

1.2 Rounding & Calculators

- ▶ Round numbers in a real-life context.
- ▶ Read large and small numbers.
- ▶ Understand the concept of “garbage in, garbage out.”



Rounding Numbers in a Real-Life Context

People tend to think that mathematics gives exact answers. In a real-life context, however, listing “exact” calculator displays is often unreasonable. It is usually reasonable to **round** the calculator display according to the context of the real-life application.

Rounding Numbers

Determine your rounding digit and look at the digit to the right of it.

1. **Rounding Down:** If the digit is 0, 1, 2, 3, or 4, do not change the rounding digit. All digits to the right of the rounding digit become 0.
2. **Rounding Up:** If the digit is 5, 6, 7, 8, or 9, add 1 to the rounding digit. All digits to the right of the rounding digit become 0.

EXAMPLE 1 Rounding Numbers in Context

Round the defense spending per person for each country so it is reasonable for the context.

2010 U.S. Defense Department budget

$$\frac{\$660 \text{ billion}}{310 \text{ million}}$$

2010 population of United States

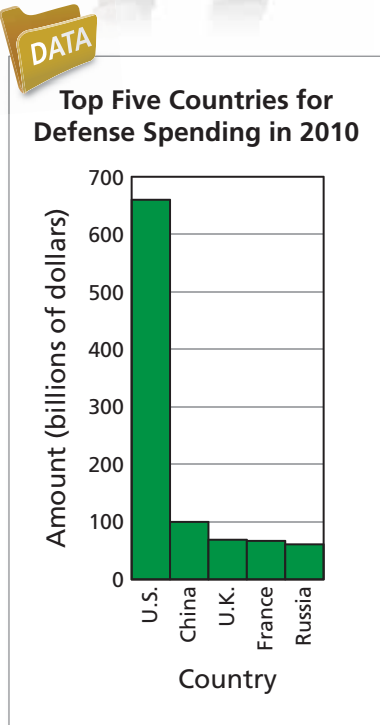
$$\approx \$2129.03226 \text{ per person}$$

2010 China's Defense Department budget

$$\frac{\$100 \text{ billion}}{1.340 \text{ billion}}$$

2010 population of China

$$\approx \$74.62687 \text{ per person}$$



SOLUTION

None of the numbers given in the problem are exact. So, rounding is reasonable.

- a. A reasonable answer is that defense spending in the United States is about \$2130 per person.
- b. A reasonable answer is that defense spending in China is about \$75 per person.

✔ Checkpoint

Help at Math.andYOU.com

In 2010, the population of the United Kingdom was about 62 million. Estimate its defense spending per person.