Name ___________________________ Date _________________

1. The table below shows the times 5 students took to run 100 meters.

<table>
<thead>
<tr>
<th>Name</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Samantha</td>
<td>19 seconds</td>
</tr>
<tr>
<td>Melanie</td>
<td>22 seconds</td>
</tr>
<tr>
<td>Chester</td>
<td>26 seconds</td>
</tr>
<tr>
<td>Dominique</td>
<td>18 seconds</td>
</tr>
<tr>
<td>Louie</td>
<td>24 seconds</td>
</tr>
</tbody>
</table>

a. Who is the fastest runner?  
   Dominique

b. Who is the slowest runner?  
   Chester

c. How many seconds faster does Samantha run than Louie?
   \[ \text{Louie} - \text{Samantha} = \text{difference} \]
   \[ 24 - 19 = 5 \text{ seconds} \]

2. List activities at home that take the following times to complete. If you do not have a stop watch, you can use the strategy of counting by "1 Mississippi, 2 Mississippi, 3 Mississippi,..."

<table>
<thead>
<tr>
<th>Time</th>
<th>Activities at home</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 seconds</td>
<td>For example: Tying shoelaces</td>
</tr>
<tr>
<td>45 seconds</td>
<td></td>
</tr>
<tr>
<td>60 seconds</td>
<td></td>
</tr>
</tbody>
</table>
3. Match the analog clock with the correct digital clock.
1. Follow the directions to label the number line below.

```
W  F  G  B  P
0  5 10 15 20 25 30 35 40 45 50 55 60
4:00 pm
```

a. The basketball team practices between 4:00 p.m. and 5:00 p.m. Label the first and last tick marks as 4:00 p.m. and 5:00 p.m.

b. Each interval represents 5 minutes. Count by fives starting at 0, or 4:00 p.m. Label 0, 5, and 10 below the number line up to 5:00 p.m.

c. The team warms up at 4:05 p.m. Plot a point on the number line to represent this time. Above the point write W.

d. The team shoots free throws at 4:15 p.m. Plot a point on the number line to represent this time. Above the point write F.

e. The team plays a practice game at 4:25 p.m. Plot a point on the number line to represent this time. Above the point write G.

f. The team has a water break at 4:50 p.m. Plot a point on the number line to represent this time. Above the point write B.

g. The team reviews their plays at 4:55 p.m. Plot a point on the number line to represent this time. Above the point write P.
1. Plot points on the number line for each time shown on a clock below. Then draw lines to match the clocks to the points.

2. Julie eats dinner at 6:07 p.m. Draw hands on the clock below to show what time Julie eats dinner.

3. P.E. starts at 1:32 p.m. Draw hands on the clock below to show what time P.E. starts.
4. The clock shows what time Zachary starts playing with his action figures.

   a. What time does he start playing with his action figures?

      \[ \begin{align*}
      \text{Start} \\
      2:32 \\
      \end{align*} \]

   b. He plays with his action figures for 23 minutes. What time does he finish playing?

      \[ 10 + 10 + 3 = 23 \text{ min} \]

   c. Draw hands on the clock to the right to show what time Zachary finishes playing.

   d. Label the first and last tick marks with 2:00 p.m. and 3:00 p.m. Then plot Zachary's start and finish times. Label his start time with a \( B \) and his finish time with an \( F \).
Record your homework start time on the clock in Problem 6.
Directions: Use a number line to answer Problems 1 through 4.

1. Joy's mom begins walking at 4:12 p.m. She stops at 4:43 p.m. How many minutes does she walk?
   Joy's mom walks for 31 minutes.

2. Cassie finishes softball practice at 3:52 p.m. after practicing for 30 minutes. What time does Cassie's practice start?
   Cassie's practice starts at 3:22 p.m.

3. Jordie builds a model from 9:14 a.m. to 9:47 a.m. How many minutes does Jordie spend building his model?
   Jordie builds for 33 minutes.

4. Cara finishes reading at 2:57 p.m. She reads for a total of 46 minutes. What time did Cara start reading?
   Cara starts reading at 2:11 p.m.
5. Jenna and her mom take the bus to the mall. The clocks below show when they leave their house and when they arrive at the mall. How many minutes does it take them to get to the mall?

Time when they leave home:

![Clock image](image)

Time when they arrive at the mall:

![Clock image](image)

36 minutes

6. Record your homework start time:

![Clock image](image)

Record the time you finish Problems 1–5:

![Clock image](image)

Show work
Answers will vary.

How many minutes did you work on Problems 1–5?
1. Abby spent 22 minutes doing her science project yesterday and 34 minutes doing it today. How many minutes does Abby spend working on her science project altogether? Model the problem on the number line and write an equation to solve.

\[22 + 34 = 56\]

Abby spends 56 minutes.

2. Susanna spends a total of 47 minutes working on her project. How many more minutes than Susanna does Abby spend working? Draw a number line to model the problem and write an equation to solve.

\[56 - 47 = 9\]

56 more minutes

3. Peter practices violin for a total of 55 minutes over the weekend. He practices 25 minutes on Saturday. How many minutes does he practice on Sunday?

\[55 \text{ total} - 25 \text{ on Sat} = \_ \text{ on Sunday}\]

\[55 - 25 = 30\]

30 min on Sunday
4. a. Marcus gardens. He pulls weeds for 18 minutes, waters for 13 minutes, and plants for 16 minutes. How many total minutes does he spend gardening?

\[
\begin{array}{ccc}
\text{weeds} & \text{waters} & \text{plants} \\
18 \text{ min} & 13 \text{ min} & 16 \text{ min}
\end{array}
\]

\[
18 + 13 + 16 = 47 \text{ total minutes}
\]

4. b. Marcus wants to watch a movie that starts at 2:55 p.m. It takes 10 minutes to drive to the theater. If Marcus starts the yard work at 2:00 p.m., can he make it on time for the movie? Explain your reasoning.

No. If Marcus starts yard work at 2:00 and it takes 47 minutes to complete, he will finish at 2:47. If he left right away and traveled 10 minutes, he would get to the theater at 2:57. That is 2 minutes after the movie starts.

5. Arelli takes a short nap after school. As she falls asleep the clock reads 3:03 p.m. She wakes up at the time shown below. How long is Arelli's nap?

\[
\begin{array}{c}
\text{27 minutes}
\end{array}
\]

\[
\begin{array}{c}
3:30 \text{ end of nap} \\
- 3:03 \text{ beginning of nap} \\
0:27 \text{ length of nap}
\end{array}
\]
1. Use the chart to help you answer the following questions:

<table>
<thead>
<tr>
<th>1 kilogram</th>
<th>100 grams</th>
<th>10 grams</th>
<th>1 gram</th>
</tr>
</thead>
<tbody>
<tr>
<td>thousands</td>
<td>hundreds</td>
<td>tens</td>
<td>ones</td>
</tr>
</tbody>
</table>

a. Isaiah puts a 10 gram weight on a pan balance. How many 1 gram weights does he need to balance the scale?

Isaiah needs 10 1 gram weights to balance the scale.

b. Next, Isaiah puts a 100 gram weight on a pan balance. How many 10 gram weights does he need to balance the scale?

Isaiah needs 10 10 gram weights to balance the scale.

c. Isaiah then puts a kilogram weight on a pan balance. How many 100 gram weights does he need to balance the scale?

Isaiah needs 10 100 gram weights to balance the scale.

d. What pattern do you notice in Parts (a–c)?

Each time Isaiah needed 10 times the amount to balance the scale.
2. Read each digital scale. Write each weight using the word kilogram or gram for each measurement.

3 kilograms
6 kilograms
450 grams

907 grams
11 kilograms
1 kilogram
1. Match the object with its approximate weight.

2. Alicia and Jeremy weigh a cell phone on a digital scale. They write down 113 but forget to record the unit. Which unit of measurement is correct? How do you know?

113 grams is correct because kilograms would be too large.

Example: 113 kilograms would be the size of about 113 water bottles.
3. Read and write the weights below. Write the word kilogram or gram with the measurement.

25 kilograms

9 kilograms

367 grams

105 grams
1. The weights of 3 fruit baskets are shown below.

   ![Basket A](image1) 12kg
   ![Basket B](image2) 8kg
   ![Basket C](image3) 16kg

   a. Basket C is the heaviest.
   b. Basket B is the lightest.
   c. Basket A is 4 kilograms heavier than Basket B.
   d. What is the total weight of all three baskets?

   \[
   \begin{array}{c|c|c}
   & 12 & 8 \\
   \hline
   & 16 & 36
   \end{array}
   \]

   All three baskets weigh 36 kg.

2. Each journal weighs about 280 grams. What is the total weight of 3 journals?

   \[
   \begin{array}{c|c|c}
   & 280 & 280 \\
   & 280 &
   \end{array}
   \]

   280 + 280 = 560
   560 + 280 = 840

   The 3 journals weigh 840 g.

3. Ms. Rios buys 453 grams of strawberries. She has 23 grams left after making smoothies. How many grams of strawberries did she use?

   \[
   \begin{array}{c}
   453 \\
   -23 \\
   \hline
   430
   \end{array}
   \]

   Ms. Rios uses 430 grams of strawberry.
4. Andrea’s dad is 57 kilograms heavier than Andrea. Andrea weighs 34 kilograms.
   a. How much does Andrea’s dad weigh?
      \[
      \begin{array}{c}
      57 \text{ kg} \\
      34 \text{ kg}
      \end{array}
      \]
      \[
      57 + 34 = 91 \text{ kg}.
      \]
      Andrea’s dad weighs 91 kg.
   b. How much do Andrea and her dad weigh in total?
      \[
      \begin{array}{c}
      91 \text{ kg} \\
      34 \text{ kg}
      \end{array}
      \]
      \[
      91 + 34 = 125 \text{ kg}.
      \]
      Together they weigh 125 kg.

5. Jennifer’s grandmother buys carrots at the farm stand. She and her 3 grandchildren equally share the carrots. The total weight of the carrots she buys is shown below.
   a. How many kilograms of carrots will Jennifer get?
      \[
      \begin{array}{c}
      28 \text{ kg}
      \end{array}
      \]
      \[
      28 \div 4 = 7
      \]
      Jennifer gets 7 kg of carrots.
   b. Jennifer uses 2 kilograms of carrots to bake muffins. How many kilograms of carrots does she have left?
      \[
      \begin{array}{c}
      7 \text{ kg}
      \end{array}
      \]
      \[
      7 - 2 = 5
      \]
      Jennifer has 5 kg of carrots left.
1. Find containers at home that have a capacity of about 1 liter. Use the labels on containers to help you identify them.

   a. Name of Container
      
      Example: Carton of Orange Juice

   b. Sketch the containers. How do their size and shape compare?

2. The doctor prescribes Mrs. Larson 5 milliliters of medicine each day for 3 days. How many milliliters of medicine will she take altogether?

   \[ 3 \times 5 = 15 \]
   Mrs. Larson will take 15 mL altogether.
3. Mrs. Goldstein pours 3 juice boxes into a bowl to make punch. Each juice box holds 236 milliliters. How much juice does Mrs. Goldstein pour into the bowl?

\[
\begin{array}{ccc}
236 & 236 & 236 \\
\text{mL} & \text{mL} & \text{mL} \\
\hline
472 & \text{mL}
\end{array}
\]

Mrs. Goldstein pours 708 mL into the bowl.

4. Daniel's fish tank holds 24 liters of water. He uses a 4-liter bucket to fill the tank. How many buckets of water are needed to fill the tank?

\[
24 \div 4 = 6
\]

6 buckets of water are needed to fill the tank.

5. Sheila buys 15 liters of paint to paint her house. She pours the paint equally into 3 buckets. How many liters of paint are in each bucket?

\[
15 \div 3 = 5
\]

5 liters of paint are in each bucket.
4. Kristen is comparing the capacity of gas tanks of cars. Use the chart below to answer the questions.

<table>
<thead>
<tr>
<th>Size of car</th>
<th>Capacity in liters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>74</td>
</tr>
<tr>
<td>Medium</td>
<td>57</td>
</tr>
<tr>
<td>Small</td>
<td>42</td>
</tr>
</tbody>
</table>

a. Label the number line to show the capacity of each gas tank. The medium car has been done for you.

b. Which car’s gas tank has the greatest capacity? **Large**

c. Which car’s gas tank has the least capacity? **Small**

d. Kristen’s car has a gas tank capacity of about 60 liters. Which car from the chart has about the same capacity as Kristen’s car? **Medium**

e. Use the number line to find how many more liters the large car’s tank holds than the small car’s tank. **32 liters**
3. Theresa's soccer team fills up 6 water coolers before the game. Each water cooler holds 9 liters of water. How many liters of water did they fill?

\[ 6 \times 9 = 54 \]

They filled 54 liters of water.

4. Dwight purchased 48 kilograms of fertilizer for his garden. He needs 6 kilograms of fertilizer for each bed of vegetables. How many beds of vegetables can he fertilize?

\[ 48 \div 6 = 8 \]

Dwight can fertilize 8 beds of vegetables.

5. Nancy bakes 7 cakes for the school bake sale. Each cake requires 5 milliliters of oil. How many milliliters of oil does she use?

\[ 7 \times 5 = 35 \]

Nancy uses 35 mL of oil.
4. Mrs. Santos' weight is shown on the scale. Round the weight to the nearest 10 kilograms.

Mrs. Santos' weight is \( \boxed{53} \) kilograms.
Mrs. Santos weighs about \( \boxed{50} \) kilograms.

5. A zookeeper weighs a chimp. Round the chimp's weight to the nearest 10 kilograms.

The chimp's weight is \( \boxed{58} \) kilograms.
The chimp weighs about \( \boxed{60} \) kilograms.
1. Round to the nearest ten. Use the number line to model your thinking.

   a. \(43 = 40\)

   b. \(48 = 50\)

   c. \(73 = 70\)

   d. \(173 = 170\)

   e. \(189 = 190\)

   f. \(194 = 190\)
2. Round the weight of each item to the nearest 10 grams. Draw numbers lines to model your thinking.

<table>
<thead>
<tr>
<th>Cereal Bar: 45 grams</th>
<th>Number Line</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Number Line" /></td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>45, 40</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Loaf of bread: 673 grams</th>
<th>Number Line</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Number Line" /></td>
<td>680</td>
</tr>
<tr>
<td></td>
<td>675, 673</td>
</tr>
<tr>
<td></td>
<td>670</td>
</tr>
<tr>
<td>Round to the nearest 10 grams:</td>
<td>50</td>
</tr>
<tr>
<td>670</td>
<td></td>
</tr>
</tbody>
</table>

3. The Garden Clubplants rows of carrots in the garden. One seed packet weighs 28 grams. Round the total weight of 2 seed packets to the nearest 10 grams. Model your thinking using a number line.

\[
\frac{28}{28} + 28 = 60 \text{ grams.}
\]
1. Round to the nearest hundred. Use the number line to model your thinking.

- a. \(156 = \underline{200}\)
  ![Number line for a.](image)

- b. \(342 = \underline{300}\)
  ![Number line for b.](image)

- c. \(685 = \underline{700}\)
  ![Number line for c.](image)

- d. \(804 = \underline{800}\)
  ![Number line for d.](image)

- e. \(260 = \underline{300}\)
  ![Number line for e.](image)

- f. \(1260 = \underline{1300}\)
  ![Number line for f.](image)
2. Complete the chart.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Luis has 217 baseball cards. Round the number of cards Luis has to the nearest hundred.</td>
<td>200</td>
</tr>
<tr>
<td>b. There were 462 people sitting in the audience. Round the number of people to the nearest hundred.</td>
<td>500</td>
</tr>
<tr>
<td>c. A bottle of juice holds 386 milliliters. Round the capacity to the nearest 100 milliliters.</td>
<td>400</td>
</tr>
<tr>
<td>d. A math textbook weighs 727 grams. Round the weight to the nearest 100 grams.</td>
<td>700</td>
</tr>
<tr>
<td>e. Joanie's parents spent $1,260 on two plane tickets. Round the total to the nearest $100.</td>
<td>1,300</td>
</tr>
</tbody>
</table>

3. Circle the numbers that round to 400 when rounding to the nearest hundred.

368  342  420  492  449  464

4. There are 525 pages in a book. Julia and Kim round the number of pages to the nearest ten. Julia says it is 520. Kim says it is 53 tens. Who is correct? Explain your thinking.

525 would be rounded to 530 which is 53 tens.

Kim is correct.
1. Find the sums below. Choose mental math or the algorithm.

a. $75 \text{ cm} + 7 \text{ cm} = 82 \text{ cm}$

b. $39 \text{ kg} + 56 \text{ kg} = 95 \text{ kg}$

c. $362 \text{ mL} + 229 \text{ mL} = 591 \text{ mL}$

d. $283 \text{ g} + 92 \text{ g} = 375 \text{ g}$

e. $451 \text{ mL} + 339 \text{ mL} = 790 \text{ mL}$

f. $149 \text{ L} + 331 \text{ L} = 480 \text{ L}$

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

<table>
<thead>
<tr>
<th>Drink</th>
<th>Liquid Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple juice</td>
<td>125 mL</td>
</tr>
<tr>
<td>Milk</td>
<td>236 mL</td>
</tr>
<tr>
<td>Water</td>
<td>248 mL</td>
</tr>
<tr>
<td>Orange juice</td>
<td>174 mL</td>
</tr>
<tr>
<td>Fruit punch</td>
<td>208 mL</td>
</tr>
</tbody>
</table>

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

\[
\begin{align*}
125 \text{ mL} & + 248 \text{ mL} \\
\underline{+} & \underline{+} \\
373 \text{ mL} & \\
\end{align*}
\]

Jen drinks 373 mL.

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

\[
\begin{align*}
236 \text{ mL} & + 208 \text{ mL} \\
\underline{+} & \underline{+} \\
444 \text{ mL} & \\
\end{align*}
\]

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.

\[
\begin{align*}
\text{Grade 4} & \quad \frac{75}{3^{rd}} + 44 \\
\text{75 students} & \quad \frac{119}{4^{th} \text{ grade}}.
\end{align*}
\]

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?

\[
\begin{align*}
\text{29 cm} \quad + \quad \frac{29}{1 \text{ week}} + 5 & \quad \frac{34}{2 \text{ weeks}}.
\end{align*}
\]

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.

<table>
<thead>
<tr>
<th>Paperback Book</th>
<th>Banana</th>
<th>Bar of Soap</th>
</tr>
</thead>
<tbody>
<tr>
<td>343 grams</td>
<td>108 grams</td>
<td>117 grams</td>
</tr>
</tbody>
</table>

\[
\begin{align*}
343 & \quad + \quad 117 \\
\text{460 grams}.
\end{align*}
\]

The paperback and the bar of soap equal 460 grams.
1. Find the sums below.

a. \( 47 \text{ m} + 8 \text{ m} = \) 55 m
b. \( 47 \text{ m} + 38 \text{ m} = \) 85 m
c. \( 147 \text{ m} + 383 \text{ m} = \) 530 m
d. \( 63 \text{ mL} + 9 \text{ mL} = \) 72 mL
e. \( 463 \text{ mL} + 79 \text{ mL} = \) 542 mL
f. \( 463 \text{ mL} + 179 \text{ mL} = \) 642 mL
g. \( 368 \text{ kg} + 263 \text{ kg} = \) 631 kg
h. \( 508 \text{ kg} + 293 \text{ kg} = \) 801 kg
i. \( 103 \text{ kg} + 799 \text{ kg} = \) 902 kg
j. \( 4 \text{ L} \ 342 \text{ mL} + 2 \text{ L} \ 214 \text{ mL} = \) 6 L 556 mL
k. \( 3 \text{ kg} \ 296 \text{ g} + 5 \text{ kg} \ 326 \text{ g} = \) 8 kg 622 g
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.

\[
\begin{array}{c}
55 \text{ min.} \\
+36 \\
\hline
91 \text{ min.}
\end{array}
\]

Mrs. Haley roasts the turkey for a total of 91 minutes.

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

\[
\begin{array}{c}
228 \\
+53 \\
\hline
281 \text{ kg}
\end{array}
\]

A Shetland pony weighs 281 kg.

<table>
<thead>
<tr>
<th>Types of Horses</th>
<th>Weight in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shetland pony</td>
<td>281 kg</td>
</tr>
<tr>
<td>American Saddlebred</td>
<td>543 kg</td>
</tr>
<tr>
<td>Clydesdale horse</td>
<td>824 kg</td>
</tr>
<tr>
<td>Miniature horse</td>
<td>53 kg</td>
</tr>
</tbody>
</table>

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

\[
\begin{array}{c}
281 \\
+543 \\
\hline
824 \text{ kg}
\end{array}
\]

A Clydesdale weighs 824 kg.
Cathy collects the following information about her dogs, Stella and Oliver.

<table>
<thead>
<tr>
<th></th>
<th>Stella</th>
<th>Oliver</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time Spent</strong></td>
<td><strong>Weight</strong></td>
<td><strong>Time Spent</strong></td>
</tr>
<tr>
<td>Getting a Bath</td>
<td>32 kg</td>
<td>25 minutes</td>
</tr>
</tbody>
</table>

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

a. Estimate the total weight of Stella and Oliver.

\[
\text{Stella: } 30 \text{ kg}, \quad \text{Oliver: } 10 \text{ kg}
\]

\[
30 + 10 = 40 \text{ kg}
\]

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

\[
\frac{32}{7} + \frac{7}{29} \text{ kg}
\]

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

\[
\begin{align*}
40 \\
+ 30 \\
\hline
70 \text{ minutes}
\end{align*}
\]

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

\[
\begin{align*}
36 \\
+ 25 \\
\hline
61 \text{ minutes}
\end{align*}
\]

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

The estimated weight and time should be approximately what the actual weight and time are to be reasonable.
1. Solve the subtraction problems below.

   a. $70 \text{ L} - 46 \text{ L} =$
      
      $24 \text{ L}$

   b. $370 \text{ L} - 46 \text{ L} =$
      
      $324 \text{ L}$

   c. $370 \text{ L} - 146 \text{ L} =$
      
      $224 \text{ L}$

   d. $607 \text{ cm} - 32 \text{ cm} =$
      
      $575 \text{ cm}$

   e. $592 \text{ cm} - 258 \text{ cm} =$
      
      $334 \text{ cm}$

   f. $918 \text{ cm} - 553 \text{ cm} =$
      
      $365 \text{ cm}$

   g. $763 \text{ g} - 82 \text{ g} =$
      
      $681 \text{ g}$

   h. $803 \text{ g} - 542 \text{ g} =$
      
      $261 \text{ g}$

   i. $572 \text{ km} - 266 \text{ km} =$
      
      $306 \text{ km}$

   j. $837 \text{ km} - 645 \text{ km} =$
      
      $192 \text{ km}$
2. A magazine weighs 280 grams less than a newspaper. The weight of the newspaper is shown below. How much does the magazine weigh? Use a tape diagram to model your thinking.

\[
\begin{array}{c}
\text{magazine} \\
\text{wt. of newspaper} \\
\text{454 g} \\
\text{280 less} \\
\hline
\text{454} \\
\text{174}
\end{array}
\]

The magazine weighs 174 grams.

3. The chart to the right shows how long 3 games take.

a. Francesca’s basketball game is 22 minutes shorter than Lucas’ baseball game. How long is Francesca’s basketball game?

\[
\begin{array}{c}
180 \\
- 22 \\
\hline
158
\end{array}
\]

Francesca’s game is 158 minutes long.

b. How much longer is Francesca’s basketball game than Joey’s football game?

\[
\begin{array}{c}
188 \\
- 139 \\
\hline
49
\end{array}
\]

Francesca’s game is 19 minutes longer than Joey’s game.
1. Solve the subtraction problems below.

a. \(280 \text{ g} - 90 \text{ g} = 190 \text{ g}\)

b. \(450 \text{ g} - 284 \text{ g} = 166 \text{ g}\)

c. \(423 \text{ cm} - 136 \text{ cm} = 287 \text{ cm}\)

d. \(567 \text{ cm} - 246 \text{ cm} = 321 \text{ cm}\)

e. \(900 \text{ g} - 58 \text{ g} = 842 \text{ g}\)

f. \(900 \text{ g} - 358 \text{ g} = 542 \text{ g}\)

g. \(4 \text{ L} 710 \text{ mL} - 2 \text{ L} 690 \text{ mL} = 2 \text{ L} 20 \text{ mL}\)

h. \(8 \text{ L} 830 \text{ mL} - 4 \text{ L} 378 \text{ mL} = 4 \text{ L} 452 \text{ mL}\)
2. The total weight of a giraffe and her calf is 904 kilograms. How much does the calf weigh? Use a tape diagram to model your thinking.

\[
\begin{array}{c}
\text{Giraffe} \quad 829 \text{ kg} \\
\text{Calf} \quad ? \text{ kg}
\end{array}
\]

\[
\begin{array}{c}
904 \text{ kg} \\
- 829 \text{ kg}
\end{array}
\]

The calf weighs 75 kg.

3. The Erie Canal runs 584 kilometers from Albany to Buffalo. Salvador travels on the canal from Albany. He must travel 396 kilometers more before he reaches Buffalo. How many kilometers has he traveled so far?

\[
\begin{array}{c}
396 \text{ km} \quad \text{km he has already traveled} \\
584 \text{ km} \quad \text{km he has traveled so far}
\end{array}
\]

\[
\begin{array}{c}
4 \text{ km} \\
584 \text{ km} \\
- 396 \text{ km}
\end{array}
\]

Salvador has traveled 188 kilometers so far.

4. Mr. Nguyen fills two inflatable pools. The kiddie pool holds 185 liters of water. The larger pool holds 600 liters of water. How much more water does the larger pool hold than the kiddie pool?

\[
\begin{array}{c}
\text{kiddie pool} \quad 185 \text{ liters} \\
\text{lager pool} \quad 600 \text{ liters}
\end{array}
\]

\[
\begin{array}{c}
600 \text{ liters} \\
- 185 \text{ liters}
\end{array}
\]

The larger pool holds 415 more liters of water than the kiddie pool.
Estimate, and then solve each problem.

1. Melissa and her mom go on a road trip. They drive 87 kilometers before lunch. They drive 59 kilometers after lunch.

   a. Estimate how many more kilometers they drive before lunch than after by rounding to the nearest 10 kilometers.
      \[ \begin{array}{c}
      90 \\
      -60 \\
      \hline
      30
      \end{array} \]
      They drive 30 more kilometers before lunch than after.

   b. Precisely how much farther do they drive before lunch than after lunch?
      \[ \begin{array}{c}
      78.7 \\
      -59 \\
      \hline
      19.7
      \end{array} \]
      They drive precisely 19.7 more kilometers before lunch than after.

   c. Compare your estimate from (a) to your answer from (b). Is your answer reasonable? Write a sentence to explain your thinking.
      Yes, my answer is reasonable. 30 is close (or can be rounded) to 30.

2. Amy measures ribbon. She measures a total of 393 centimeters of ribbon and cuts it into 2 pieces. The first piece is 184 centimeters long. How long is the second piece of ribbon?

   a. Estimate the length of the second piece of ribbon by rounding in two different ways.
      \[ \begin{array}{c}
      400 \\
      -200 \\
      \hline
      200
      \end{array} \]
      \[ \begin{array}{c}
      390 \\
      -180 \\
      \hline
      210
      \end{array} \]

   b. Precisely how long is the second piece of ribbon? Explain why one estimate was closer.
      \[ \begin{array}{c}
      393 \\
      -184 \\
      \hline
      209
      \end{array} \]
      Rounding to the nearest 10 was closer because these numbers are closer to the actual numbers.
3. The weight of a chicken leg, steak, and ham are shown to the right. The chicken and the steak together weigh 341 grams. How much does the ham weigh?

a. Estimate the weight of the ham by rounding.

\[
\begin{array}{c}
1,000 \\
- 300 \\
\hline \\
700 \text{ grams}
\end{array}
\]

\[989 \approx 1,000 \text{ g.}\]

b. How much does the ham actually weigh?

\[
\begin{array}{c}
989 \\
- 341 \\
\hline \\
648 \text{ grams.}
\end{array}
\]

4. Kate uses 506 liters of water each week to water plants. She uses 252 liters to water the plants in the greenhouse. How much water does she use for the other plants?

a. Estimate how much water Kate uses for the other plants by rounding.

\[
\begin{array}{c|c}
\text{Rounded to nearest 100} & 500 \\
\hline \\
- 300 \\
\hline \\
\text{200 liters} & 510 \\
\hline \\
\text{Rounded to nearest 10} & 250 \\
\hline \\
\text{260 liters.}
\end{array}
\]

b. Estimate how much water Kate uses for the other plants by rounding a different way.

c. How much water does Kate use for the other plants? Which estimate was closer? Explain why.

Kate uses 260 liters for the other plants.

Rounding to the nearest 10 was closer.

\[
\begin{array}{c}
\text{Actual: 506} \\
\hline \\
252 \\
\hline \\
264 \text{ liters.}
\end{array}
\]
1. There are 153 milliliters of juice in 1 carton. A 3-pack of juice boxes contains a total of 459 milliliters.
   a. Estimate, and then find the total amount of juice in 1 carton and a 3-pack of juice boxes.
      \[153 \text{ mL} + 459 \text{ mL} = 150 + 460 = 610 \text{ mL}\]
      \[153 \text{ mL} + 459 \text{ mL} = 612 \text{ mL}\]
   b. Estimate, and then find the difference between the amount in 1 carton and a 3-pack of juice boxes.
      \[459 \text{ mL} - 153 \text{ mL} = 460 - 150 = 310\]
      \[459 \text{ mL} - 153 \text{ mL} = 306\]
   c. Are your answers reasonable? Why?
      yes because 306 rounds to 310

2. Mr. Williams owns gas stations. He sells 367 liters of gas in the morning, 300 liters of gas in the afternoon, and 219 liters of gas in the evening.
   a. Estimate, and then find the total amount of gas he sells in one day.
      \[367 \approx 370\]
      \[300 = 300\]
      \[219 \approx 280\]
      \[\frac{890}{890}\]
      Mr. Williams sells \(\approx 890\) liters of gas in one day.
   b. Estimate, and then find the difference between the amount of gas Mr. Williams sells in the morning and the amount he sells in the evening.
      \[367 = 370\]
      \[219 \approx -220\]
      \[\frac{150}{150}\]
      The difference in gas sold in the morning is 150 liters more than in the evening.
3. The Blue Team runs a relay. The chart shows the time in minutes that each team member spent running.

<table>
<thead>
<tr>
<th>Blue Team</th>
<th>Time in Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jen</td>
<td>5 minutes</td>
</tr>
<tr>
<td>Kristin</td>
<td>7 minutes</td>
</tr>
<tr>
<td>Lester</td>
<td>6 minutes</td>
</tr>
<tr>
<td>Evy</td>
<td>8 minutes</td>
</tr>
<tr>
<td>Total</td>
<td>86 minutes</td>
</tr>
</tbody>
</table>

a. How many minutes does it take the Blue Team to run the relay?

\[ 8 + 6 + 7 + 5 = 26 \]

It takes the Blue Team 26 minutes to run the relay.

b. It takes the Red Team 37 minutes to run the relay. Estimate, and then find the difference in time between the 2 teams.

\[ \begin{align*}
37 &\approx 40 \\
26 &\approx -30
\end{align*} \]

\[ 10 \text{ minutes} \]

4. The lengths of 3 banners are shown to the right.

<table>
<thead>
<tr>
<th>Banner A</th>
<th>437 cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banner B</td>
<td>457 cm</td>
</tr>
<tr>
<td>Banner C</td>
<td>332 cm</td>
</tr>
</tbody>
</table>

a. Estimate, and then find the total length of Banner A and Banner C.

\[ \begin{align*}
437 &\approx 440 \\
332 &\approx +330
\end{align*} \]

\[ 770 \text{ cm} \]

b. Estimate, and then find the difference in length between Banner B and the total length of Banner A and Banner C. Model the problem with a tape diagram.

\[ \begin{align*}
\text{Banner B} &\approx 460 \text{ cm} \\
\text{Banner A} &\approx 440 \\
\text{Banner C} &\approx 330
\end{align*} \]

\[ 770 - 470 = 300 \text{ cm} \]