

Swimming at the Beach



Mom, Dad, Isaac, and Sonata are excited to be spending time together swimming at the beach. As soon as they see the water, the two children are off and running. They decide to have water races and Dad times them. Here are the results.

Race Number	Isaac	Sonata
1	28.8 seconds	30.2 seconds
2	25.3 seconds	22.1 seconds
3	34.55 seconds	31.79 seconds

Example: How much faster is Sonata in Race Number 3?

Strategy A:

Use rounding.

Sonata is about
3 seconds faster.

$$\begin{array}{r} 35 \\ -32 \\ \hline 3 \end{array}$$

Strategy B:

Use compatible numbers.

Sonata is about
3.0 seconds faster.

$$\begin{array}{r} 34.5 \\ -31.5 \\ \hline 3.0 \end{array}$$

Exact

$$\begin{array}{r} 34.55 \\ -31.79 \\ \hline \end{array}$$

Estimate to answer the following questions. You do not need to find an exact answer!

- 1. How much faster was Isaac in Race Number 1?
- 2. How much faster was Sonata in Race Number 2?
- + 3. What was Isaac's total time?
- + 4. What was Sonata's total time?
- ? 5. How did you know whether to add or subtract?

I can show my understanding of adding and subtracting decimals by using compatible numbers to solve problems.
I can show my understanding of adding and subtracting decimals by using estimation to solve problems.

Time for a Hike



Mom, Dad, Isaac, and Sonata like to hike. At the beginning of the trail, the family sees a sign explaining the distances and elevation gains of the hiking trails they can take.

Trail Number	Distance (round trip)	Elevation Gain
1	9.2 km	4.5 m
2	3.7 km	8.9 m
3	4.58 km	15.35 m
4	4.63 km	11.74 m

Calculate the answers to the following questions. Record each solution as an addition equation.

1. What is the total elevation gain of Trails 1 and 2?
2. What is the total distance of Trails 3 and 4?
3. What is the total elevation gain of Trails 3 and 4?
4. What is the total distance of Trails 1 and 2?
5. What is the total distance of all four hikes?
6. What is the total elevation gain of all four hikes?
7. How did you add the decimals?
8. How did you know where to place the decimal?
9. How does adding decimals compare to adding whole numbers?

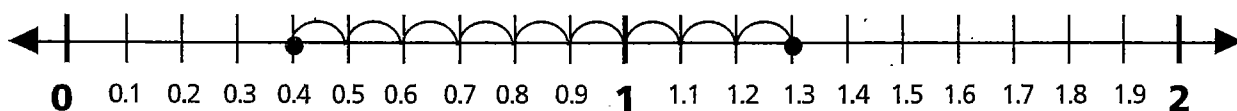


Adding on the Line

Strategy A: Use the number line to help you add horizontally.

$$0.4 + 0.9 = 1.3$$

add 0.9



- | | | |
|-------------------|-------------------|-------------------|
| 1. $0.2 + 0.3 =$ | 2. $0.6 + 0.3 =$ | 3. $0.3 + 0.8 =$ |
| 4. $0.7 + 0.1 =$ | 5. $0.4 + 0.5 =$ | 6. $0.2 + 1.2 =$ |
| 7. $1.1 + 0.3 =$ | 8. $0.3 + 1.0 =$ | 9. $0.7 + 0.7 =$ |
| 10. $0.2 + 1.4 =$ | 11. $0.7 + 0.8 =$ | 12. $1.1 + 0.4 =$ |
| 13. $0.6 + 0.9 =$ | 14. $0.5 + 0.7 =$ | 15. $0.6 + 0.6 =$ |
16. How did the number line help you to add decimals?

Strategy B: Perform step-by-step decimal addition vertically.

Line up the decimals.

$$\begin{array}{r} 1.3 \\ + 0.8 \\ \hline \end{array}$$

Add the tenths.

$$\begin{array}{r} 1.3 \\ + 0.8 \\ \hline .11 \text{ tenths} \end{array}$$

Carry the ten tenths.

$$\begin{array}{r} 1.3 \\ + 0.8 \\ \hline .1 \end{array}$$

Add the whole numbers.

$$\begin{array}{r} 1.3 \\ + 0.8 \\ \hline 2.1 \end{array}$$

- | | | | |
|---|---|---|---|
| 17. $\begin{array}{r} 1.0 \\ + 1.5 \\ \hline \end{array}$ | 18. $\begin{array}{r} 0.9 \\ + 0.6 \\ \hline \end{array}$ | 19. $\begin{array}{r} 1.6 \\ + 0.2 \\ \hline \end{array}$ | 20. $\begin{array}{r} 0.8 \\ + 1.3 \\ \hline \end{array}$ |
| 21. $\begin{array}{r} 1.0 \\ + 0.6 \\ \hline \end{array}$ | 22. $\begin{array}{r} 1.5 \\ + 0.7 \\ \hline \end{array}$ | 23. $\begin{array}{r} 0.4 \\ + 0.7 \\ \hline \end{array}$ | 24. $\begin{array}{r} 1.6 \\ + 0.9 \\ \hline \end{array}$ |
| 25. $\begin{array}{r} 1.3 \\ + 0.6 \\ \hline \end{array}$ | 26. $\begin{array}{r} 1.7 \\ + 1.2 \\ \hline \end{array}$ | 27. $\begin{array}{r} 1.5 \\ + 1.6 \\ \hline \end{array}$ | 28. $\begin{array}{r} 1.3 \\ + 0.7 \\ \hline \end{array}$ |



29. Which strategy do you prefer?

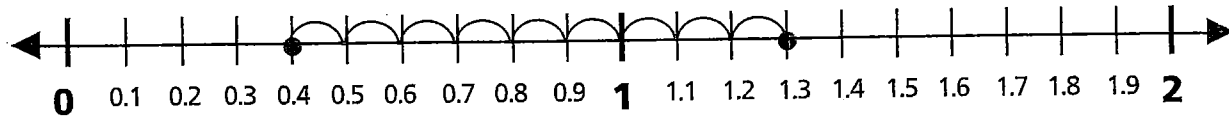
30. Which strategy is most efficient?

I can show my understanding of adding and subtracting decimals by using mental math strategies to solve problems.

Strategy A: Use the number line to help you subtract horizontally.

$$1.3 - 0.9 = 0.4$$

subtract 0.9



1. $1.2 - 0.3 =$
2. $1.9 - 0.7 =$
3. $0.9 - 0.1 =$
4. $2.4 - 0.2 =$
5. $2.8 - 1.0 =$
6. $2.0 - 1.5 =$
7. $0.7 - 0.6 =$
8. $1.3 - 0.9 =$
9. $1.4 - 0.4 =$
10. How did the number line help you to subtract decimals?

Strategy B: Perform step-by-step decimal subtraction vertically.

Line up the decimals.

$$\begin{array}{r} 2.6 \\ -0.8 \\ \hline \end{array}$$

Subtract the tenths. Regroup if necessary.

$$\begin{array}{r} 2.6 \\ -0.8 \\ \hline \end{array} \longrightarrow \begin{array}{r} 1 \cancel{.} 16 \\ \cancel{2} 6 \\ -0.8 \\ \hline .8 \end{array}$$

Subtract the whole numbers.

$$\begin{array}{r} 1 \cancel{.} 16 \\ \cancel{2} 6 \\ -0.8 \\ \hline 1.8 \end{array}$$

- | | | | |
|--|--|--|--|
| 11. $\begin{array}{r} 1.9 \\ -0.8 \\ \hline \end{array}$ | 12. $\begin{array}{r} 1.3 \\ -0.6 \\ \hline \end{array}$ | 13. $\begin{array}{r} 2.3 \\ -1.7 \\ \hline \end{array}$ | 14. $\begin{array}{r} 2.7 \\ -1.3 \\ \hline \end{array}$ |
| 15. $\begin{array}{r} 1.6 \\ -0.3 \\ \hline \end{array}$ | 16. $\begin{array}{r} 1.4 \\ -1.1 \\ \hline \end{array}$ | 17. $\begin{array}{r} 2.0 \\ -0.5 \\ \hline \end{array}$ | 18. $\begin{array}{r} 2.5 \\ -1.0 \\ \hline \end{array}$ |
| 19. $\begin{array}{r} 2.8 \\ -1.9 \\ \hline \end{array}$ | 20. $\begin{array}{r} 0.7 \\ -0.4 \\ \hline \end{array}$ | 21. $\begin{array}{r} 0.9 \\ -0.7 \\ \hline \end{array}$ | 22. $\begin{array}{r} 3.0 \\ -2.9 \\ \hline \end{array}$ |



23. Which strategy do you prefer?
24. Which strategy is most efficient?

I can show my understanding of adding and subtracting decimals by using mental math strategies to solve problems.

Answer the Code

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Solve the problems to crack the mystery code.

What did one decimal say to another decimal when they were being subtracted?

1

2

3

4

5

6

!

$E = 0.03$

$I = 0.96$

$L = 13.9$

$N = 6.4$

$P = 0.12$

$U = 3.1$

1. Enu and her family went to a Pow Wow at City Hall. The dance lasted 34.2 minutes. They looked around the City Hall for 20.3 minutes. How much more time did they spend watching the dance than touring City Hall?
2. Marco used 3.57 m of train track and Abby used 2.61 m of train track. How much more train track did Marco use?
3. Juan and Julia were trying to raise money for a charity by reading books and getting sponsors. Juan read for 34.2 hours and Julia read for 27.8 hours. How much longer did Juan read?
4. Guangie raced his go-cart around the track in 1.56 minutes. His brother did it in 1.59 minutes. By how much time did Guangie beat his brother?
5. Friedrich measured the temperature at lunch time and it was 21.2°C . At dinner time it was 24.3°C . What was the difference in temperature?
6. Armand's grandmother thought that he had grown a lot since the last time he visited her. He was 1.21 m tall then, but when his grandmother measured him now, he was 1.33 m tall! How much did Armand grow?



7. What strategies did you use to solve these problems?

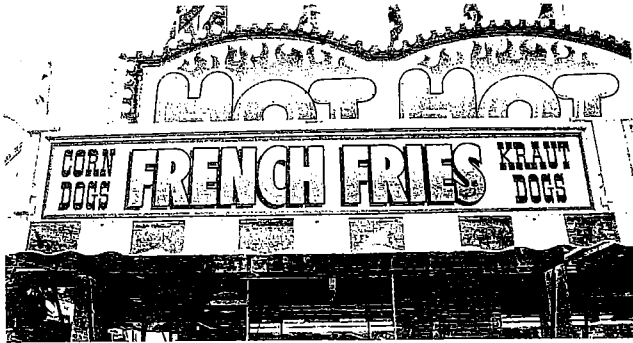


I can show my understanding of adding and subtracting decimals by using mental math strategies to solve problems.

Dinner at the Carnival

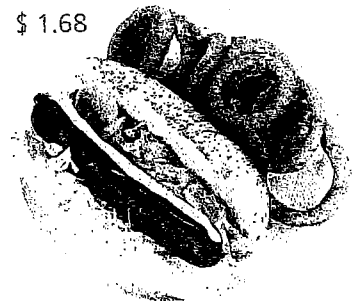


At the carnival, each family member has \$6.00 to spend. What are the possible items they could buy for their dinner? How much change would each family member receive?



Coco's Carnival Concession Menu

hot dog	\$ 2.25
hamburger	\$ 3.55
french fries	\$ 1.79
onion rings	\$ 2.15
cotton candy	\$ 3.27
mini doughnuts	\$ 2.19
samosas	\$ 4.09
perogies	\$ 3.99
drinks	\$ 1.55
fruit cup	\$ 1.68



Example:

samosas	\$4.09	\$6.00
french fries +	\$1.79	– \$5.88
	\$5.88	\$0.12

1. Mom
 - a. Which menu items could she buy?
 - b. What is the total cost?
 - c. How much change will she get?
2. Dad
 - a. Which menu items could he buy?
 - b. What is the total cost?
 - c. How much change will he get?
3. Isaac
 - a. Which menu items could he buy?
 - b. What is the total cost?
 - c. How much change will he get?
4. Sonata
 - a. Which menu items could she buy?
 - b. What is the total cost?
 - c. How much change will she get?
5. How did estimation help you in this activity?
6. How did you decide which menu items each person could buy?
7. How did you calculate the total cost without going over \$6.00?
8. How did you calculate each person's change from \$6.00?

I can show my understanding of adding and subtracting decimals by using estimation to solve problems.

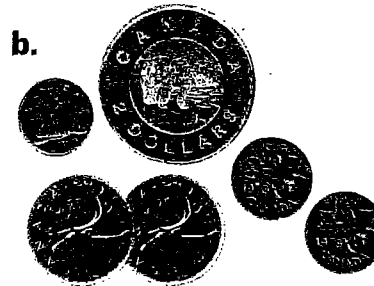
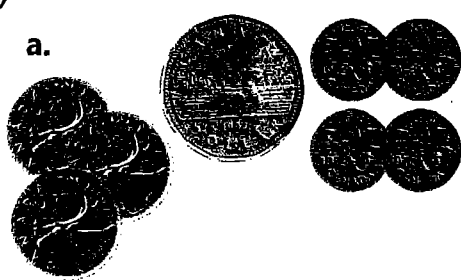
I can show my understanding of adding and subtracting decimals by using mental math strategies to solve problems.

Adding Money



Add each set of money.

Example:



a. \$1.94

b. \$2.62

c. Total: \$4.56

1. a.

b.

a.

b.

c. Total:

2. a.

b.

a.

b.

c. Total:

3. a.

b.

a.

b.

c. Total:



4. How did you add the money? What happens to the dollar sign when you add?

I can show my understanding of adding and subtracting decimals by using mental math strategies to solve problems.

Making Change by Counting Back

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Use the counting back strategy to show the change you will receive.

Example:


The purchase was \$4.23. A \$10.00 bill was given. Show the change using the counting on strategy.

\$4.23 +



Total: \$10.00

\$0.02 + \$0.75 + \$5.00

1. The purchase was \$3.92. A \$10.00 bill was given.
 2. The purchase was \$2.79. A \$5.00 bill was given.
 3. The purchase was \$0.15. A \$2.00 coin was given.
 4. The purchase was \$8.66. A \$10.00 bill was given.
 5. The purchase was \$0.35. A \$5.00 bill was given.
 6. The purchase was \$7.50. A \$10.00 bill was given.
 7. The purchase was \$1.24. A \$2.00 coin was given.
-  8. Explain how the counting back strategy works. Is this an efficient strategy? Explain.

I can show my understanding of adding and subtracting decimals by using mental math strategies to solve problems.

Problems for Cashiers

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You are the cashier at the local store. Read each situation and then use play money to find out how much change you will give each customer.

1. A little boy wants to buy a toy car for \$1.45. He gives you a \$2.00 coin.
2. Your friend comes in and buys two birthday cards for a total cost of \$3.95. Your friend pays you with a \$5.00 bill.
3. Your mom pops in to see you and picks up a spool of thread for \$1.59. She pays with a \$10.00 bill.
4. This is Rene's first visit to your town. He decides to buy a pennant to remember his trip. The pennant costs \$4.48 and he gives you a \$5.00 bill.
5. Little Susie has a loonie to spend. She decides to buy a sour soother candy for \$0.18.
6. Just after lunch, your cousin wanders into the store and finds a poster for \$6.18. Your cousin pays for the poster with a \$10.00 bill.
7. You are looking forward to a short afternoon break when, suddenly, quite a number of customers enter the store to do some shopping. Soon, they are at the cash register and you try your best to work quickly to take their money and give their change.

Here are all the transactions made:

- a. \$4.06 purchase paid with a \$5.00 bill.
 - b. \$8.31 purchase paid with a \$10.00 bill.
 - c. \$2.33 purchase paid with a \$2.00 coin and a \$1.00 coin.
 - d. \$7.49 purchase paid with a \$10.00 bill and two quarters.
 - e. \$0.64 purchase paid with a \$2.00 coin.
 - f. \$2.77 purchase paid with a \$5.00 bill.
8. As you are cleaning up the store just before closing time, one last customer makes a purchase of three items. The costs are \$3.39, \$2.16, and \$1.58. The last customer pays with a \$10.00 bill.

Choose any two transactions and calculate how much change you gave each customer.

I can show my understanding of adding and subtracting decimals by using mental math strategies to solve problems.