Lesson 7-3

Example 1 Use Fractions to Estimate
STUDY HALL Mrs. Brown has 40 student in her fifth period English class. If 18% of those students come for extra help during study hall, about how many students from that class will attend study hall?

You need to estimate 18% of 40.

18% is about 20% or $\frac{1}{5}$.

$18\% \text{ of } 40 \approx \frac{1}{5} \cdot 40$ Use $\frac{1}{5}$ to estimate.

≈ 8 Multiply.

So, about 8 students from Mrs. Brown's fifth period English class will attend study hall.

Example 2 Use Fractions to Estimate
ANIMALS The head of a local animal shelter states that 61% of the animals in the shelter will be successfully placed for adoption. At this time, there are 251 animals in the shelter. About how many of the animals will be successfully placed for adoption?

You need to estimate 61% of 251.

61% is about 60%, which is $\frac{6}{10}$ or $\frac{3}{5}$.

$61\% \text{ of } 251 \approx \frac{3}{5} \cdot 250$ Use $\frac{3}{5}$ to estimate and round 251 to 250.

≈ 150 Multiply.

So, about 150 of the 251 animals will be successfully placed for adoption.

Example 3 Percents Greater Than 100 or Less Than 1
Estimate 161% of 90.

161% is more than 100%, so 161% of 90 is greater than 90.
161% is about 160%.

160% of 90 = (100% of 90) + (60% of 90) — 160% = 100% + 60%

$= (1 \cdot 90) + \left(\frac{3}{5} \cdot 90\right)$ — 100% = 1 and 60% = $\frac{3}{5}$

= 90 + 54 or 144 — Simplify.

So, 161% of 90 is about 144.

Example 4 Percents Greater Than 100 or Less Than 1
Estimate $\frac{1}{2}$% of 307.

$\frac{1}{2}$% is one half of 1%. 307 is about 300.

1% of 300 = $0.01 \cdot 300$ — To multiply by 1%, move the decimal point two places to the left.

$= 3$

One half of 1% is $\frac{1}{2} \cdot 3$ or 1.5.

So, $\frac{1}{2}$% of 307 is about 1.5.

Example 5 Estimate Percent to Solve a Problem
TRANSPORTATION It is believed that 19% of the working population of a large city use public transportation to travel to work. If the city has a working population of 48,938, estimate the number of people who use public transportation to travel to work.

19% is about 20%.
10% of 49,000 = $0.1 \cdot 49{,}000$ — 48,938 is about 49,000.

= 4,900
20% of 48,938 is about 2 times 10% of 49,000, or 9,800.

So, about 9,800 people use public transportation to travel to work.