Lesson 4-9

Example 1 Compare Fractions
GRADES Who has the better test score? Karli scored 21 out of 24 on her math test, and Alicia scored 18 out of 20.

Method 1 Rename using the LCD.

The LCD of the denominators, 24 and 20, is 120.

Karli: $\frac{21}{24} = \frac{21 \cdot 5}{24 \cdot 5} = \frac{105}{120}$

Alicia: $\frac{18}{20} = \frac{18 \cdot 6}{20 \cdot 6} = \frac{108}{120}$

Since $\frac{108}{120} > \frac{105}{120}$, then $\frac{18}{20} > \frac{21}{24}$. Alicia has the better score.

Method 2 Write each fraction as a decimal.
Use a calculator.

Karli: 21 ÷ 24 ENTER 0.875
Alicia: 18 ÷ 20 ENTER 0.90

Since 0.90 > 0.875, then $\frac{18}{20} > \frac{21}{24}$. Alicia has the better score.

Example 2 Compare Ratios
MUSIC In Drew's history class, 17 of the 31 students play a musical instrument. In his English class, 11 of the 28 students play a musical instrument. Which class has a greater fraction of students who play a musical instrument?

Since the denominators are large, write $\frac{17}{31}$ and $\frac{11}{28}$ as decimals and then compare.

$17 \div 31 \approx 0.5484$ $11 \div 28 \approx 0.3929$ Use a calculator.

Since 0.5484 > 0.3929, then $\frac{17}{31} > \frac{11}{28}$. So, Drew's history class has a greater fraction of students who play a musical instrument.

Example 3 Identify Rational Numbers
Determine whether 3 is a rational number. Explain your reasoning.

Since 3 can be written as $\frac{3}{1}$, it is rational.

Example 4 Identify Rational Numbers
Determine whether 4.0756131001… is a rational number. Explain your reasoning.

The number 4.0756131001… neither terminates nor repeats. Therefore, it is not rational.

Example 5 Standardized Test Practice
Rose keeps track of the proportion of free throws she makes during basketball practice for four days. The results are $\frac{14}{25}$, 62%, $\frac{12}{20}$, and 0.48. Which list shows the proportions from least to greatest?

A $\frac{12}{20}, 0.48, 62\%, \frac{14}{25}$
B $\frac{14}{25}, 0.48, 62\%, \frac{12}{20}$
C $0.48, \frac{14}{25}, \frac{12}{20}, 62\%$
D $62\%, \frac{12}{20}, \frac{14}{25}, 0.48$

Read the Test Item
To order the proportions, you need to compare the proportions. First write each number as a decimal. Then compare.

Solve the Test Item
$\frac{14}{25} = 0.56$ $\quad 62\% = 0.62 \quad$ $\frac{12}{20} = 0.60$ $\quad 0.48$

Since $0.48 < 0.56 < 0.60 < 0.62$, you can write $0.48 < \frac{14}{25} < \frac{12}{20} < 62\%$.

So, the answer is C.