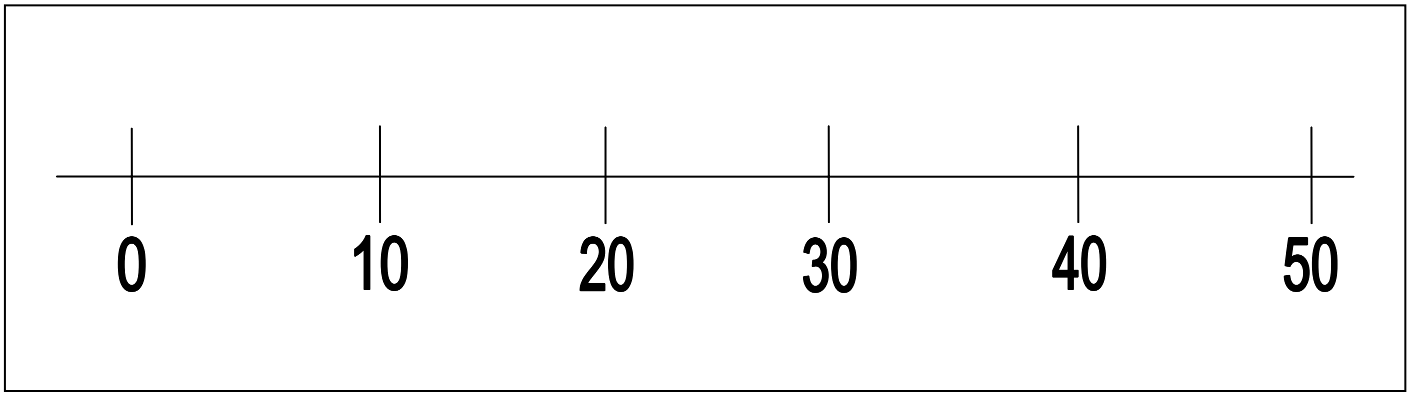
- better suited to subtraction for many children
- better suited to 3-digit numbers and higher, not 2-digit numbers
- Third Grade is an introduction to this strategy, mastery not expected

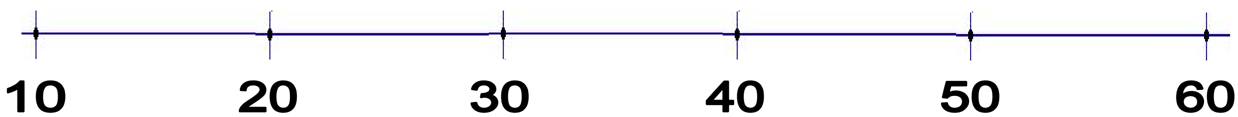
When first trying this strategy, keep the tic marks as far apart as possible.
At first, you might consider letting children use a number line already created.
Try to add numbers that do not have 3-digit sums (at first)
The objective is to have third graders familiar with this strategy, not to master it.
Strategies will then be consistent across the grades.

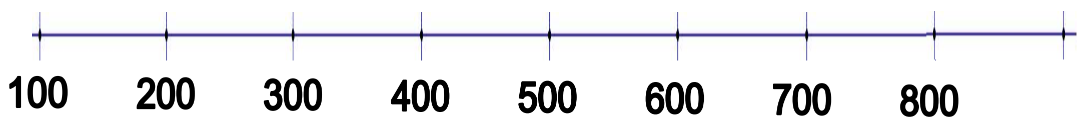
24 is close to 25 – start at 25 on the number line
Jump 10 more (from the 10 in 18) – Now we're at 35
Jump 5 more (from the 7 in 17 – Now we're at 40
3 more gives us "a little more than 40

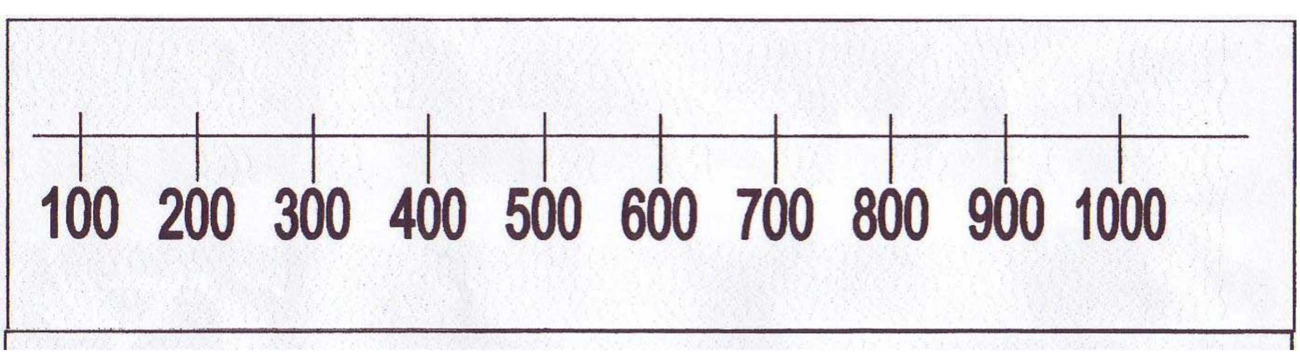
(Better Strategy: Front End with Adjustment)

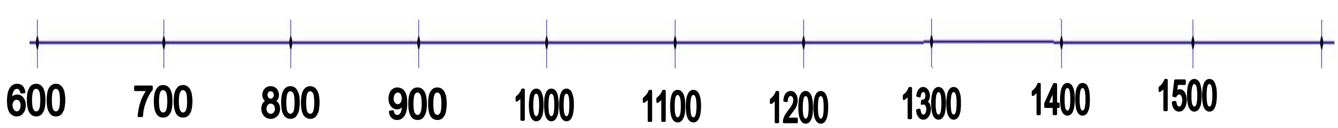
NUMBER LINE STRATEGY











Addition of Three-Digit Numbers
Which strategy or strategies would be best?
(Grade 3 CMT)

1. **ROUNDING** both numbers to the nearest 100
   Why? Because of the multiple choice responses

   A. 285 + 499 → 300 + 500

   O 600
   O 700
   O 800
   O 900

   B. $2.87 + $4.15 → $3 + $4

   O $6
   O $7
   O $8
   O $9

2. **FRONT END WITH ADJUSTMENT**

327 + 277

300 + 200 = 500
Add another 77 (from 277) = 577
Add another 30 from 327): 577 + 30 = 607
ESTIMATES: 600, a little more than 600,
between 600 and 700

$3.27 + 2.77 →

```
   3  2  7
 + 2  7  7
```
500 + 90 + more than 10 =
a little more than 600

Front end = 500
Adjustment looks at rest of numbers:
There is more than another 100 (27 + 77)

327 + 277: Change both numbers to **multiples of 25** (This can be a less than useful strategy if the estimate turns out to be a "rounded" number but the choices are "a little less/a little more" or "between ___ and ___"
327 + 277 →
325 + 275 = 600 + a little more (from 27 and 77) = 604 or 605

Addition of Three-Digit Numbers (Continued)
Which strategy or strategies would be best?

3. 623 + 295 OR $6.23 + $2.95 **CHANGE ONLY ONE NUMBER**

Change only one number
623 + 295 →
623 + 300 = 923

408 + 274 →
400 + 274 → 674

Estimate of 700,
a little less than 700,
between 600 and 700

Good number sense tells the child that being 7, 8, 9, 10, even 11 or 12 numbers away from the next hundred is acceptable with 3-digit numbers because of the span of 100 numbers

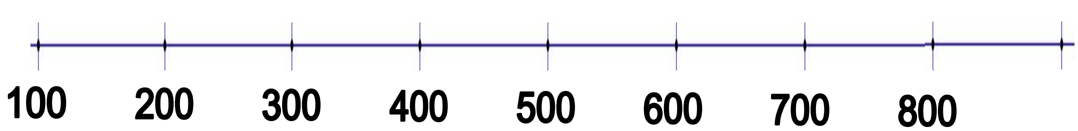
but would not be a good idea with 2-digit numbers that have a span of only 10 numbers (more or less)

4. 429 + 285: Try the "**NUMBER LINE AND COUNT BY ...**" strategy

To decide how high to number the number line: count the 100s and add 200 more to be safe (another 100 for 23 and another hundred for 95)

429 is so close to 425:
- Start at 425.
- Add 200 more (from 285); we are now at 625 on the number line
- Add 75 more (from the 85); that brings us to 700
- There is 10 more to add – that brings us to "a little more than 700" or 725 as an estimate

Correct multiple choices: 700 ***or*** a little more than 700 ***or*** between 700 and 800



Addition of Three-Digit Numbers (Continued)
Which strategy or strategies would be best?

NUMBER LINE AND COUNT BY – Continued:

681 + 839: Children with strong number sense or lots of practice with this strategy will check the hundreds place to see how large a number line is needed:
They will start at 600, not 100, and add 900 more to the number line

Locate 681 on the number line (a little past 675)
Add 800 more – bringing up to 1481 (though probably closer to 1475 on the number line)
We need to add in 39 more – 1481 + 40 = a little more than 1500

Addition of Four- and Five-Digit Numbers
Which strategy or strategies would be best?

1. **ROUNDING** if the multiple choices indicate this:

4296 + 3874 → 4000 + 4000

7,000
8,000
9,000
10,000

MONEY: $42.96 + $38.74 → $40 + 40

28,266 + 39,477 → 30,000 + 40,000

50,000
60,000
70,000
80,000

MONEY: $282.66 + 394.77 → $300 + $400

2. **CHANGE ONE NUMBER ONLY** – if number sense says that one of the numbers is close to a rounded number

5923 + 2388 →
6000 + 2388 → Estimate of 8388 (8000, a little more than 8000, between 8000 and 9000)

MONEY: $59.23 + 23.88 →
$60 + $23 = Estimate of $83

2123 + 4718 →
2000 + 4718 → Estimate of 6718 (7000, a little less than 7000, between 6000 and 7000)

MONEY: $21.23 + $47.18

58,299 + 29,647 (For this example, change the number closest to a 10,000 number
58,300 + 30,000 → 88,299 or 88,300
(90,000, a little less than 90,000, between 80,000 and 90,000)

MONEY: $582.99 + $296.47

22,439 + 53,681 →
20,000 + 53,681 → Estimate of 73,681
(70,000, a little more than 70,000, between 70,000 and 80,000

MONEY: $224.39 + $536.81

Addition of Four- and Five-Digit Numbers (Continued)
Which strategy or strategies would be best?

3. **FRONT END WITH ADJUSTMENT**

```
  2 9 4 1
+5 9 2 7
```

7000

1800 → Estimate of 8800
9000
a little less than 9000
between 8000 and 9000

This problem lends itself to the “change only one number” strategy.

```
 3 4, 2 3 8
+5 8, 1 0 4
```

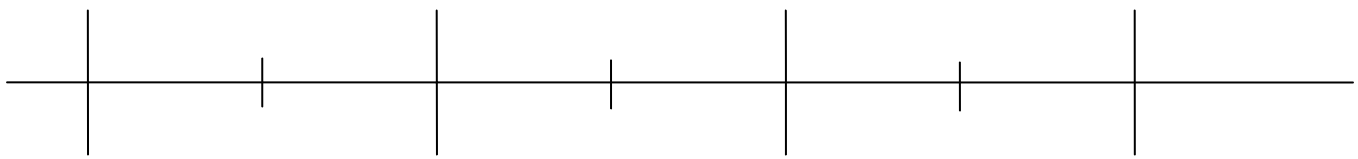
80,000 + 12,000 → 92,000

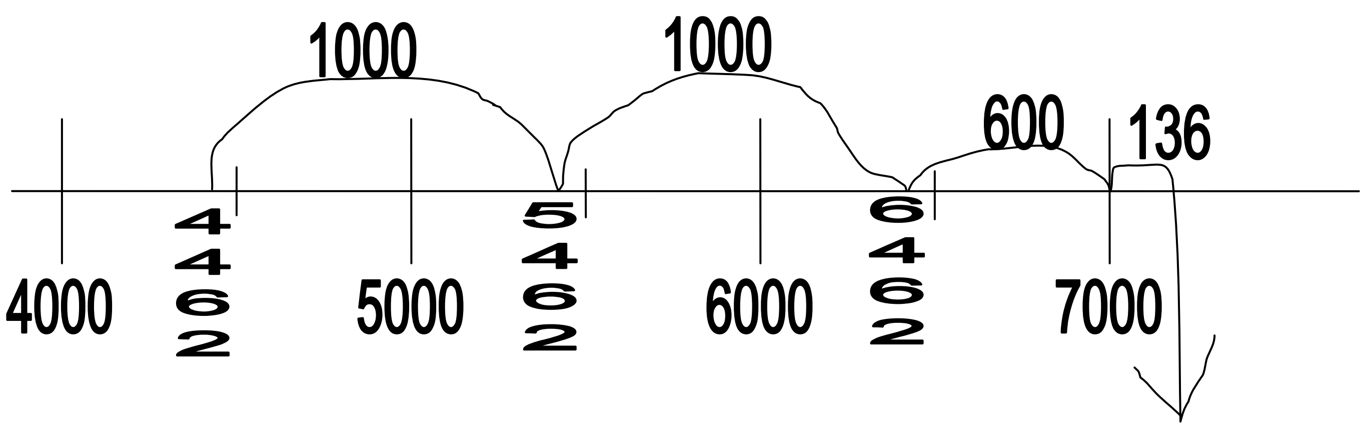
Number Sense says that 238 + 104 is insignificant

Addition of Four- and Five-Digit Numbers (Continued)
Which strategy or strategies would be best?

4. **NUMBER LINE AND COUNT BY…**

2736 + 4462 (Number Sense says to make the number line extend to 7000 or 8000. It would also say to start at either 2000 or 4000 rather than at 1000.)

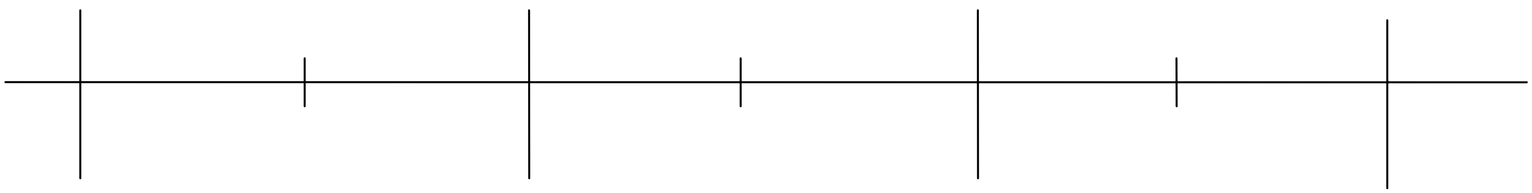




Addition of Four- and Five-Digit Numbers (Continued)
Which strategy or strategies would be best?

4. (Continued) **NUMBER LINE AND COUNT BY**

34,298 + 28,119
It would be almost easier to change the numbers into money:
$342.98 + $281.10 →
$340 + $280 → 540 + 80 = $620 (which is 62,000)



Subtraction of Two-Digit Numbers:
Which strategy or strategies would be best?

1. ROUNDING: Round both numbers to nearest ten
Why? Because of the multiple choice responses

42 – 18

O 10
O 20
O 30
O 40

Changing 18 to 20 would also work: 42 – 20 = 22
Estimate would be 20

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2. CHANGE SMALLER NUMBER TO NEAREST 10 (if numbers are possible)
CHANGE ONLY ONE NUMBER

83 – 49 →
83 – 50 → Estimate of 33 (about 30, a little more than 30, between 30 and 40)

74 – 19 →
74 – 20 → Estimate of 54

73 – 29
Change 29 → 30
73 – 30 = 43
a little more than 40
about 40
in the range of 40 to 50

Changing larger number to nearest 10 is not often a good strategy:
61 – 26 →
60 – 26: Not too easy to estimate (though 60 – 25 might be pretty easy for some children)

Subtraction of Two-Digit Numbers:
Which strategy or strategies would be best?
(Continued)

3. KEEP LARGEST NUMBER – Subtract one place value at a time
A bit like "counting back"

81 – 23 Keep 81; Regroup 23 as 20 + 3 81 – 20 = 61 61 – 3 = less than 60
81 - 23 Change 81 to 80, then regroup 23 as 20 + 3 80 – 20 = 60 60 – 3 = less than 60

62 – 34 62 – 30 = 32 32 – 4 = a little less than 30

53 – 26 53 – 20 = 33 33 – 6 ***or*** 33 – 3; 30 – 3 = a little less than 30

Subtraction of Two-Digit Numbers:
Which Strategy or strategies would be best?
(Continued)

4. "**COUNT UP"** (This strategy is from Janice Vuolo, Math Consultant in Connecticut. She uses it as an alternative method of calculation, but this may appeal to some children for estimation)

<u>97 – 38</u>

Start at 38:
Keep track of 10s on fingers

48, 58, 68, 78, 88, 98 (-1)
1 2 3 4 5 6 → a little less than 60

<u>61 – 18</u>

Start at 18: 28, 38, 48, 58, (+3)
10, 20, 30, 40 and a little more

Estimate of a little more than 40

Subtraction of Two-Digit Numbers:
Which Strategy or strategies would be best?
(Continued)

5. Try the "**Number Line and Count B**y" strategy – more as an introduction (Not that useful with 2-digit numbers for most children)

Keep tic marks far apart when first trying this strategy. In subtraction, the problem below starts at 53, so draw a number line to 60)

<u>53 – 27</u>

Locate 53 on the number line (CMT Obj. 4 something – locate or identify numbers on number lines)

Count back 27 as: 53 - go back 10 (to 43),
then 10 more (to 33),
then about 3 (to 30)
then about 4 – to A LITTLE LESS THAN 30

Some children might be comfortable starting at 27 and "counting up" to 53 on the number line

Start at 27 (just a little past 25)
Add on 10 more to 37 (Estimate of 10)
Add on 10 more to 47 (Estimate is now up to 20)
Then 3 more to 50 (Estimate is 23)
Then 3 more to 53 (Estimate is 4 more – A LITTLE LESS THAN 30)

Subtraction of 3-Digit Numbers
Which strategy or strategies would be best?

1. **ROUNDING** both numbers to nearest hundred
   Why? because of the choices

   612 – 398 → 600 - 400

   O 200
   O 300
   O 400
   O 500

   Changing 398 to 400 and not changing 612 would also work: 612 – 400 = 212; Answer of 200

2. **CHANGE ONLY THE SMALLER NUMBER**

642 - 398

642 - 398
642 – stays the same
398 → 400

642 – 400 → 242
Answers: about 200
A little more than 200
In the range of 200 and 300

You could try to change the **smaller** number to be more compatible with the larger number: 536 – 229 →
536 – 226 = 310

536 – 229
First: 536 – 200 = 336
Next: 336 – 30 (instead of 29) = 306
A little more than 300

Not as good to change larger number to be more compatible to smaller number:

724 – 229 →
729 – 229 = 500 (a poor estimate for "a little less/a little more" or "range" answers

Better Strategy: Number Line or "Regroup"
724 - 229
724 – 200 = 524
524 – 20 = 504
504 -9 = less than 500

Subtraction of 3-Digit Numbers (Continued)
Which strategy or strategies would be best?

3. **CHANGE ONE OR BOTH NUMBERS TO MULTIPLES OF 25** if feasible

498 – 124 →
500 – 125: Count back by 25s (500: 475, 450, 425, 400, 375)
OR first subtract 100 (500 – 100 = 400); then count back 25 (400 – 25 = 375

4. **KEEP LARGEST NUMBER – Subtract one place value at a time**
A bit like "counting back"

827 – 188
1st 827 – 100 = 727
2nd subtract 88 – change to 90
727 – 100 = 627
627 + 10 = Estimate of 637

583 – 239
1st 583 – 200 = 383
2nd 383 – 40 (not 39) = Estimate of 343

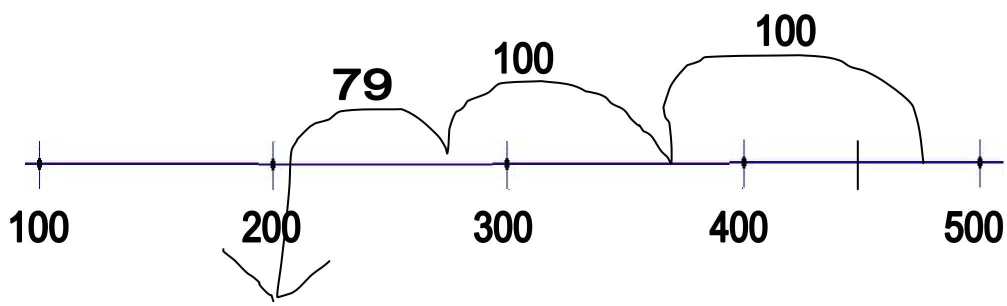
761 – 327
1st 760 (not 761) – 300 = 460
2nd 460 – 30 (not 27) = Estimate of 430

Subtraction of 3-Digit Numbers (Continued)
Which strategy or strategies would be best?

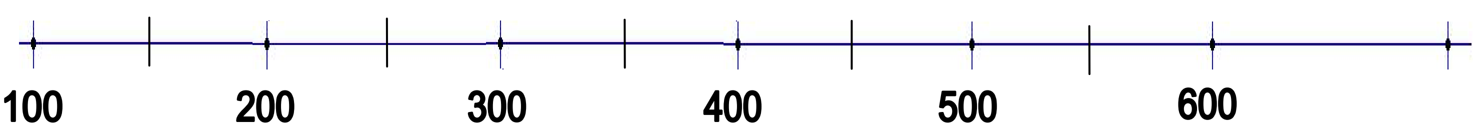
5. Try the "**NUMBER LINE AND COUNT BY…**" Strategy

<u>485 – 279</u>
Looking at the numbers, I know I have to number my number line only to 500
Look at the largest number and go up to the next 100 to be safe.
If either number is close to a multiple of 25, it might be good to divide the number line into fourths between each set of 100 numbers (Mark: 125, 150, 175, 225, 250, 275, etc)

Locate 485 on number line (just a little beyond 475
Go back 200 (to 285)
Go back 79 – you are a little more than 200



<u>628 - 277</u>

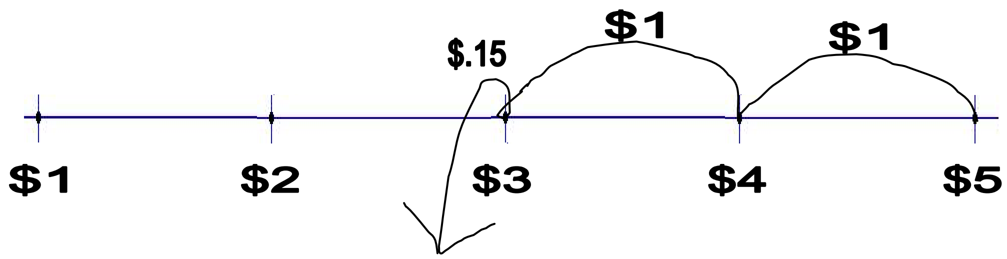


Subtraction of 3-Digit Numbers (Continued)
Which strategy or strategies would be best?

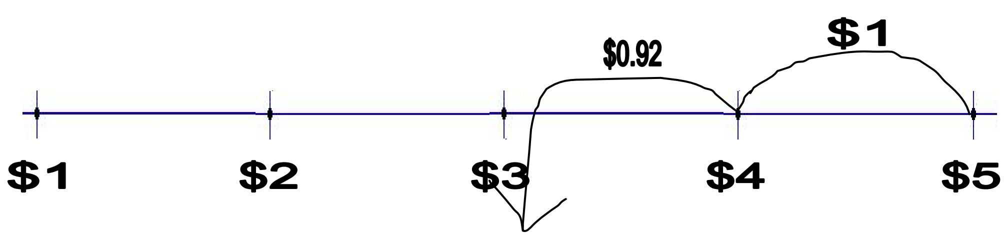
5. NUMBER LINE AND COUNT BY... (Continued)

A little more/a little less – change from $1, $5, $10

$5.00 - $2.15 (cost of the item): Estimated change is a little less than $3



$5.00 - $1.92 (cost of the item): Estimated change is a little more than $3



Subtraction of 4- and 5-Digit Numbers
Which strategy or strategies would be best?

Children who are able to subtract 2-digit numbers mentally will have greater success learning to estimate with 4- and 5-digit numbers

1. **ROUNDING** both numbers to nearest thousand
   Why? because of the choices

4712 – 1398 → 5000 - 1000

O 2000
O 3000
O 4000
O 5000

2. **CHANGE ONLY THE SMALLER NUMBER**

6428 - 3981
6428 – stays the same
3981 → 4000

6428 – 4000 → 2428
Answers: about 2000
A little more than 2000
In the range of 2000 and 3000

You could try to change the **smaller** number to be more compatible with the larger number: 5347 – 2249 →
5347 – 2247 = 2100

Subtraction of 4- and 5-Digit Numbers (Continued)
Which strategy or strategies would be best?

3. **CHANGE ONE OR BOTH NUMBERS TO MULTIPLES OF 25** if feasible

<u>5498 – 2124</u> →
5500 – 2125: 5500 – 2000 = 3425; 125 left to subtract: 3425 – 125 = 3300

4. **KEEP LARGEST NUMBER –**

<u>4827 – 2188</u>

 4 8 2 7 → 4 8 2 7
<u>-2 1 8 8 → 2 2 0 0</u>
 2 6 2 7 = Estimate

<u>8583 – 3239</u>

 8 5 8 3 → 8 5 8 3
<u>-3 2 3 9 → 3 2 0 0</u>
 5 3 8 3 = Estimate

<u>72,966 – 29,438</u>

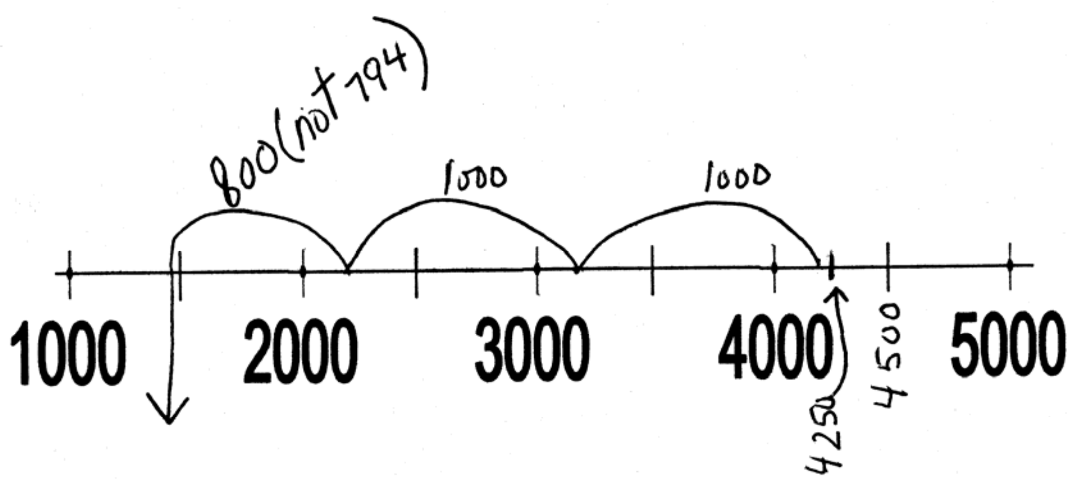
 7 2, 9 6 6 → 7 2, 9 6 6
<u>--2 9, 4 3 9 → 3 0, 0 0 0 (Rounded)</u>
 4 2, 9 6 6

Subtraction of 4- and 5-Digit Numbers (Continued)
Which strategy or strategies would be best?

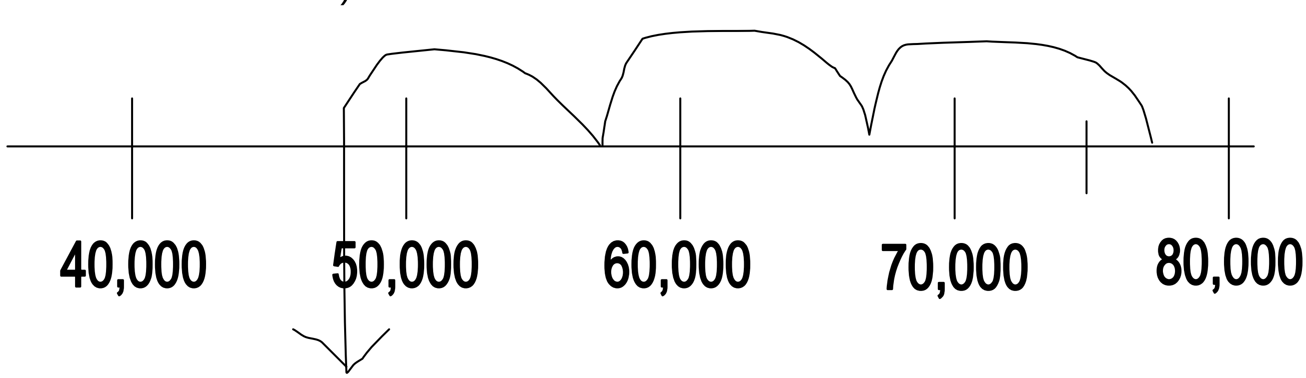
5. Try the "**NUMBER LINE AND COUNT BY...**" Strategy

4185 – 2794
Looking at the numbers, I know I have to number my number line to 5000
Look at the largest number and go up to the next 1000 to be safe.
If either number is close to a multiple of 25, it might be good to divide the number line into fourths between each set of 100 numbers (Mark: 125, 150, 175, 225, 250, 275, etc)

Locate 4185 on number line
Go back 2000 (from 2794)
Then go back a final 800
Estimates would be about 1000, a little more than 1000, or between 1000 and 2000



77,249 – 29,633 (Number Line is not necessarily best strategy with this problem. It could be pretty easy for some children to subtract 78,000 – 30,000 or 77,249 – 30,000 for an easily obtained estimate.)

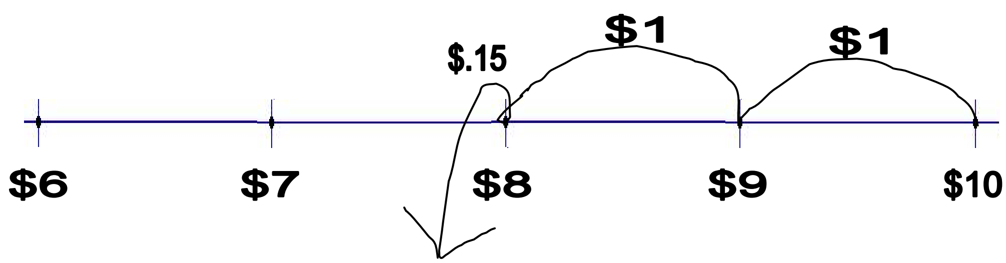


Subtraction of 4- and 5-Digit Numbers (Continued)
Which strategy or strategies would be best?

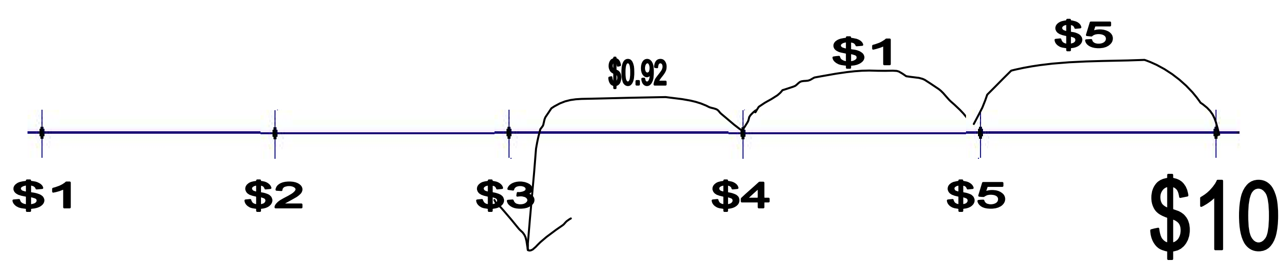
5. NUMBER LINE AND COUNT BY… (Continued)

A little more/a little less – change from $10, $20, etc.

$10.00 - $2.15 (cost of the item): Estimated change is a little less than $8



$10.00 - $6.92 (cost of the item): Estimated change is a little more than $3



MULTIPLICATION and DIVISION
Grade 5 (4th Generation) CMT

This is guess work on my part. It appears that the multiplication and division in Strand 11 involves **rounding** as the estimation strategy.

This would be in line with Obj. 7B for Grade 5 CMT - Multiply and divide multiples of 10 and 100 by 10 and 100 .

Count Dracula had 32 cases. Inside each case were 18 bottles of blood. **About** how many bottles of blood did he have?

O 500
O 600
O 700
O 800

32 x 18 →
30 x 20 = 600

Janette had $112. She put an equal amount of money in each of 11 wallets. **About** how much money did she put in each wallet?

O 10
O 20
O 30
O 40

112 ÷ 11 →
100 ÷ 10 = 10

There were 112 houses in Mr. Roger's neighborhood. Each house had 88 windows. **About** how many windows were in Mr. Roger's neighborhood?

O 3000
O 6000
O 9000
O 12,000

112 x 88 →
100 x 90 = 9000

There were 985 seats in the auditorium. Each row had 48 seats. **About** how many rows were there?

O 5
O 10
O 15
o 20

985 ÷ 48 →
1000 ÷ 50 = 20

FRACTIONS AND MIXED NUMBERS
Grade 5 CMT (4th Generation)

Rounding is the best estimation strategy to use for fractions, mixed numbers and decimals.

With fractions, children need to have established three benchmarks: 0, $\frac{1}{2}$, and 1.

Rounding requires that a child know if a fraction is closer to 0 or closer to 1.

Knowing equivalent fractions for $\frac{1}{2}$ would be extremely useful.

Be careful if using long equations such as $\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8}$ etc. to record results.
Not all fifth graders (maybe not MOST fifth graders) can understand that all those equivalent fractions are equal to each other from that equation.

To those children, $\frac{1}{2} = \frac{2}{4}$ and nothing else,

$\frac{2}{4} = \frac{3}{6}$ and nothing else,

$\frac{3}{6} = \frac{4}{8}$, but no other fractions are equivalent in that equation.

To them, $\frac{1}{2}$ does not equal $\frac{3}{6}$ or $\frac{4}{8}$. Only the fractions on both sides of the equal sign are equivalent.

Children should then become familiar with fractions that are **about** $\frac{1}{2}$. Example:

$\frac{4}{8} = \frac{1}{2}$; which fractions are **about** $\frac{1}{2}$? Answers: $\frac{3}{8}$, $\frac{5}{8}$

That leaves $\frac{1}{8}$ and $\frac{2}{8}$ to be rounded to 0 or $5\frac{1}{8}$ rounded to 5.

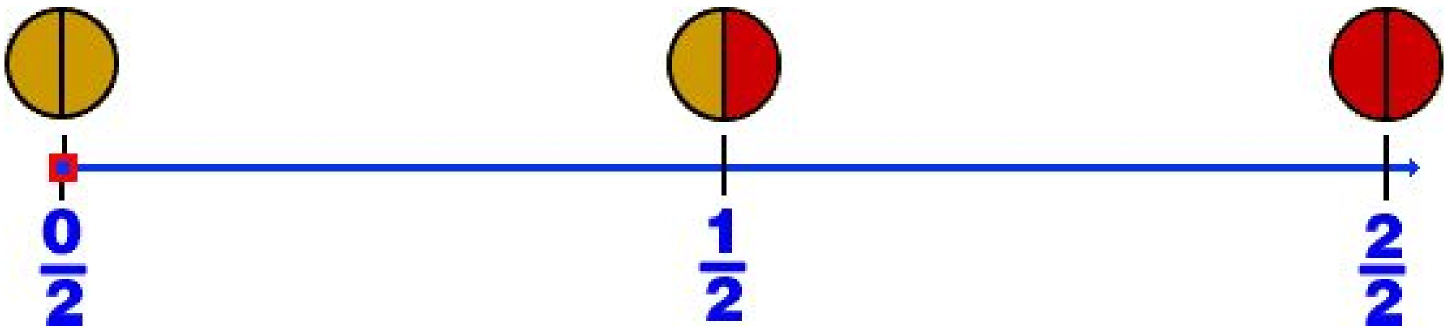
$\frac{6}{8}$ and $\frac{7}{8}$ would be rounded to 1, or $2\frac{6}{8}$ rounded to 3.

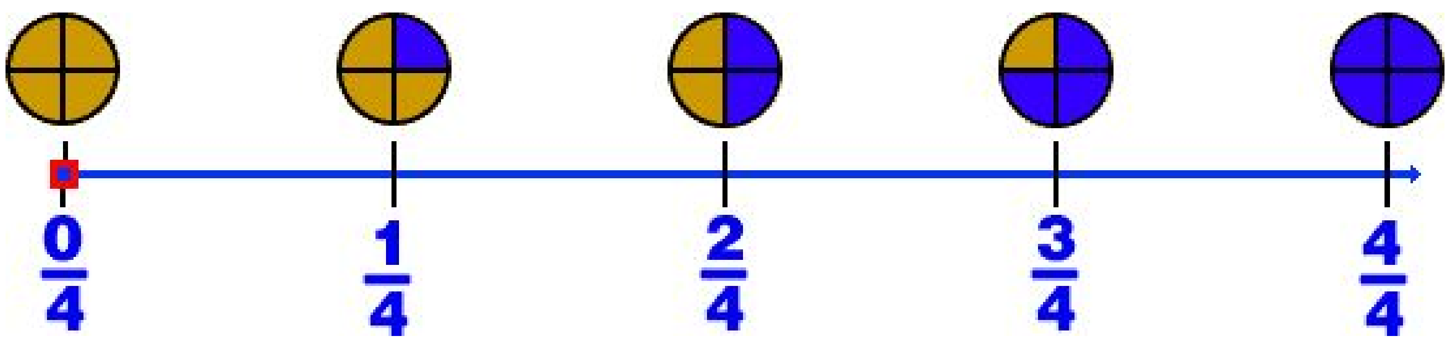
$7\frac{2}{8} + 4\frac{7}{8}$ → 7 + 5 = 12 (Estimated Answer)

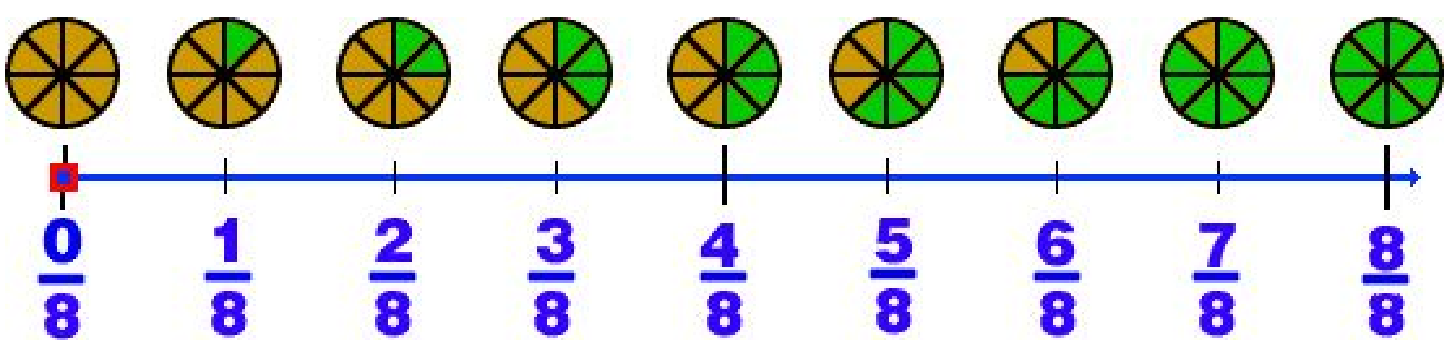
$9\frac{6}{8} - 2\frac{1}{8}$ → 10 – 2 = Estimated Answer of 8

FRACTIONS AND MIXED NUMBERS (Continued)
Grade 5 CMT (4th Generation)

Number lines can be a useful aid to some children.

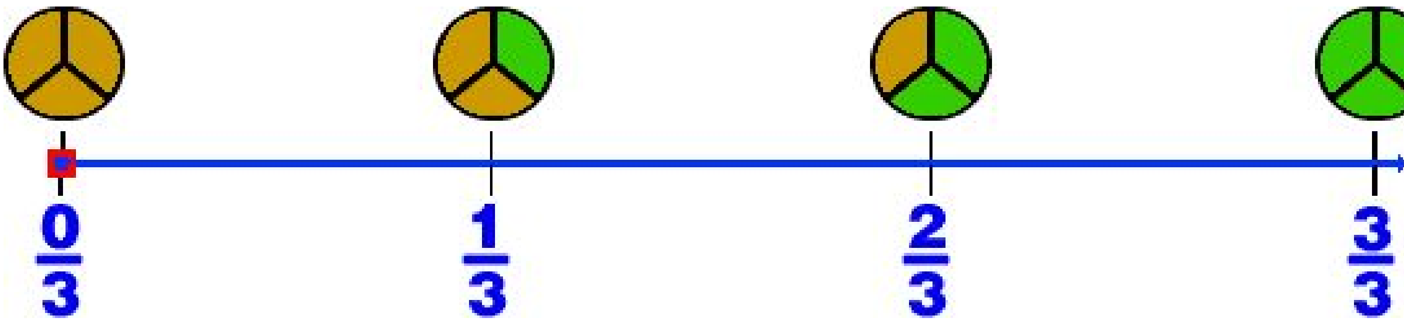


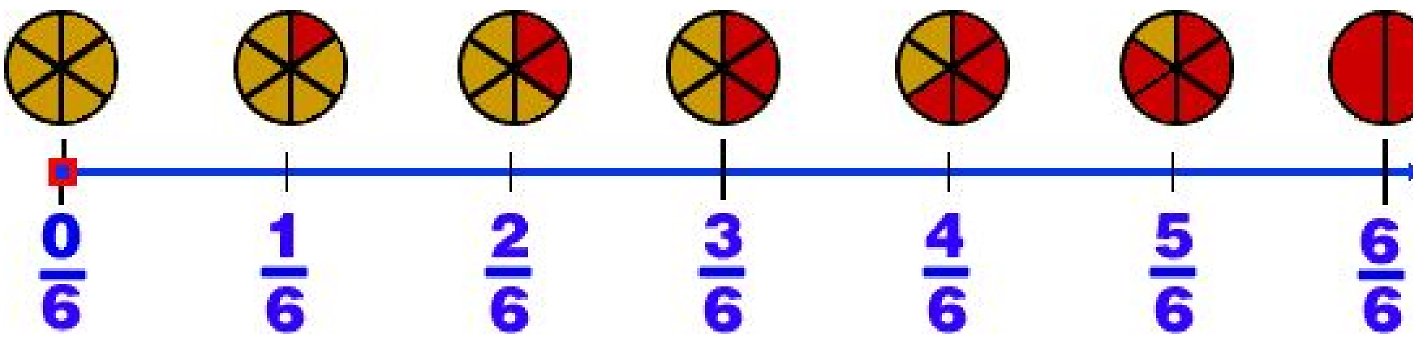


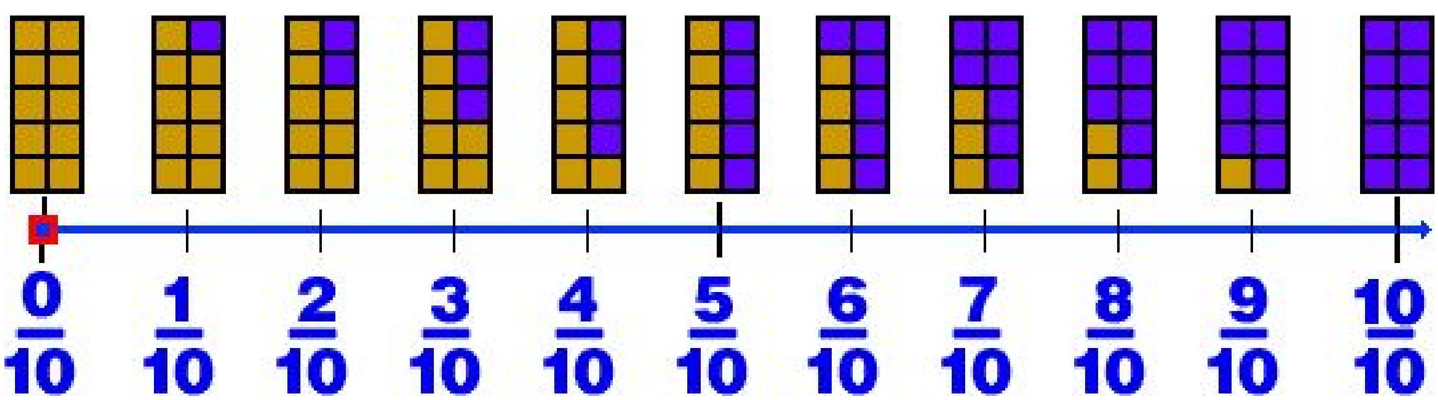


FRACTIONS AND MIXED NUMBERS (Continued)
Grade 5 CMT (4th Generation)

Need to locate $\frac{1}{2}$ on the number line for thirds





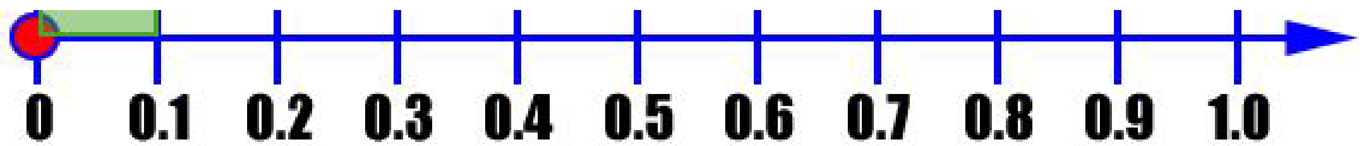


DECIMALS

Decimals can use the same rounding strategy as fractions and mixed numbers.

- Children need to have established 3 benchmarks: 0, 0.5, and 1.
- Rounding requires that a child know if a decimal is closer to 0 or closer to 1.

Number lines can again be a useful strategy.



Which decimals are closer to 0? 0.1, 0.2, 0.3 – maybe 0.4?

Which decimals are closer to 1? 0.6, 0.7. 0.8, 0.9

5.2 + 8.9 →
5 + 9 = 14 (Estimated Answer)

12.7 – 3.8 →
13 – 4 = 9 (Estimated Answer)

"In the Ball Park" Problems

Children need to understand what these types of problems mean. Otherwise they'll be trying to memorize a meaningless formula.

Beginning problem for Third Grade:

Maria bought 2 pens **ranging** in price from $3 to $6. Which could be the amount of money she spent on the pens in all?

O 2

O 3

O 5

O 7

1st pen could cost: 3 4 5 or 6 dollars
2nd pen could cost: 3 4 5 or 6 dollars

How much could the two pens cost?

- $ 6 (3 + 3)
- $ 7 (3 + 4, 4 + 3)
- $ 8 (4 + 4, 5 + 3, 3 + 5)
- $ 9 (3 + 6, 6 + 3, 4 + 5, 5 + 4)
- $10 (4 + 6, 6 + 4, 5 + 5)
- $11 (5 + 6, 6 + 5)
- $12 (6 + 6)

Any number from 6 to 12 is a possible correct choice

Lead children to see that figuring out every single possible choice would take a long time. They need to find the range of possible answers. That range is from 6 to 12 (Not BETWEEN 6 and 12.)

The only possibility in the choices is **7** .

Nikki typed **between** 5 and 10 pages every hour for 5 hours. **About** how many pages could she have typed altogether?

◯ 15

◯ 35

◯ 55

◯ 75

Suggestion:
What is the fewest number of pages Nikki could have typed? (5 + 5 + 5 + 5 + 5 = 25 pages)

What is the largest number of pages Nikki could have typed? (10 + 10 + 10 + 10 + 10 = 50 pages)

The answer is in the ball park of 25 to 50.
The only choice in that ball park is **35**.

Picking a number in the middle of "5 to 10"

5 6 7 8 9 10

If she typed 7 pages/hour for 5 hours, that makes 35 pages [7 pg/hr x 5 hours = 35 pages]

If she typed 8 pages/ hour for 5 hours, that makes 40 pages [7 pg/hr x 5 hours = 40 pages]

The closest choice to 40 is still 35

"In the Ball Park" Problems (Continued)

Georgi ran **<u>between</u>** 2 and 8 miles every day for 5 days. **About** how many miles could he have run?

◯ 5
◯ 8
◯ 12
◯ 50

Smallest Number of Miles	Largest Number of Miles
2	8
2	8
2	8
2	8
+2	+8
10	40

Answer is somewhere in between 10 and 40

There were 10 calculators on the teacher's desk **<u>ranging</u>** in weight from 5 to 7 ounces. **About** how much could the calculators weigh altogether?

◯ 20
◯ 40
◯ 60
◯ 80

It would be wonderful if children made the connection (on their own) of addition to multiplication as an easier way to solve these types of problems.

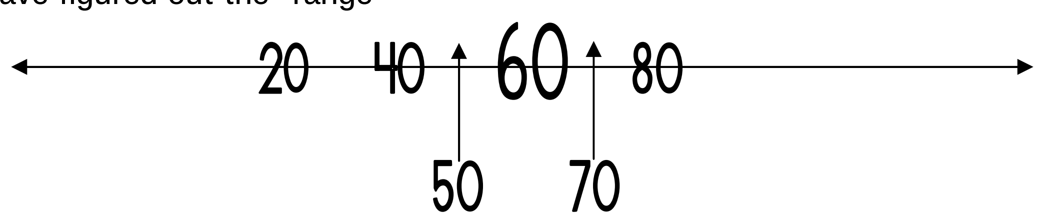
Smallest weight: 10 x 5 = 50
Heaviest weight: 10 x 7 = 70

Best choice is 60.

Choosing the middle number: Middle of 5-7 is **<u>6</u>**

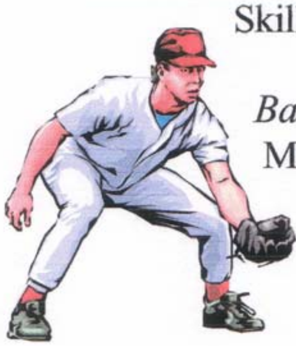
10 x 6 = 60: 60 is the best choice

Sometimes a number line will help some children to find the correct choice after they have figured out the "range"



These are informally called "in the ball park" problems by the State Dept. of Education.

(1) Content Standard(s): Estimation and Approximation
Skills: estimation, mental computation

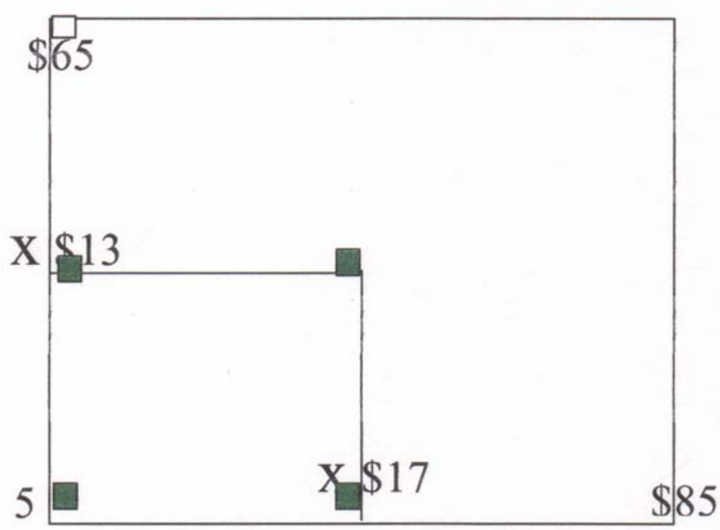


Ball Park Problems:
Michael purchased 5 CDs ranging in price from $13.00 to $17.00. Which could be the amount of money she spent on the CDs altogether?

$53.00
$34.00
$28.00
$72.00 *

Extension: Write similar estimation problems for your classmates to solve.

Teaching suggestions: To give students a better conceptual understanding of the problem, use a baseball park to describe the possible range of answers.



Use the factor that remains the same as home plate (in this example, 5 CDs). Use the third base line as the lowest price factor (in this example, $13), use the base line as the lowest price factor (in this example, $13), use the first base line as the highest price factor (in this example, $17).

Ask the students the lowest possible product (in this example, $65) and place that at the left field foul line. Ask students the highest possible product (in this example, $85) and place that at the right field foul line.

In the Ball Park