

Name _____ Date _____

1. Find the sums below.

a. $46 \text{ mL} + 5 \text{ mL}$

$$\begin{array}{r} 46 \\ + 5 \\ \hline 51 \text{ mL} \end{array}$$

b. $46 \text{ mL} + 25 \text{ mL}$

$$\begin{array}{r} 46 \\ + 25 \\ \hline 71 \text{ mL} \end{array}$$

c. $46 \text{ mL} + 125 \text{ mL}$

$$\begin{array}{r} 46 \\ + 125 \\ \hline 171 \text{ mL} \end{array}$$

d. $59 \text{ cm} + 30 \text{ cm}$

$$\begin{array}{r} 59 \\ + 30 \\ \hline 89 \text{ cm} \end{array}$$

e. $509 \text{ cm} + 83 \text{ cm}$

$$\begin{array}{r} 509 \\ + 83 \\ \hline 592 \text{ cm} \end{array}$$

f. $597 \text{ cm} + 30 \text{ cm}$

$$\begin{array}{r} 597 \\ + 30 \\ \hline 627 \text{ cm} \end{array}$$

g. $39 \text{ g} + 63 \text{ g}$

$$\begin{array}{r} 39 \\ + 63 \\ \hline 102 \text{ g} \end{array}$$

h. $345 \text{ g} + 294 \text{ g}$

$$\begin{array}{r} 345 \\ + 294 \\ \hline 639 \text{ g} \end{array}$$

i. $480 \text{ g} + 476 \text{ g}$

$$\begin{array}{r} 480 \\ + 476 \\ \hline 956 \text{ g} \end{array}$$

j. $1 \text{ L } 245 \text{ mL} + 2 \text{ L } 412 \text{ mL} =$

$$\begin{array}{r} 1 \text{ L } 245 \text{ mL} \\ + 2 \text{ L } 412 \text{ mL} \\ \hline 3 \text{ L } 657 \text{ mL} \end{array}$$

k. $2 \text{ kg } 509 \text{ g} + 3 \text{ kg } 367 \text{ g} =$

$$\begin{array}{r} 2 \text{ kg } 509 \text{ g} \\ + 3 \text{ kg } 367 \text{ g} \\ \hline 5 \text{ kg } 876 \text{ g} \end{array}$$

COMMON
CORE

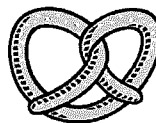
Lesson 15:

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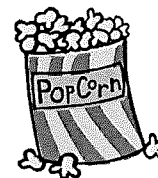
Add measurements using the standard algorithm to compose larger units once.
7/5/13engage^{ny}

2.D.9

2. Nadine and Jen buy a small bag of popcorn and a pretzel at the movie theater. The pretzel weighs 63 grams more than the popcorn. What is the weight of the pretzel?



? grams



44 grams

pretzel 107g

popcorn 44g $+ 63g$

$$\begin{array}{r} 44g \\ + 63 \\ \hline 107g \end{array}$$

The pretzel weighs 107 grams.

3. In math class, Jason and Andrea find the total liquid volume of water in their beakers. Jason says the total is 782 mL, but Andrea says it is 792 mL. The amount of water in each beaker can be found in the table to the right. Show whose calculation is correct. Explain the mistake of the other student.

Student	Liquid Volume
Jason	475 mL
Andrea	317 mL

$$\begin{array}{r} 475 \text{ mL} \\ + 317 \text{ mL} \\ \hline 792 \end{array}$$

Andrea is right. Jason forgot to add the 10 mL that he regrouped.

4. It takes Greg 15 minutes to mow the front lawn. It takes him 17 more minutes to mow the back lawn than the front lawn. What is the total amount of time Greg spends mowing the lawns?

F 15 min $+ 17 \text{ min}$
B 32 min

$$\begin{array}{r} 15 \\ + 17 \\ \hline 32 \end{array}$$

$$\begin{array}{r} 15 \\ + 32 \\ \hline 47 \text{ min} \end{array}$$

He spends 47 minutes mowing the lawns.

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1. Find the sums.

$$\begin{array}{r} -14 \quad \rightarrow \quad +14 \\ \text{a. } 24 \text{ cm} + 36 \text{ cm} \end{array}$$

$$\begin{array}{r} 20 \text{ cm} + 40 \text{ cm} \\ 60 \text{ cm} \end{array}$$

b. $562 \text{ m} + 180 \text{ m}$

$$500 \text{ m} + 100 \text{ m} = 600 \text{ m}$$

$$62 \text{ m} + 80 \text{ m} = 142 \text{ m}$$

$$742 \text{ m}$$

$$\begin{array}{r} +15 \quad \rightarrow \quad -5 \\ \text{c. } 345 \text{ km} + 239 \text{ km} \end{array}$$

$$350 \text{ km} + 234 \text{ km} =$$

$$584 \text{ km}$$

2. Brianna jogs 15 minutes more on Sunday than Saturday. She jogged 26 minutes on Saturday.

- a. How many minutes does she jog on Sunday?

$$26 \text{ min} + 15 \text{ min} = 41 \text{ mins.}$$

- b. How many minutes does she jog in total?

$$26 \text{ min} + 41 \text{ min} = 67 \text{ mins.}$$

$$60 + 7 = 67 \text{ mins}$$

Name _____

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1. Find the sums below. Choose mental math or the algorithm.

a. $75 \text{ cm} + 7 \text{ cm}$

$$\begin{array}{r} 75 \text{ cm} \\ + 7 \text{ cm} \\ \hline 82 \text{ cm} \end{array}$$

b. $39 \text{ kg} + 56 \text{ kg}$

$$\begin{array}{r} 40 \text{ kg} + 55 \text{ kg} \\ 95 \text{ kg} \end{array}$$

c. $362 \text{ mL} + 229 \text{ mL}$

$$\begin{array}{r} 361 \text{ mL} + 230 \text{ mL} \\ 591 \text{ mL} \end{array}$$

d. $283 \text{ g} + 92 \text{ g}$

$$285 \text{ g} + 90 \text{ g} = 375 \text{ g}$$

e. $451 \text{ mL} + 339 \text{ mL}$

$$\begin{array}{r} 450 \text{ mL} + 340 \text{ mL} \\ 790 \text{ mL} \end{array}$$

f. $149 \text{ L} + 331 \text{ L}$

$$\begin{array}{r} 150 \text{ L} + 330 \text{ L} \\ 480 \text{ L} \end{array}$$

2. The liquid volume of five drinks is shown below.

a. Jen drinks the apple juice and the water. How many milliliters does she drink in all?

Drink	Liquid Volume
Apple juice	125 mL
Milk	236 mL
Water	248 mL
Orange juice	174 mL
Fruit punch	208 mL

$$\begin{array}{r} 125 \text{ mL} \\ + 236 \text{ mL} \\ \hline 361 \end{array}$$

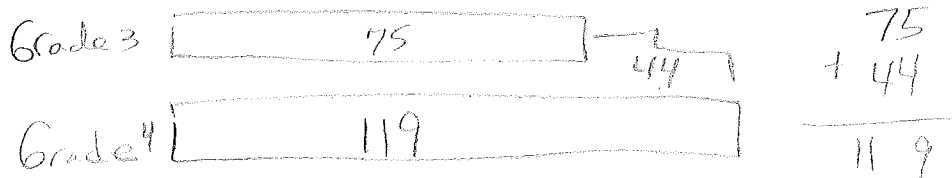
Jen drinks 361 mL.

b. Kevin drinks the milk and the fruit punch. How many milliliters does he drink in all?

$$\begin{array}{r} 236 \text{ mL} + 208 \text{ mL} \\ 240 \text{ mL} + 204 \text{ mL} \end{array}$$

Kevin drinks 444 mL.

3. There are 75 students in Grade 3. There are 44 more students in Grade 4 than in Grade 3. How many students are in Grade 4? Use a tape diagram to model your thinking.



4. Mr. Green's sunflower grew 29 centimeters in one week. The next week it grew 5 centimeters more. What is the total number of centimeters the sunflower grew in 2 weeks?

Handwritten addition:
$$\begin{array}{r} 29 \text{ cm} \\ + 5 \text{ cm} \\ \hline 34 \text{ cm} \end{array}$$
 Another handwritten calculation:
$$\begin{array}{r} 29 \text{ cm} \\ + 1 \\ \hline 30 \text{ cm} \end{array} + \begin{array}{r} 4 \text{ cm} \\ + 1 \\ \hline 5 \text{ cm} \end{array} = 34 \text{ cm}$$

5. Kylie records the weights of 3 objects as shown below. Which 2 objects can she put on a pan balance to equal the weight of a 460 gram bag? Show how you know.

Paperback Book	Banana	Bar of Soap
343 grams	108 grams	117 grams

Handwritten calculations and a diagram showing the weights of the objects and their combinations:

- $343\text{g} + 108\text{g} = 451\text{g}$
- $343 + 117 = 460\text{g}$
- $117\text{g} + 108\text{g} = 225\text{g}$

A diagram shows three boxes representing the objects. Lines connect the Paperback Book (343g) and Bar of Soap (117g) to a central point, indicating their combined weight is 460g.

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1. Find the sums below.

a. $52 \text{ mL} + 68 \text{ mL}$
 $\xrightarrow{+2}$
 $52 \text{ mL} + 68 \text{ mL}$
 $50 \text{ mL} + 70 \text{ mL}$
 120 mL

b. $352 \text{ mL} + 68 \text{ mL}$
 $\xrightarrow{+2}$
 $352 \text{ mL} + 68 \text{ mL}$
 $350 \text{ mL} + 70 \text{ mL}$
 420 mL

c. $352 \text{ mL} + 468 \text{ mL}$
 $\xrightarrow{+2}$
 $352 \text{ mL} + 468 \text{ mL}$
 $350 \text{ mL} + 470 \text{ mL}$
 820 mL

d. $56 \text{ cm} + 94 \text{ cm}$
 $\xrightarrow{+6}$
 $56 \text{ cm} + 94 \text{ cm}$
 $50 \text{ cm} + 100 \text{ cm}$
 150 cm

e. $506 \text{ cm} + 94 \text{ cm}$
 $\xrightarrow{+6}$
 $506 \text{ cm} + 94 \text{ cm}$
 $500 \text{ cm} + 100 \text{ cm}$
 600 cm

f. $506 \text{ cm} + 394 \text{ cm}$
 $\xrightarrow{+6}$
 $506 \text{ cm} + 394 \text{ cm}$
 $500 \text{ cm} + 400 \text{ cm}$
 900 cm

g. $697 \text{ g} + 138 \text{ g}$
 $\xrightarrow{+3}$
 $697 \text{ g} + 138 \text{ g}$
 $700 \text{ g} + 135 \text{ g}$
 835 g

h. $345 \text{ g} + 597 \text{ g}$
 $\xrightarrow{+3}$
 $345 \text{ g} + 597 \text{ g}$
 $342 \text{ g} + 600 \text{ g}$
 942 g

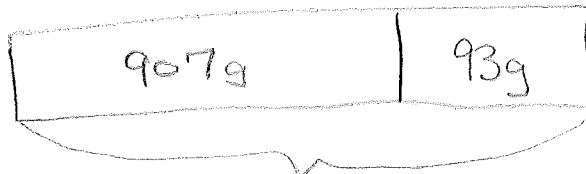
i. $486 \text{ g} + 497 \text{ g}$
 $\xrightarrow{+3}$
 $486 \text{ g} + 497 \text{ g}$
 $483 \text{ g} + 500 \text{ g}$
 983 g

j. $3 \text{ L } 251 \text{ mL} + 1 \text{ L } 549 \text{ mL}$
 $\xrightarrow{+1}$
 4 L
 $251 \text{ mL} + 549 \text{ mL}$
 $250 \text{ mL} + 550 \text{ mL}$
 $4 \text{ L } 800 \text{ mL}$

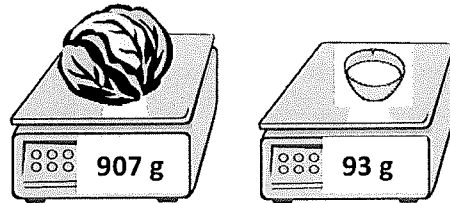
k. $4 \text{ kg } 384 \text{ g} + 2 \text{ kg } 467 \text{ g}$
 $\xrightarrow{+2}$
 6 kg
 $384 \text{ g} + 467 \text{ g}$
 851 g



2. Lane makes sauerkraut. He weighs the amounts of cabbage and salt he uses. Draw and label a tape diagram to find the total weight of the cabbage and salt Lane uses.



? The total weight is 1,000g.



$$\begin{array}{r} \overset{+100}{\curvearrowright} \quad \overset{-3}{\curvearrowright} \\ 907\text{g} + 93\text{g} = \\ 1000\text{g} + 90\text{g} = 1090\text{g} \end{array}$$

3. Sue bakes mini muffins for the school bake sale. After wrapping 86 muffins, she still has 58 muffins left cooling on the table. How many muffins did she bake altogether?

$$\begin{array}{r} 86 \text{ muffins} \\ + 58 \text{ muffins} \\ \hline 144 \end{array}$$

She baked 144 muffins.

4. The milk carton to the right holds 183 milliliters more liquid than the juice box. What is the total capacity of the juice box and milk carton?



Juice Box
279 mL



Milk Carton
? mL

$$\begin{array}{r} \overset{+1}{\curvearrowright} \quad \overset{-1}{\curvearrowright} \\ 279\text{mL} + 183\text{mL} = \\ 280\text{mL} + 182\text{mL} = 462\text{mL} \\ \text{of milk} \end{array}$$

$$\begin{array}{r} \overset{+1}{\curvearrowright} \quad \overset{-1}{\curvearrowright} \\ 279\text{mL} + 462\text{mL} = \\ 280\text{mL} + 461\text{mL} = \end{array}$$

The total capacity is 741 mL.

741 mL

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1. Find the sums.

a. $78 \text{ g} + 29 \text{ g}$

$$\begin{array}{r} 78 \text{ g} + 29 \text{ g} \\ \xrightarrow{-1} \quad \xrightarrow{+1} \\ 77 \text{ g} + 30 \text{ g} \\ 107 \text{ g} \end{array}$$

b. $328 \text{ kg} + 289 \text{ kg}$

$$\begin{array}{r} 328 \text{ kg} + 289 \text{ kg} = \\ \xrightarrow{-1} \quad \xrightarrow{+1} \\ 327 + 290 \text{ kg} = \\ 557 \text{ kg} \end{array}$$

c. $509 \text{ L} + 293 \text{ L}$

$$\begin{array}{r} 509 \text{ L} + 293 \text{ L} \\ \xrightarrow{-1} \quad \xrightarrow{+1} \\ 508 \text{ L} + 292 \text{ L} \\ 802 \text{ L} \end{array}$$

2. The third grade sells lemonade to raise funds. After selling 38 liters of lemonade in 1 week, they still have 26 liters of lemonade left. How many liters of lemonade did they have at the beginning?

$$\begin{array}{r} 38 \text{ L} \\ + 26 \text{ L} \\ \hline 64 \text{ L} \end{array}$$

They had 64L of lemonade at the beginning.

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1. Find the sums below.

a. $47\text{ m} + 8\text{ m}$

$$\begin{array}{r} \overset{+3}{\curvearrowright} \quad \overset{-3}{\curvearrowright} \\ 47\text{ m} + 8\text{ m} \\ 50\text{ m} + 5\text{ m} \\ 55\text{ m} \end{array}$$

b. $47\text{ m} + 38\text{ m}$

$$\begin{array}{r} \overset{+3}{\curvearrowright} \quad \overset{-3}{\curvearrowright} \\ 50\text{ m} + 35\text{ m} \\ 85\text{ m} \end{array}$$

c. $147\text{ m} + 383\text{ m}$

$$\begin{array}{r} \overset{+3}{\curvearrowright} \quad \overset{-3}{\curvearrowright} \\ 150\text{ m} + 380\text{ m} \\ 530\text{ m} \end{array}$$

d. $63\text{ mL} + 9\text{ mL}$

$$\begin{array}{r} \overset{-1}{\curvearrowright} \quad \overset{+1}{\curvearrowright} \\ 62\text{ mL} + 10\text{ mL} \\ 72\text{ mL} \end{array}$$

e. $463\text{ mL} + 79\text{ mL}$

$$\begin{array}{r} \overset{-1}{\curvearrowright} \quad \overset{+1}{\curvearrowright} \\ 462\text{ mL} + 80\text{ mL} \\ 542\text{ mL} \end{array}$$

f. $463\text{ mL} + 179\text{ mL}$

$$\begin{array}{r} 463\text{ mL} \\ + 179\text{ mL} \\ \hline 642\text{ mL} \end{array}$$

g. $368\text{ kg} + 263\text{ kg}$

$$\begin{array}{r} 368\text{ kg} \\ + 263\text{ kg} \\ \hline 631\text{ kg} \end{array}$$

h. $508\text{ kg} + 293\text{ kg}$

$$\begin{array}{r} \overset{-2}{\curvearrowright} \quad \overset{+2}{\curvearrowright} \\ 501\text{ kg} + 300\text{ kg} \\ 801\text{ kg} \end{array}$$

i. $103\text{ kg} + 799\text{ kg}$

$$\begin{array}{r} \overset{-1}{\curvearrowright} \quad \overset{+1}{\curvearrowright} \\ 102\text{ kg} + 800\text{ kg} \\ 902\text{ kg} \end{array}$$

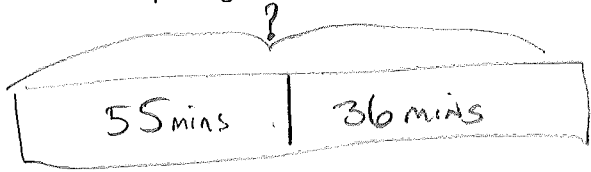
j. $4\text{ L } 342\text{ mL} + 2\text{ L } 214\text{ mL}$

$$\begin{array}{r} 6\text{ L} + 556\text{ mL} \end{array}$$

k. $3\text{ kg } 296\text{ g} + 5\text{ kg } 326\text{ g}$

$$\begin{array}{r} \overset{+4}{\curvearrowright} \quad \overset{-4}{\curvearrowright} \\ 8\text{ kg} + 300\text{ g} + 322\text{ kg} \\ 622\text{ kg} \end{array}$$

2. Mrs. Haley roasts a turkey for 55 minutes. She checks it, and decides to roast it for an additional 36 minutes. Use a tape diagram to find the total minutes Mrs. Haley roasts the turkey.



$$55 \text{ mins} + 36 \text{ mins} =$$

$$60 \text{ mins} + 31 \text{ mins} =$$

She roasts the turkey
for 91 mins.

91 mins.

3. A miniature horse weighs 228 fewer kilograms than a Shetland pony. Use the table to find the weight of a Shetland pony.

$$\begin{array}{r} 228 \text{ kg} \\ 53 \text{ kg} \\ \hline 381 \text{ kg} \end{array}$$

Types of Horses	Weight in kg
Shetland pony	<u>381</u> kg
American Saddlebred	543 kg
Clydesdale horse	_____ kg
Miniature horse	53 kg

4. A Clydesdale horse weighs as much as a Shetland pony and an American Saddlebred horse combined. How much does a Clydesdale horse weigh?

$$\begin{array}{r} 381 \text{ kg Shetland} \\ + 543 \text{ kg American Saddlebred} \\ \hline 924 \text{ kg} \end{array}$$

A Clydesdale horse weighs 924 kgs.

Name _____

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1.

- a. Find the actual sum either on paper or using mental math. Round each addend to the nearest hundred and find the estimated sums.

A

$$\begin{array}{r} 451 + 253 = 704 \\ \underline{500 + 300 = 800} \end{array}$$

$$\begin{array}{r} 451 + 249 = 700 \\ \underline{500 + 200 = 700} \end{array}$$

$$\begin{array}{r} 448 + 249 = 697 \\ \underline{400 + 200 = 600} \end{array}$$

Circle the estimated sum that is the closest to its real sum.

B

$$\begin{array}{r} 356 + 161 = 517 \\ \underline{400 + 200 = 600} \end{array}$$

$$\begin{array}{r} 356 + 148 = 504 \\ \underline{400 + 100 = 500} \end{array}$$

$$\begin{array}{r} 347 + 149 = 496 \\ \underline{300 + 100 = 400} \end{array}$$

Circle the estimated sum that is the closest to its real sum.

C

$$\begin{array}{r} 652 + 158 = 810 \\ \underline{700 + 200 = 900} \end{array}$$

$$\begin{array}{r} 647 + 158 = 805 \\ \underline{600 + 200 = 800} \end{array}$$

$$\begin{array}{r} 647 + 146 = 793 \\ \underline{600 + 100 = 700} \end{array}$$

Circle the estimated sum that is the closest to its real sum.

- b. Look at the sums that gave the most precise estimates. Explain below what they have in common. You might use a number line to support your explanation.

If one number rounds up and the other number rounds down and both numbers are rounded about the same amount.

2. Janet watched a movie that is 94 minutes long on Friday night. She watched a movie that is 151 minutes long on Saturday night.

- a. Decide how to round the minutes. Then, estimate the total minutes Janet watched movies on Friday and Saturday.

Round to the nearest ten
 $100 \text{ minutes} + 150 \text{ minutes} = 250 \text{ minutes}$

- b. How much time does Janet actually spend watching movies?

$94 \text{ minutes} + 151 \text{ minutes} = 245 \text{ minutes}$
 $95 \text{ mins} + 150 \text{ minutes} = 245 \text{ minutes}$

- c. Explain whether or not your estimated sum is close to the actual sum. Round in a different way and see which estimate is closer.

My estimated amount is close to the actual sum.

Round to the nearest 100
 $100 \text{ mins} + 200 \text{ mins} = 300 \text{ mins.}$

3. Sadie, a bear at the zoo, weighs 182 kilograms. Her cub weighs 74 kilograms.

- a. Estimate the total weight of Sadie and her cub using whatever method you think best.

$180 \text{ Kgs} + 70 \text{ Kgs} = 250 \text{ Kgs}$

- b. What is the actual weight of Sadie and her cub? Model the problem with a tape diagram.

The total weight of Sadie and her cub is 256 kgs.

182 kg	74 kg	= 256 kg.
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?

$$\begin{array}{r} 182 \text{ Kgs} \\ 74 \text{ Kgs} \\ \hline 256 \text{ Kg.} \end{array}$$



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Jesse practices the trumpet for a total of 165 minutes during the first week of school. He practices for 245 minutes during the second week.

- a. Estimate the total time Jesse practices by rounding to the nearest 10 minutes.

$$\begin{array}{r} 170 \text{ mins} - \text{first week} \\ + 250 \text{ mins} - \text{second week} \\ \hline 420 \text{ mins.} \end{array}$$

He practices for a total of 420 minutes.

- b. Estimate the total amount of time Jesse practices by rounding to the nearest 100 minutes.

$$\begin{array}{r} 200 \text{ mins.} - \text{first wk.} \\ 200 \text{ mins.} - \text{Second wk.} \\ \hline 400 \text{ mins.} \end{array}$$

- c. Explain why the estimates are so close to each other.

When you estimated the numbers, one was rounded up and one was rounded down and they were both rounded about the same amount.

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Estimate sums by rounding and apply to solve measurement word problems.
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2.D.37

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1. Cathy collects the following information about her dogs, Stella and Oliver.

Stella	
Time Spent Getting a Bath	Weight
36 minutes	32 kg

Oliver	
Time Spent Getting a Bath	Weight
25 minutes	7 kg

Use the information in the charts to answer the questions below.

- a. Estimate the total weight of Stella and Oliver.

$$\begin{array}{r} 30 \text{ Kg} - \text{Stella} \\ 10 \text{ Kg} - \text{Oliver} \\ \hline 40 \text{ Kg} \end{array}$$

The total estimated weight of both dogs is 40 kg.

- b. What is the total weight of Stella and Oliver?

$$\begin{array}{r} 32 \text{ Kg} \\ + 7 \text{ Kg} \\ \hline 49 \text{ Kg} \end{array}$$

The total weight is 49 Kgs.

- c. Estimate the total amount of time Cathy spends giving her dogs a bath.

$$\begin{array}{r} 40 \text{ minutes} \\ 30 \text{ minutes} \\ \hline 70 \text{ minutes} \end{array}$$

The estimated time spent giving the dogs baths is 70 minutes.

- d. What is the actual total time Cathy spends giving her dogs a bath?

$$\begin{array}{r} 36 \text{ minutes} \\ 25 \text{ minutes} \\ \hline 61 \text{ minutes} \end{array}$$

The actual time spent giving the dogs baths was 61 minutes.

- e. Explain how estimating helps you check the reasonableness of your answers.

It helps me quickly see, using easy to add numbers, about how much the answer should be.



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Estimate sums by rounding and apply to solve measurement word problems.
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2.D.38

2. Dena reads for 361 minutes during Week 1 of her school's two-week long Read-A-Thon. She reads for 212 minutes during Week 2 of the Read-A-Thon.

- a. Estimate the total amount of time Dena reads during the Read-A-Thon by rounding.

$$\begin{array}{r} 400 \text{ minutes} \\ + 200 \text{ minutes} \\ \hline 600 \text{ minutes} \end{array}$$

The estimated time reading for the Read-A-Thon was 600 minutes.

- b. Estimate the total amount of time Dena reads during the Read-A-Thon by rounding in a different way.

$$\begin{array}{r} 360 \text{ minutes} \\ 210 \text{ minutes} \\ \hline 570 \text{ minutes} \end{array}$$

- c. Calculate the actual number of minutes that Dena reads during the Read-A-Thon. Which method of rounding was more precise? Why?

$$\begin{array}{r} 361 \text{ minutes} \\ 212 \text{ minutes} \\ \hline 573 \text{ minutes} \end{array}$$

The actual number of minutes that Dena read was 573 minutes.

When I rounded to the tens the rounded number was closer to the actual number because when you round to the tens your rounded number is closer to the actual number, but when you round to the hundreds your number rounded is usually further away than your actual number.



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2.D.39