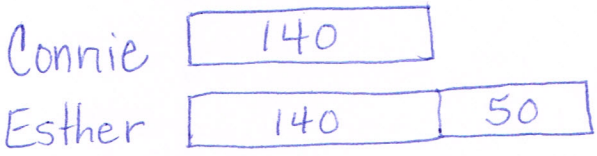
Name _____ Date _____

Estimate and then solve each problem. Model the problem with a tape diagram. Explain if your answer is reasonable.

1. For the bake sale, Connie baked 144 cookies. Esther baked 49 more cookies than Connie.

Sample:

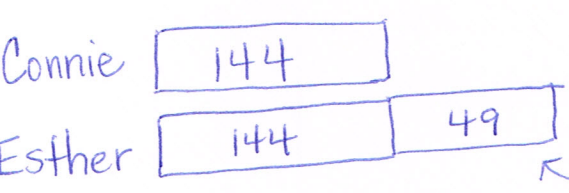
a. About how many cookies did Connie and Esther bake? Estimate by rounding each number to the nearest ten before adding.



$$\begin{array}{r} 140 \\ +190 \\ \hline 330 \end{array}$$

Connie and Esther baked about 330 cookies.

b. Exactly how many cookies did Connie and Esther bake?



Esther

$$\begin{array}{r} 144 \\ +\ 49 \\ \hline 193 \end{array}$$

$$\begin{array}{r} 144 \\ +193 \\ \hline 337 \end{array}$$

Connie and Esther baked exactly 337 cookies.

c. Is your answer reasonable? Compare your estimate from (a) to your answer from (b). Write a sentence to explain your reasoning.

My answer is reasonable because my estimate was 330, which is very close to 337.

2. Raffle tickets were sold for a school fundraiser to parents, teachers, and students. 563 tickets were sold to teachers. 888 more tickets were sold to students than to teachers. 904 tickets were sold to parents.

Sample:

a. About how many tickets were sold to parents, teachers, and students? Round each number to the nearest hundred to find your estimate.

Teachers [600] = 600

Students [600 | 900] = 1,500

Parents [|] = 900

$$\begin{array}{r} {}^{2}1{,}500 \\ 600 \\ +\ 900 \\ \hline 3{,}000 \end{array}$$

About 3,000 tickets were sold.

b. Exactly how many tickets were sold to parents, teachers, and students?

Teachers [563] = 563

Students [563 | 888] = 1,451

Parents [904 |] = 904

$$\begin{array}{r} 563 \\ +\ 888 \\ \hline 1{,}451 \end{array}$$

$$\begin{array}{r} {}^{1}\ {}^{1}\ \\ 1{,}451 \\ 563 \\ +\ 904 \\ \hline 2{,}918 \end{array}$$

2,918 tickets were sold.

c. Assess the reasonableness of your answer in (b). Use your estimate from (a) to explain.

3,000 is a reasonable answer because the exact answer of 2,918 would round to 3,000.

3. From 2010 to 2011, the population of Queens increased by 16,075. Brooklyn's population increased by 11,870 more than the population increase of Queens.

Sample:

a. Estimate the total combined population increase of Queens and Brooklyn from 2010 to 2011. (Round the addends to estimate.)

Queen's [16,000]

Brooklyn [16,000 | 12,000]

28,000

The combined increase is ≈ 16,000 + 28,000 = 44,000.

b. Find the actual total combined population increase of Queens and Brooklyn from 2010 to 2011.

Queen's 16,075

Brooklyn 16,075 | 11,870 → 27,945

16,075
11,870
27,945

27,945
+16,075
44,020

The combined increase is 44,020.

c. Assess the reasonableness of your answer in (b). Use your estimate from (a) to explain.

The estimate of 44,000 as a combined increase is reasonable because the actual combined increase is 44,020 which rounds to 44,000.

4. During National Recycling Month, Mr. Yardley's class spent 4 weeks collecting empty cans to recycle.

Sample:

Week	Number of Cans Collected
1	10,827
2	12,083
3	10,522
4	20,011

a. During Week 2, the class collected 1,256 more cans than they did during Week 1. Find the total number of cans Mr. Yardley's class collected in 4 weeks.

Week 2: 10,827 | 1,256 → 12,083

10,827
+ 1,256
12,083

They collected 53,443 cans total.

10,827
12,083
10,522
+ 20,011
53,443

b. Assess the reasonableness of your answer in (a) by estimating the total number of cans collected.

Week 1: 11,000
Week 2: 12,000
Week 3: 11,000
Week 4: 20,000
→ Total ≈ 54,000

An estimate of 54,000 is more than what the actual amount would round to. 53,443 would round to 53,000 cans. They are still close to each other.