

Sixth Grade Vocabulary

S.O. L. 6.4 – Comparing and Ordering Fractions, Decimals, and Percents

- 1. Repeating Decimal** a decimal in which a digit or set of digits repeat infinitely
- 2. Equivalent Fraction** fraction that represent the same quotient but have different numerators and denominators.
- 3. Least Common Denominator** the least common multiple of the denominators of two or more fractions.
- 4. Improper Fraction** a fraction in which the numerator is greater than the denominator.
- 5. Equivalent** equal in value
- 6. Greater Than** Bigger. The symbol $>$ means greater than (the symbol $<$ means less than).

Example: $5 > 3$ shows that 5 is greater than 3
- 7. Less Than** Smaller. A symbol used to show that one number is smaller than another. The symbol $<$ means Less than (the symbol $>$ means greater than).

Example: $4 < 9$ shows that 4 is Less than 9
- 8. Equal** Exactly the same amount or value

Examples: $3 + 4 = 7$; 1 Dollar is Equal to 100

Name _____ Class _____

S.O.L. 6.4 Class Review Questions

1. If you multiply any two positive fractions less than 1, which statement is true?



- A The answer could be P.
- B The answer could be Q.
- C The answer could be R.
- D The answer could be S.

2. Mrs. Austin wrote the four inequalities shown below on the classroom board. Which inequality is correct?

A $\frac{6}{12} > \frac{1}{2}$

B $\frac{5}{11} < \frac{5}{10}$

C $\frac{4}{8} > \frac{4}{6}$

D $\frac{2}{3} < \frac{4}{6}$

3. Which statement is true?

A $\frac{18}{25} > \frac{24}{31}$

B $\frac{26}{21} < \frac{34}{29}$

C $\frac{15}{4} < \frac{18}{30}$

D $\frac{30}{36} > \frac{18}{23}$

4. Compare: $\frac{4}{6}$ $\frac{4}{7}$

A $\frac{4}{6} = \frac{4}{7}$

B $\frac{4}{6} > \frac{4}{7}$

C $\frac{4}{6} < \frac{4}{7}$

D $\frac{4}{7} > \frac{4}{6}$

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A $\frac{4}{9} = \frac{4}{7}$

B $\frac{4}{9} > \frac{4}{7}$

C $\frac{4}{9} < \frac{4}{7}$

D $\frac{4}{11} > \frac{4}{9}$

6. What statement is true when comparing $\frac{3}{5}$ to $\frac{2}{3}$?

A $\frac{3}{5} > \frac{2}{3}$

B $\frac{3}{5} < \frac{2}{3}$

C $\frac{3}{5} = \frac{2}{3}$

D $\frac{3}{5} \geq \frac{2}{3}$

Name _____
Class Period _____
Date _____

S.O.L. 6.4
Class Practice Sheet

1. What statement is true when comparing $\frac{3}{5}$ to $\frac{2}{3}$?

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B $\frac{3}{5} < \frac{2}{3}$

C $\frac{3}{5} = \frac{2}{3}$

D $\frac{3}{5} \geq \frac{2}{3}$

2. Which of the following is true?

A $0.16 < 0.016$

B $5.065 < 5.65$

C $2.804 < 2.408$

D $5.83 < 0.583$

3. Which of the following statements is true?

A $0.215 > 1.025$

B $1.112 = 1.121$

C $3.951 > 3.591$

D $0.010 < 0.001$

4. Which of the following statements is true?

A $392 > 611$

B $6169 < 919$

C $410 = 401$

D $114 < 141$

5. Which of the following statements is true?

A $\frac{5}{12} \geq \frac{4}{7}$

B $\frac{4}{5} < \frac{7}{4}$

C $\frac{4}{9} = \frac{6}{12}$

D $\frac{6}{9} < \frac{3}{8}$

6. Mrs. Austin wrote the four inequalities shown below on the classroom board. Only one of them is correct. Which inequality is correct?

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C $\frac{4}{9} < \frac{4}{7}$

D $\frac{4}{11} > \frac{4}{9}$

Study Guide and Intervention

Comparing and Ordering Fractions

To compare two fractions,

- Find the **least common denominator (LCD)** of the fractions; that is, find the least common multiple of the denominators.
- Rewrite each fraction as an equivalent fraction whose denominator is the LCD.
- Compare the numerators.

EXAMPLE 1 Replace \bullet with $<$, $>$, or $=$ to make $\frac{1}{3} \bullet \frac{5}{12}$ true.

- The LCM of 3 and 12 is 12. So, the LCD is 12.
- Rewrite each fraction with a denominator of 12.

$$\begin{array}{c} \times 4 \\ \updownarrow \\ \frac{1}{3} = \frac{\bullet}{12}, \text{ so } \frac{1}{3} = \frac{4}{12} \end{array} \quad \frac{5}{12} = \frac{5}{12}$$

- Now, compare. Since $4 < 5$, $\frac{4}{12} < \frac{5}{12}$. So $\frac{1}{3} < \frac{5}{12}$.

EXAMPLE 2 Order $\frac{1}{6}$, $\frac{2}{3}$, $\frac{1}{4}$, and $\frac{3}{8}$ from least to greatest.

The LCD of the fractions is 24. So, rewrite each fraction with a denominator of 24.

$$\begin{array}{c} \times 4 \\ \updownarrow \\ \frac{1}{6} = \frac{\bullet}{24}, \text{ so } \frac{1}{6} = \frac{4}{24} \end{array}$$

$$\begin{array}{c} \times 8 \\ \updownarrow \\ \frac{2}{3} = \frac{\bullet}{24}, \text{ so } \frac{2}{3} = \frac{16}{24} \end{array}$$

$$\begin{array}{c} \times 6 \\ \updownarrow \\ \frac{1}{4} = \frac{\bullet}{24}, \text{ so } \frac{1}{4} = \frac{6}{24} \end{array}$$

$$\begin{array}{c} \times 3 \\ \updownarrow \\ \frac{3}{8} = \frac{\bullet}{24}, \text{ so } \frac{3}{8} = \frac{9}{24} \end{array}$$

The order of the fractions from least to greatest is $\frac{1}{6}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{2}{3}$.

EXERCISES

Replace each \bullet with $<$, $>$, or $=$ to make a true sentence.

1. $\frac{5}{12} \bullet \frac{3}{8}$

2. $\frac{6}{8} \bullet \frac{3}{4}$

3. $\frac{2}{7} \bullet \frac{1}{6}$

Order the fractions from least to greatest.

4. $\frac{3}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{1}{4}$

5. $\frac{2}{3}$, $\frac{1}{6}$, $\frac{5}{18}$, $\frac{7}{9}$

6. $\frac{1}{2}$, $\frac{5}{6}$, $\frac{5}{8}$, $\frac{5}{12}$

Practice: Word Problems**Comparing and Ordering Fractions**

1. SHOES Toya is looking in her closet. If $\frac{1}{3}$ of her shoes are black and $\frac{2}{5}$ are brown, does she have more black shoes or more brown shoes? Explain.

2. BUDGET Daniel spends $\frac{3}{7}$ of his money on rent and $\frac{4}{9}$ of his money on food. Does he spend more money on food or rent? Explain.

3. WOODWORKING Isi drilled a hole that is $\frac{5}{9}$ inch wide. She has a screw that is $\frac{5}{6}$ inch wide. Is the hole wide enough to fit the screw? Explain.

4. FOOD In a recent survey, $\frac{2}{5}$ of the people surveyed said their favorite food was pizza, $\frac{1}{4}$ said it was hot dogs, and $\frac{3}{10}$ said it was popcorn. Which food was favored by the greatest number of people? Explain.

5. OFFICE SUPPLIES A blue paper clip is $\frac{1}{6}$ inch wide. A silver paper clip is $\frac{3}{8}$ inch wide, and a red paper clip is $\frac{1}{3}$ inch wide. What color paper clip has the smallest width? Explain.

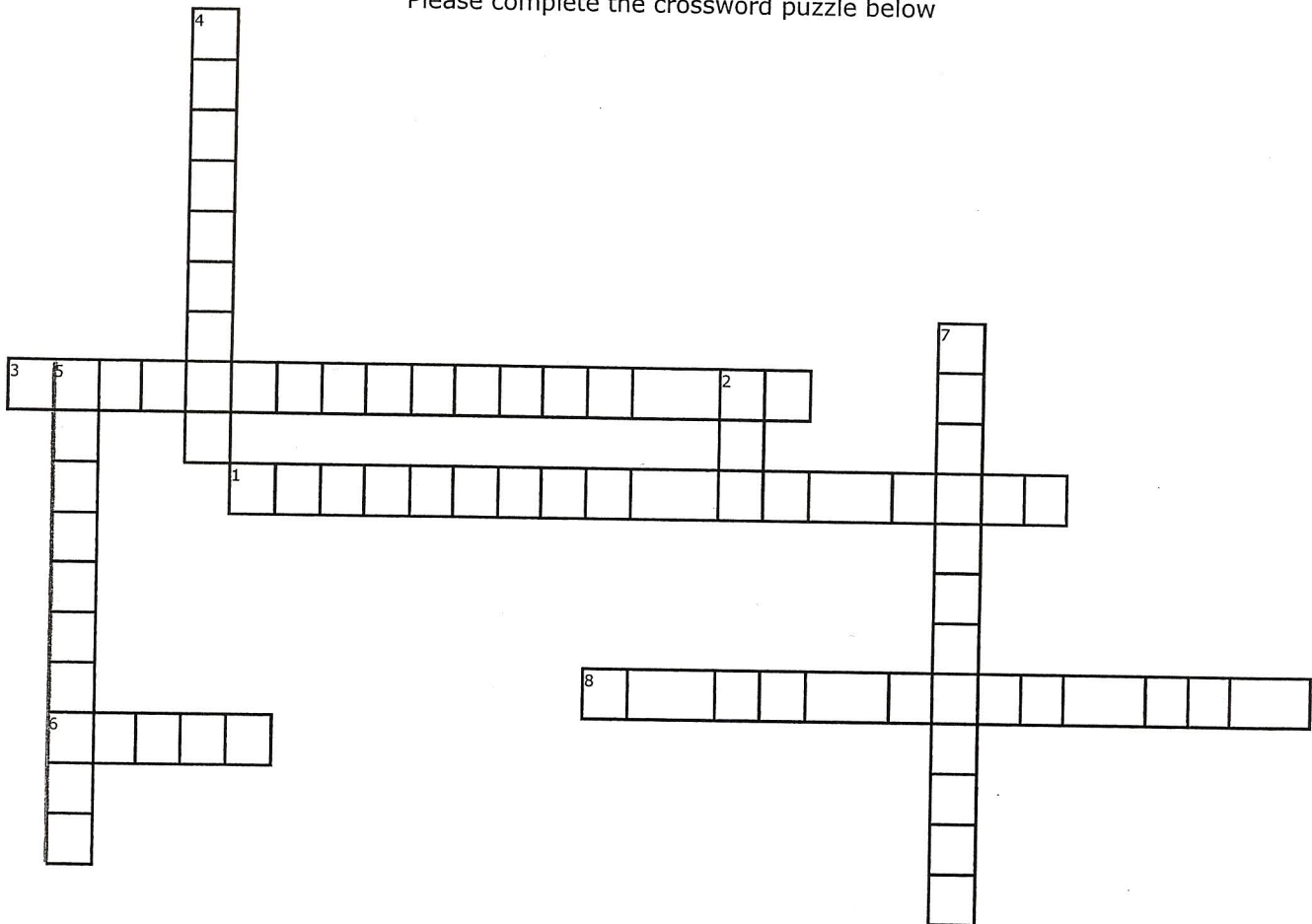
6. GUMBALLS A red gumball is $\frac{5}{8}$ inch across. A green gumball is $\frac{5}{6}$ inch across, and a blue gumball is $\frac{7}{9}$ inch across. List the gumballs in order from smallest to largest.

Name: _____

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S.O.L. 6.4 Comparing and Ordering Fractions, Decimals, and Percents

Please complete the crossword puzzle below



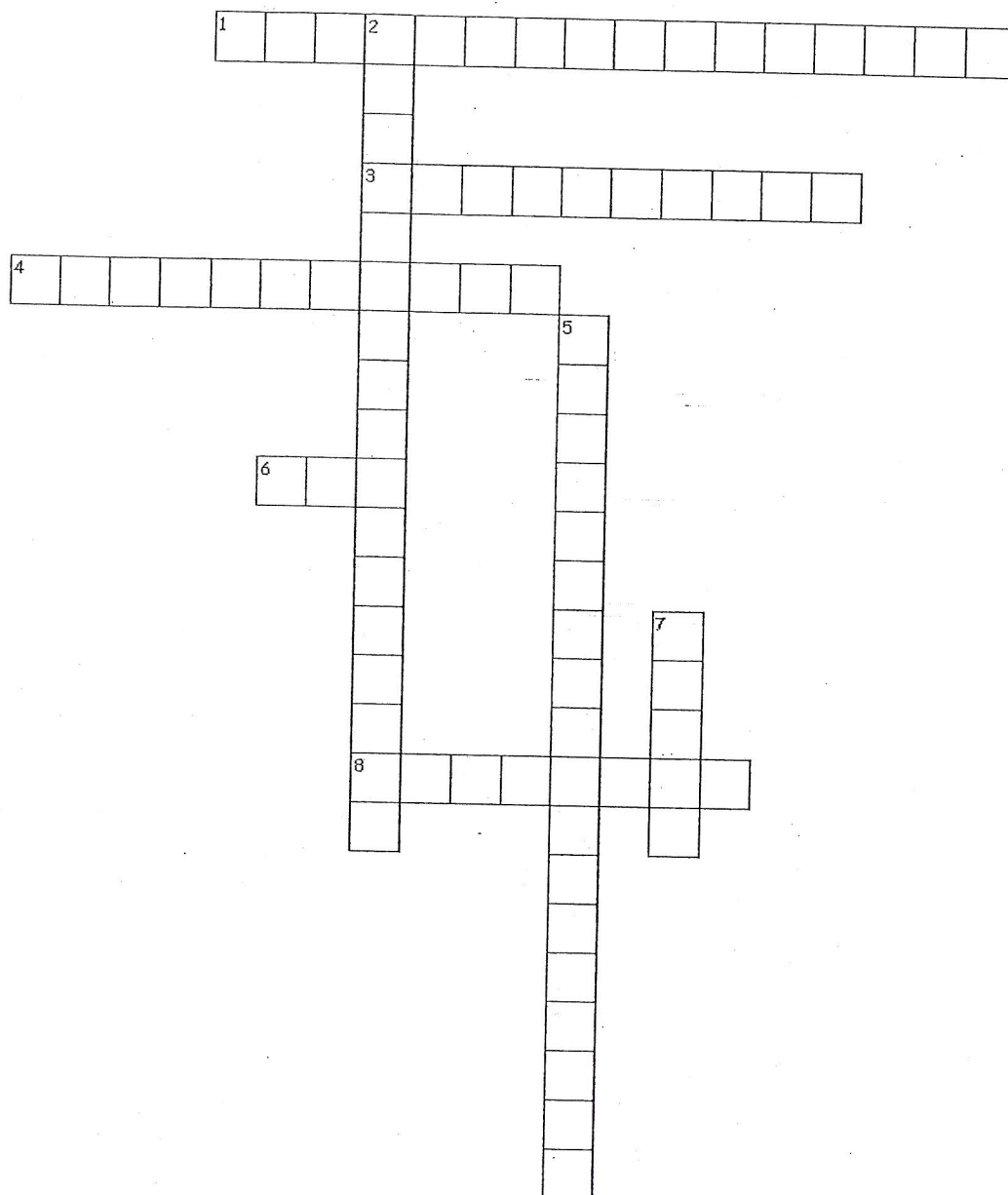
Across:

1. Fraction that represent the same quotient but have different numerators and denominators.
3. A decimal in which a digit or set of digits repeat infinitely.
6. Exactly the same amount or value.
8. A fraction in which the numerator is larger than the denominator.

Down:

2. (Least Common Denominator) The least common multiple of the denominators of two or more fractions.
4. Smaller. The symbol $<$ means less than.
5. Equal in value.
7. Bigger. The symbol $>$ means greater than.

SOL 6.4 Fractions, Decimals, and Percents



Across

1. A fraction in which the numerator is larger than the denominator.
3. equal in value
4. What does this symbol stand for? >
6. The least common multiple of the denominators of two or more fractions.
8. What does this symbol stand for? <

Down

2. A decimal in which a digit or set of digits repeat infinitely.
5. Fraction that represent the same quotient but have different numerators and denominators.
7. Exactly the same amount or value.

8 of 8 words were placed into the puzzle.

Name _____

Period _____

Sixth Grade Vocabulary
S.O. L. 6.4 – Comparing and Ordering Fractions,
Decimals, and Percents

1. _____ a decimal in which a digit or set of digits repeat infinitely
2. _____ fraction that represent the same quotient but have different numerators and denominators.
3. _____ the least common multiple of the denominators of two or more fractions.
4. _____ a fraction in which the numerator is greater than the denominator.
5. _____ equal in value
6. _____ Bigger. The symbol $>$ means greater than (the symbol $<$ means less than).

Example: $5 > 3$ shows that 5 is greater than 3
7. _____ Smaller. A symbol used to show that one number is smaller than another. The symbol $<$ means Less than (the symbol $>$ means greater than).

Example: $4 < 9$ shows that 4 is Less than 9
8. _____ Exactly the same amount or value

Examples: $3 + 4 = 7$; 1 Dollar is Equal to 100

Less Than
Greater Than
Equivalent

Repeating Decimal
Least Common Denominator

Equal

Equivalent Fraction
Improper Fraction

Name _____

6.4

Comparing and Ordering Decimals

Write $>$, $<$, or $=$ for each \bigcirc .

1. $6.5 \bigcirc 6.4$
2. $0.93 \bigcirc 0.94$
3. $6.3 \bigcirc 6.30$
4. $0.864 \bigcirc 8.60$
5. $9.02 \bigcirc 9.20$
6. $7.51 \bigcirc 7.5$
7. $6.18 \bigcirc 6.20$
8. $12.6 \bigcirc 2.6$
9. $0.008 \bigcirc 0.0080$
10. $0.3 \bigcirc 0.03$
11. $0.867 \bigcirc 0.868$
12. $6.0830 \bigcirc 6.038$
13. $2.400 \bigcirc 2.5$
14. $0.52 \bigcirc 0.6$
15. $11.060 \bigcirc 11.06$
16. $0.204 \bigcirc 0.209$
17. $5.2 \bigcirc 5.1999$
18. $3.0465 \bigcirc 3.0645$
19. $20.6 \bigcirc 20.66$
20. $1.1406 \bigcirc 1.146$
21. $20.06 \bigcirc 20.66$
22. $1.1604 \bigcirc 1.164$
23. $8.062 \bigcirc 8.026$
24. $14.602 \bigcirc 14.62$
25. $0.777 \bigcirc 0.0777$
26. $83.2 \bigcirc 83$
27. $6.419 \bigcirc 6.42$
28. $0.003 \bigcirc 0.030$
29. $7.2 \bigcirc 7.20$
30. $45.3 \bigcirc 45.28$

Order each set of decimals from least to greatest.

31. 0.684, 0.532, 0.584, 0.632, 0.588
- _____

32. 0.03, 0.0359, 0.001, 0.0412, 0.0019
- _____

33. 0.304, 0.400, 0.430, 0.380, 0.404
- _____

Lesson Objectives

Write, compare, and order decimals using place value and number lines

Additional Examples**Example 1**

Write each decimal in standard form, expanded form, and words.

A. 1.07

Expanded form: $1 +$ _____

Word form: one and seven _____

B. $0.03 + 0.006 + 0.0009$

Standard form: _____

Word form: three hundred sixty-nine _____

Example 2

The star Wolf 359 has an apparent magnitude of 13.5. Suppose another star has an apparent magnitude of 13.05. Which star has the smaller magnitude?

13.50 Line up the decimal points.

13.05 Start from the _____ and compare the digits.

Look for the _____ place where the digits are different.

0 is less than 5.

_____ < _____

The star that has an apparent magnitude of _____ has the smaller magnitude.

NAME _____
MATH PERIOD _____
DATE _____

6.4 NOTES

*The decimal point is a symbol that indicates the location of the ones place and all other subsequent place values in the decimal system. (Example 1.34)

Decimal point



*The decimal point separates a whole number amount from a number that is less than one.

*Decimals can be represented and compared, using decimal manipulatives, drawings, pictures, or symbols.

*Fractions can be represented and compared by using fraction manipulatives, drawings, pictures, or symbols.

= Equal to
< Less than
> Greater than

Study Guide and Intervention

Comparing and Ordering Decimals

EXAMPLE 1

Use $>$ or $<$ to compare 68.563 and 68.5603.

First, line up the decimal points.

68.563
68.5603

Then, starting at the left, find the first place the digits differ.

Compare the digits.

$3 > 0$

Since $3 > 0$,

$68.563 > 68.5603$

So, 68.563 is greater than 68.5603.

EXAMPLE 2

Order 4.073, 4.73, 4.0073, and 4 from least to greatest.

First, line up the decimal points.

4.073
4.73
4.0073
4

Annex zeros so that each has the same number of decimal places.

4.0730
4.7300
4.0073
4.0000

Use place value to compare and order the decimals.

4.0000
4.0073
4.0730
4.7300

The order from least to greatest is 4, 4.0073, 4.073, and 4.73.

EXERCISES

Use $>$, $<$, or $=$ to compare each pair of decimals.

1. $4.08 \bullet 4.080$

2. $0.001 \bullet 0.01$

3. $23.659 \bullet 22.659$

4. $50.031 \bullet 50.030$

5. $7 \bullet 7.0001$

6. $18.01 \bullet 18.010$

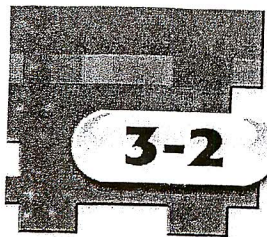
Order each set of decimals from least to greatest.

7. 0.006, 0.6, 0.060, 6

8. 456.73, 465.32, 456.37, 456.23

9. 3.01, 3.009, 3.09, 3.0001

10. 45.333, 45.303, 45.03, 45.003, 45.0003



NAME _____ DATE _____ PERIOD _____

3-2

Practice: Word Problems

Comparing and Ordering Decimals

MUSIC For Exercises 1–4, use the table.

The table shows the percent of the music market for each type of music.

| Music Industry Sales Statistics, 2001 | |
|---------------------------------------|-------------------|
| Type of Music | Percent of Market |
| Pop | 12.1 |
| Country | 10.5 |
| Rock | 24.4 |
| Rap/Hip-Hop | 11.4 |
| R&B | 10.6 |

1. Use $>$ or $<$ to compare the percents for pop and rap/hip-hop. Which is greater?

2. Use $>$ or $<$ to compare the percents for country and R&B. Which is greater?

3. If you owned a store that sells CDs, which kind of music would you want to sell, based on the table? Explain.

4. Suppose children's songs have 12.05 percent of the market. Is this greater or less than the percent for pop music? Explain.

5. **CONSTRUCTION** Alberto is setting out four boards of lumber. The lengths of the boards are 4.5 feet, 4.52 feet, 4 feet, and 4.505 feet. Order the lengths from longest to shortest.

6. **CONSTRUCTION** Ella set out a board of pine lumber that was 0.8 feet long and a board of cedar lumber that was 0.80 feet long. Alberto said the cedar board was longer. Is he correct? Explain.

1. Which of the following statements is true?

A $4.340 = 4.034$
 B $43.40 > 403.4$
 C $4.340 < 4.034$
 D $4.340 > 4.034$

2. Which of the following statements is true?

A $90.03 = 90.3$
 B $90.03 < 90.03$
 C $90.03 < 90.30$
 D $90.03 > 90.3$

3. Compare: $\frac{2}{6}$? $\frac{2}{3}$

A $<$
 B $>$
 C $=$

4. Compare: $\frac{29}{30}$? $\frac{7}{8}$

A $<$
 B $>$
 C $=$

5. Which group is in order from least to greatest?

A $\frac{29}{12} < 4\frac{1}{2} < \frac{33}{6}$
 B $\frac{33}{6} < 4\frac{1}{2} < \frac{29}{12}$
 C $4\frac{1}{2} < \frac{33}{6} < \frac{29}{12}$
 D $\frac{33}{6} < \frac{29}{12} < 4\frac{1}{2}$

6. Order these values from greatest to least.

A 5.01, 5.1, 5.11
 B 5.11, 5.1, 5.01
 C 5.1, 5.01, 5.11
 D 5.01, 5.11, 5.1

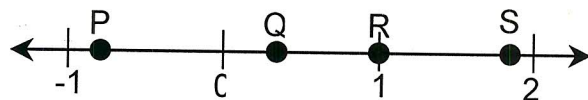
7. Which of the following is ordered from least to greatest?

A 1562.5, 1652.6, 1565.2
 B 1789.008, 1789.08, 1789.8
 C $47\frac{1}{2}$, $47\frac{3}{8}$, $47\frac{3}{4}$
 D 0.001, 0.1, 0.01

8. Which of the following statements is true?

A $10 = \frac{110}{10}$
 B $\frac{1000}{10} > 9.9$
 C $2\frac{75}{100} < 2.75$
 D $\frac{100}{10} < 9.9$

9. If you multiply any two positive fractions less than 1, which statement is true?



A The answer could be P.
 B The answer could be Q.
 C The answer could be R.
 D The answer could be S.

10. Mrs. Austin wrote the four inequalities shown below on the classroom board. Only one of them is correct. Which inequality is correct?

A $\frac{6}{12} > \frac{1}{2}$

B $\frac{5}{11} < \frac{5}{10}$

C $\frac{4}{8} > \frac{4}{6}$

D $\frac{2}{3} < \frac{4}{6}$

11. Compare: $\frac{4}{9} \bigcirc \frac{4}{7}$

A $\frac{4}{9} = \frac{4}{7}$

B $\frac{4}{9} > \frac{4}{7}$

C $\frac{4}{9} < \frac{4}{7}$

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15. Which of the following is true?

A. $0.16 < 0.016$

~~A~~ $5.065 < 5.65$

~~B~~ $2.804 < 2.408$

~~D~~ $5.83 < 0.583$

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A $90.03 = 90.3$
 B $90.03 < 90.03$
 C $90.03 < 90.30$
 D $90.03 > 90.3$

3. Compare: $\frac{2}{6} \quad ? \quad \frac{2}{3}$

A $<$
 B $>$
 C $=$

4. Compare: $\frac{29}{30} \quad ? \quad \frac{7}{8}$

A $<$
 B $>$
 C $=$

5. Which group is in order from least to greatest?

A $\frac{29}{12} < 4\frac{1}{2} < \frac{33}{6}$
 B $\frac{33}{6} < 4\frac{1}{2} < \frac{29}{12}$
 C $4\frac{1}{2} < \frac{33}{6} < \frac{29}{12}$
 D $\frac{33}{6} < \frac{29}{12} < 4\frac{1}{2}$

6. Order these values from greatest to least.

A 5.01, 5.1, 5.11
 B 5.11, 5.1, 5.01
 C 5.1, 5.01, 5.11
 D 5.01, 5.11, 5.1

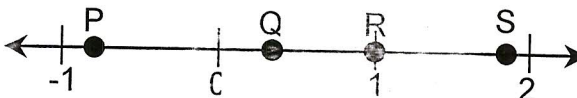
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11. Compare: $\frac{4}{9} \bigcirc \frac{4}{7}$

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Compare $\frac{4}{6} \bigcirc \frac{4}{7}$

A $\frac{4}{6} = \frac{4}{7}$

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C. $2.804 < 2.408$

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Practice: Skills***Comparing and Ordering Decimals***

Use $>$, $<$, or $=$ to compare each pair of decimals.

1. $2.4 \bullet 2.04$

2. $6.23 \bullet 6.32$

3. $0.02 \bullet 0.020$

4. $12.05 \bullet 12.50$

5. $0.92 \bullet 0.095$

6. $39.21 \bullet 39.021$

7. $0.849 \bullet 0.0851$

8. $12.1 \bullet 12.10$

9. $21.967 \bullet 2.1968$

10. $0.0128 \bullet 0.128$

11. $1.4601 \bullet 1.460$

12. $19.08 \bullet 19.079$

13. $28.003 \bullet 28.03$

14. $0.831 \bullet 0.0835$

15. $39.020 \bullet 39.0200$

16. $15.6243 \bullet 15.6234$

17. $12.0905 \bullet 12.10$

18. $56.7 \bullet 5.67$

Order each set of decimals from least to greatest.

19. 1.25, 1.52, 1.02, 1.50

20. 67.39, 68.004, 67.039, 67.04

21. 15.0421, 14.52, 14.521, 15.421

22. 0.0012, 0.0211, 0.0002, 0.0022

Order each set of decimals from greatest to least.

23. 4.99, 4.001, 5.0, 4.01

24. 12.0012, 120.012, 12.012, 12.12

25. 3.5, 3.05, 3.55, 3.555

26. 45.0, 40.5, 40.09, 49.5

Lesson 3-2

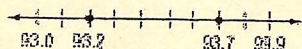
Example 1 Compare Decimals

WEIGHT On the same scale, Jeremy weighs 93.7 pounds and Jeffrey weighs 93.2 pounds. Use $>$ or $<$ to compare Jeremy's weight to Jeffrey's weight.

Method 1 Use place value.

Jeremy: 93.7 First, line up the decimal points. Then starting at the left,
Jeffrey: 93.2 find the first place the digits differ. Compare the digits.
Since $7 > 2$, $93.7 > 93.2$. So, Jeremy's weight is greater than Jeffrey's weight.

Method 2 Use a number line.



Numbers to the right are greater than numbers to the left. Since 93.7 is to the right of 93.2, $93.7 > 93.2$.

Example 2 Order Decimals

Order 34.03, 34, 33.98, and 34.1 from least to greatest.

34.03 \rightarrow 34.03 First, line up the decimal points.
34 \rightarrow 34.00 Next, annex zeros so that each has the same number of decimal
33.98 \rightarrow 33.98 places.
34.1 \rightarrow 34.10 Finally, use place value to compare the decimals.

The order from least to greatest is 33.98, 34, 34.03, and 34.1.

3-2**Practice: Word Problems****Comparing and Ordering Decimals**

MUSIC For Exercises 1–4, use the table.

The table shows the percent of the music market for each type of music.

| Music Industry Sales Statistics, 2001 | |
|---------------------------------------|-------------------|
| Type of Music | Percent of Market |
| Pop | 12.1 |
| Country | 10.5 |
| Rock | 24.4 |
| Rap/Hip-Hop | 11.4 |
| R&B | 10.6 |

1. Use $>$ or $<$ to compare the percents for pop and rap/hip-hop. Which is greater?

2. Use $>$ or $<$ to compare the percents for country and R&B. Which is greater?

3. If you owned a store that sells CDs, which kind of music would you want to sell, based on the table? Explain.

4. Suppose children's songs have 12.05 percent of the market. Is this greater or less than the percent for pop music? Explain.

5. **CONSTRUCTION** Alberto is setting out four boards of lumber. The lengths of the boards are 4.5 feet, 4.52 feet, 4 feet, and 4.505 feet. Order the lengths from longest to shortest.

6. **CONSTRUCTION** Ella set out a board of pine lumber that was 0.8 feet long and a board of cedar lumber that was 0.80 feet long. Alberto said the cedar board was longer. Is he correct? Explain.

Comparing and Ordering Whole Numbers

Know It!

Note

Lesson Objectives

Compare and order whole numbers using place value or a number line

Place Value

| Hundreds | Tens | Ones | Hundreds | Tens | Ones | Hundreds | Tens | Ones | Hundreds | Tens | Ones |
|----------|------|------|----------|------|------|-----------|------|------|----------|------|------|
| | | 6 | 8 | 2 | 3 | 6 | 3 | 4 | 5 | 5 | 3 |
| Billions | | | Millions | | | Thousands | | | Ones | | |

Additional Examples

Example 1

Belize's 2000 population was 249,183 people. Iceland's 2000 population was 276,365 people. Which country had more people?

Belize 2 4 9, 1 8 3

Iceland 2 7 6, 3 6 5

Start at the _____ and compare digits in the same place value position. Look for the _____ place where the values are different.

40 thousand is _____ than 70 thousand.

249,183 is _____ than 276,365.

_____ had more people.

LESSON
1-1

Practice A

Comparing and Ordering Whole Numbers

Write $<$, $>$, or $=$ to compare the numbers.

1. 8 18

2. 43 34

3. 100 90

4. 295 259

5. 706 706

6. 1,006 6,001

Write the numbers from least to greatest.

7. 3; 13; 1

8. 88; 80; 78

9. 104; 204; 102

10. 75; 95; 59

11. 642; 855; 658

12. 274; 207; 740

Write the numbers from greatest to least.

13. 10; 100; 11

14. 36; 16; 63

15. 28; 20; 80

16. 500; 300; 305

17. 593; 93; 59

18. 184; 800; 481

19. English is spoken in 47 countries around the world. French is spoken in 23 countries. Which language is spoken in the most countries?

20. The United States–Mexico border is 1,933 miles long. The United States–Canada border is 3,987 miles long. Which border is longer?

Example 2

Order the numbers from least to greatest.

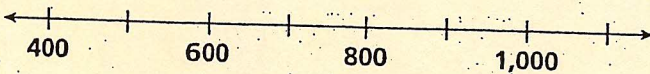
675; 1,044; 497

Graph the numbers on a number line:

The number _____ is between 600 and 700.

The number _____ is between 1,000 and 1,100.

The number _____ is between 400 and 500.



The numbers are ordered when you read the number line from _____ to _____.

The numbers in order from least to greatest are _____, _____, and _____.

Try This

1. In 2000, the population of San Diego, California was 1,223,400 people. In 2000, the population of Dallas, Texas was 1,188,580 people. Which city had more people?

2. Order the numbers from least to greatest.
732, 923, 502

5-5**Study Guide and Intervention****Comparing and Ordering Fractions**

To compare two fractions,

- Find the **least common denominator (LCD)** of the fractions; that is, find the least common multiple of the denominators.
- Rewrite each fraction as an equivalent fraction whose denominator is the LCD.
- Compare the numerators.

EXAMPLE 1 Replace \bullet with $<$, $>$, or $=$ to make $\frac{1}{3} \bullet \frac{5}{12}$ true.

- The LCM of 3 and 12 is 12. So, the LCD is 12.
- Rewrite each fraction with a denominator of 12.

$$\frac{1}{3} = \frac{\bullet}{12}, \text{ so } \frac{1}{3} = \frac{4}{12}. \quad \frac{5}{12} = \frac{5}{12}$$

- Now, compare. Since $4 < 5$, $\frac{4}{12} < \frac{5}{12}$. So $\frac{1}{3} < \frac{5}{12}$.

EXAMPLE 2 Order $\frac{1}{6}$, $\frac{2}{3}$, $\frac{1}{4}$, and $\frac{3}{8}$ from least to greatest.

The LCD of the fractions is 24. So, rewrite each fraction with a denominator of 24.

$$\frac{1}{6} = \frac{\bullet}{24}, \text{ so } \frac{1}{6} = \frac{4}{24}.$$

$$\frac{2}{3} = \frac{\bullet}{24}, \text{ so } \frac{2}{3} = \frac{16}{24}.$$

$$\frac{1}{4} = \frac{\bullet}{24}, \text{ so } \frac{1}{4} = \frac{6}{24}.$$

$$\frac{3}{8} = \frac{\bullet}{24}, \text{ so } \frac{3}{8} = \frac{9}{24}.$$

The order of the fractions from least to greatest is $\frac{1}{6}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{2}{3}$.

EXERCISES

Replace each \bullet with $<$, $>$, or $=$ to make a true sentence.

1. $\frac{5}{12} \bullet \frac{3}{8}$

2. $\frac{6}{8} \bullet \frac{3}{4}$

3. $\frac{2}{7} \bullet \frac{1}{6}$

Order the fractions from least to greatest.

4. $\frac{3}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{1}{4}$

5. $\frac{2}{3}$, $\frac{1}{6}$, $\frac{5}{18}$, $\frac{7}{9}$

6. $\frac{1}{2}$, $\frac{5}{6}$, $\frac{5}{8}$, $\frac{5}{12}$

Practice: Word Problems**Comparing and Ordering Fractions**

1. SHOES Toya is looking in her closet. If $\frac{1}{3}$ of her shoes are black and $\frac{2}{5}$ are brown, does she have more black shoes or more brown shoes? Explain.

2. BUDGET Daniel spends $\frac{3}{7}$ of his money on rent and $\frac{4}{9}$ of his money on food. Does he spend more money on food or rent? Explain.

3. WOODWORKING Isi drilled a hole that is $\frac{5}{9}$ inch wide. She has a screw that is $\frac{5}{6}$ inch wide. Is the hole wide enough to fit the screw? Explain.

4. FOOD In a recent survey, $\frac{2}{5}$ of the people surveyed said their favorite food was pizza, $\frac{1}{4}$ said it was hot dogs, and $\frac{3}{10}$ said it was popcorn. Which food was favored by the greatest number of people? Explain.

5. OFFICE SUPPLIES A blue paper clip is $\frac{1}{6}$ inch wide. A silver paper clip is $\frac{3}{8}$ inch wide, and a red paper clip is $\frac{1}{3}$ inch wide. What color paper clip has the smallest width? Explain.

6. GUMBALLS A red gumball is $\frac{5}{8}$ inch across. A green gumball is $\frac{5}{6}$ inch across, and a blue gumball is $\frac{7}{9}$ inch across. List the gumballs in order from smallest to largest.

Lesson 5-5

Example 1 Compare Fractions

Replace \bullet with $<$, $>$, or $=$ to make $\frac{7}{9} \bullet \frac{5}{6}$ true.

- First, find the LCD; that is, the LCM of the denominators. The LCM of 9 and 6 is 18. So, the LCD is 18.
- Next, rewrite each fraction with a denominator of 18.
$$\frac{7}{9} = \frac{7 \times 2}{9 \times 2} = \frac{14}{18} \qquad \frac{5}{6} = \frac{5 \times 3}{6 \times 3} = \frac{15}{18}$$
- Then compare. Since $14 < 15$, $\frac{14}{18} < \frac{15}{18}$. So, $\frac{7}{9} < \frac{5}{6}$.

Example 2 Order Fractions

Order the fractions $\frac{5}{8}$, $\frac{3}{4}$, $\frac{5}{6}$, and $\frac{1}{2}$ from least to greatest.

The LCD of the fractions is 24. So, rewrite each fraction with a denominator of 24.

$$\frac{5}{8} = \frac{5 \times 3}{8 \times 3} = \frac{15}{24}$$

$$\frac{3}{4} = \frac{3 \times 6}{4 \times 6} = \frac{18}{24}$$

$$\frac{5}{6} = \frac{5 \times 4}{6 \times 4} = \frac{20}{24}$$

$$\frac{1}{2} = \frac{1 \times 12}{2 \times 12} = \frac{12}{24}$$

The order of the fractions from least to greatest is $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{5}{6}$.

Example 3 Compare and Order Fractions

MULTIPLE-CHOICE TEST ITEM

According to a survey on music, $\frac{9}{25}$ of the people asked preferred jazz music, $\frac{11}{20}$

preferred rock music, and $\frac{9}{100}$ preferred classical music. Which type of music did most of the people prefer?

- A jazz music
- B rock music
- C classical music
- D cannot tell from the data

Read the Test Item You need to compare the fractions.

Solve the Test Item Rewrite the fractions with the LCD, 100.

$$\frac{9}{25} = \frac{9 \times 4}{25 \times 4} = \frac{36}{100}$$

$$\frac{11}{20} = \frac{11 \times 5}{20 \times 5} = \frac{55}{100}$$

$$\frac{9}{100} = \frac{9}{100}$$

So, $\frac{55}{100}$ is the greatest fraction, and the answer is B.

Lesson 3-2

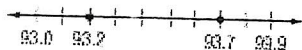
Example 1 Compare Decimals

WEIGHT On the same scale, Jeremy weighs 93.7 pounds and Jeffrey weighs 93.2 pounds. Use $>$ or $<$ to compare Jeremy's weight to Jeffrey's weight.

Method 1 Use place value.

Jeremy: 93.7 First, line up the decimal points. Then starting at the left,
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Since $7 > 2$, $93.7 > 93.2$. So, Jeremy's weight is greater than Jeffrey's weight.

Method 2 Use a number line.



Numbers to the right are greater than numbers to the left. Since 93.7 is to the right of 93.2, $93.7 > 93.2$.

Example 2 Order Decimals

Order 34.03, 34, 33.98, and 34.1 from least to greatest.

34.03 \rightarrow 34.03 First, line up the decimal points.
34 \rightarrow 34.00 Next, annex zeros so that each has the same number of decimal
33.98 \rightarrow 33.98 places.
34.1 \rightarrow 34.10 Finally, use place value to compare the decimals.

The order from least to greatest is 33.98, 34, 34.03, and 34.1.

5-5**Practice: Skills****Comparing and Ordering Fractions**

Replace each \bullet with $<$, $>$, or $=$ to make a true sentence.

1. $\frac{2}{3} \bullet \frac{3}{4}$

2. $\frac{3}{8} \bullet \frac{6}{16}$

3. $\frac{5}{8} \bullet \frac{7}{12}$

4. $\frac{1}{2} \bullet \frac{6}{7}$

5. $\frac{3}{9} \bullet \frac{1}{3}$

6. $\frac{1}{6} \bullet \frac{9}{10}$

7. $\frac{5}{6} \bullet \frac{7}{8}$

8. $\frac{5}{8} \bullet \frac{5}{12}$

9. $\frac{4}{5} \bullet \frac{2}{3}$

10. $\frac{6}{7} \bullet \frac{4}{5}$

11. $\frac{5}{12} \bullet \frac{3}{16}$

12. $\frac{3}{4} \bullet \frac{2}{9}$

13. $\frac{5}{7} \bullet \frac{7}{10}$

14. $\frac{2}{15} \bullet \frac{1}{6}$

15. $\frac{5}{12} \bullet \frac{2}{5}$

16. $\frac{3}{10} \bullet \frac{5}{14}$

17. $\frac{4}{9} \bullet \frac{3}{7}$

18. $\frac{3}{5} \bullet \frac{5}{9}$

19. $\frac{1}{6} \bullet \frac{2}{12}$

20. $\frac{7}{9} \bullet \frac{4}{7}$

21. $\frac{9}{10} \bullet \frac{11}{12}$

22. $\frac{1}{4} \bullet \frac{2}{8}$

23. $\frac{8}{9} \bullet \frac{7}{8}$

24. $\frac{2}{9} \bullet \frac{4}{15}$

Order the fractions from least to greatest.

25. $\frac{3}{4}, \frac{2}{5}, \frac{5}{8}, \frac{1}{2}$

26. $\frac{1}{3}, \frac{2}{7}, \frac{3}{14}, \frac{1}{6}$

27. $\frac{2}{3}, \frac{4}{9}, \frac{5}{6}, \frac{7}{12}$

28. $\frac{4}{5}, \frac{2}{3}, \frac{13}{15}, \frac{7}{9}$

29. $\frac{11}{12}, \frac{5}{6}, \frac{3}{4}, \frac{9}{16}$

30. $\frac{7}{15}, \frac{3}{5}, \frac{5}{12}, \frac{1}{2}$

NAME _____
MATH PERIOD _____
DATE _____

6.4 NOTES

*The decimal point is a symbol that indicates the location of the ones place and all other subsequent place values in the decimal system. (Example 1.34)

Decimal point



*The decimal point separates a whole number amount from a number that is less than one.

*Decimals can be represented and compared, using decimal manipulatives, drawings, pictures, or symbols.

*Fractions can be represented and compared by using fraction manipulatives, drawings, pictures, or symbols.

= Equal to

< Less than

> Greater than

LESSON
1-1

Practice B

Comparing and Ordering Whole Numbers

Compare. Write $<$, $>$, or $=$.

1. 69 96

2. 117 107

3. 958 9,124

4. 3,567 3,567

5. 18,443 1,844

6. 64,209 64,290

Order the numbers from least to greatest.

7. 58; 166; 85

8. 115; 151; 111

9. 269; 29; 96

10. 308; 3,800; 3,080

11. 1,864; 824; 1,648

12. 4,663; 4,336; 43,666

Order the numbers from greatest to least.

13. 35; 53; 13

14. 807; 800; 708

15. 249; 392; 248

16. 555; 600; 535

17. 7,320; 6,000; 6,305

18. 999; 9,559; 5,995

19. Delaware and Rhode Island are the two smallest states. Delaware covers 1,955 square miles, and Rhode Island covers 1,045 square miles. What is the smallest state in the United States?

20. Vermont and Wyoming have the smallest populations in the United States. The population of Vermont is 608,827. The population of Wyoming is 493,782. Which state has the smallest population?

LESSON
1-1 Practice C
Comparing and Ordering Whole Numbers

Compare. Write $<$, $>$, or $=$.

1. 1,478 1,748

2. 5,643 5,643

3. 9,610 10,961

4. 308,524 3,854

Order the numbers from least to greatest.

5. 379; 79; 978

6. 16,780; 17,847; 6,988

7. 76,334; 47,961; 70,336

8. 101,695; 19,568; 191,658

Order the numbers from greatest to least.

9. 605; 560; 565

10. 8,320; 8,063; 8,663

11. 49,210; 49,000; 49,910

12. 352,699; 353,963; 95,614

13. Alaska, California, and Texas are the three largest states. Alaska covers 615,230 square miles. California covers 158,869 square miles. Texas covers 267,277 square miles. Write the states in order by size, from largest to smallest.

14. California, New York, and Texas have the largest populations in the United States. Their populations are 33,871,648; 20,851,820; and 18,976,457. California has the largest population. More people live in Texas than in New York. What is each state's population?

5-5**Practice: Skills****Comparing and Ordering Fractions**Replace each \bullet with $<$, $>$, or $=$ to make a true sentence.

1. $\frac{2}{3} \bullet \frac{3}{4}$

2. $\frac{3}{8} \bullet \frac{6}{16}$

3. $\frac{5}{8} \bullet \frac{7}{12}$

4. $\frac{1}{2} \bullet \frac{6}{7}$

5. $\frac{3}{9} \bullet \frac{1}{3}$

6. $\frac{1}{6} \bullet \frac{9}{10}$

7. $\frac{5}{6} \bullet \frac{7}{8}$

8. $\frac{5}{8} \bullet \frac{5}{12}$

9. $\frac{4}{5} \bullet \frac{2}{3}$

10. $\frac{6}{7} \bullet \frac{4}{5}$

11. $\frac{5}{12} \bullet \frac{3}{16}$

12. $\frac{3}{4} \bullet \frac{2}{9}$

13. $\frac{5}{7} \bullet \frac{7}{10}$

14. $\frac{2}{15} \bullet \frac{1}{6}$

15. $\frac{5}{12} \bullet \frac{2}{5}$

16. $\frac{3}{10} \bullet \frac{5}{14}$

17. $\frac{4}{9} \bullet \frac{3}{7}$

18. $\frac{3}{5} \bullet \frac{5}{9}$

19. $\frac{1}{6} \bullet \frac{2}{12}$

20. $\frac{7}{9} \bullet \frac{4}{7}$

21. $\frac{9}{10} \bullet \frac{11}{12}$

22. $\frac{1}{4} \bullet \frac{2}{8}$

23. $\frac{8}{9} \bullet \frac{7}{8}$

24. $\frac{2}{9} \bullet \frac{4}{15}$

Order the fractions from least to greatest.

25. $\frac{3}{4}, \frac{2}{5}, \frac{5}{8}, \frac{1}{2}$

26. $\frac{1}{3}, \frac{2}{7}, \frac{3}{14}, \frac{1}{6}$

27. $\frac{2}{3}, \frac{4}{9}, \frac{5}{6}, \frac{7}{12}$

28. $\frac{4}{5}, \frac{2}{3}, \frac{13}{15}, \frac{7}{9}$

29. $\frac{11}{12}, \frac{5}{6}, \frac{3}{4}, \frac{9}{16}$

30. $\frac{7}{15}, \frac{3}{5}, \frac{5}{12}, \frac{1}{2}$

Practice: Word Problems**Comparing and Ordering Fractions**

1. SHOES Toya is looking in her closet. If $\frac{1}{3}$ of her shoes are black and $\frac{2}{5}$ are brown, does she have more black shoes or more brown shoes? Explain.

2. BUDGET Daniel spends $\frac{3}{7}$ of his money on rent and $\frac{4}{9}$ of his money on food. Does he spend more money on food or rent? Explain.

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5-6**Study Guide and Intervention**
Writing Decimals as Fractions

Decimals like 0.58, 0.12, and 0.08 can be written as fractions.

To write a decimal as a fraction, you can follow these steps.

- Identify the place value of the last decimal place.
- Write the decimal as a fraction using the place value as the denominator.
- If necessary, simplify the fraction.

EXAMPLE 1 Write 0.5 as a fraction in simplest form.

$$0.5 = \frac{5}{10}$$

0.5 means five tenths.

$$= \frac{\cancel{5}}{\cancel{10}_2}$$

Simplify. Divide the numerator and denominator by the GCF, 5.

$$= \frac{1}{2}$$

So, in simplest form, 0.5 is $\frac{1}{2}$.

EXAMPLE 2 Write 0.35 as a fraction in simplest form.

$$0.35 = \frac{35}{100}$$

0.35 means 35 hundredths.

$$= \frac{\cancel{35}^7}{\cancel{100}_{20}}$$

Simplify. Divide the numerator and denominator by the GCF, 5.

$$= \frac{7}{20}$$

So, in simplest form, 0.35 is $\frac{7}{20}$.

EXAMPLE 3 Write 4.375 as a mixed number in simplest form.

$$4.375 = 4\frac{375}{1,000}$$

0.375 means 375 thousandths.

$$= 4\frac{\cancel{375}^3}{\cancel{1,000}_8}$$

Simplify. Divide by the GCF, 125.

$$= 4\frac{3}{8}$$

EXERCISES

Write each decimal as a fraction or mixed number in simplest form.

1. 0.9

2. 0.8

3. 0.27

4. 0.75

5. 0.34

6. 0.125

7. 0.035

8. 0.008

9. 1.4

10. 3.6

11. 6.28

12. 2.65

13. 12.05

14. 4.004

15. 23.205

16. 51.724

Lesson Objectives

Compare and order whole numbers using place value or a number line

Place Value

| | | | | | | | | | | | |
|----------|------|------|----------|------|------|-----------|------|------|----------|------|------|
| Hundreds | Tens | Ones | Hundreds | Tens | Ones | Hundreds | Tens | Ones | Hundreds | Tens | Ones |
| | | 6 | 8 | 2 | 3 | 6 | 3 | 4 | 5 | 5 | 3 |
| Billions | | | Millions | | | Thousands | | | Ones | | |

Additional Examples**Example 1**

Belize's 2000 population was 249,183 people. Iceland's 2000 population was 276,365 people. Which country had more people?

Belize 2 4 9, 1 8 3

Iceland 2 7 6, 3 6 5

Start at the _____ and compare digits in the same place value position. Look for the _____ place where the values are different.

40 thousand is _____ than 70 thousand.

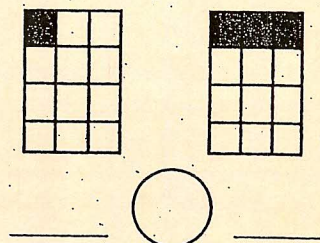
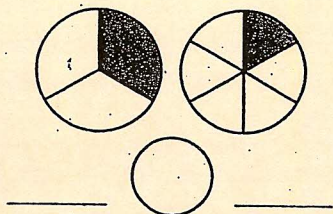
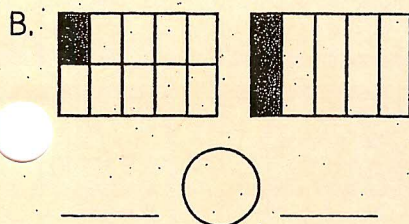
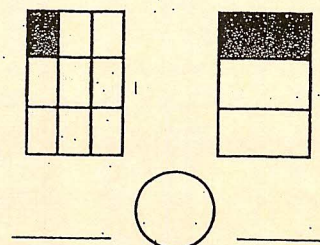
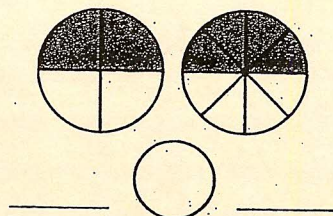
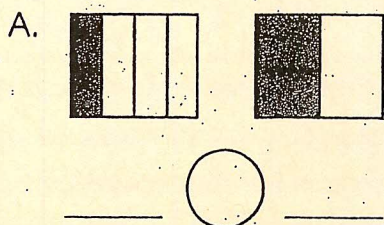
249,183 is _____ than 276,365.

_____ had more people.

Name _____

Shading the Facts

Identify each fraction. Compare using $>$, $<$, and $=$.



C. $\frac{1}{4}$ ○ $\frac{1}{2}$

$\frac{6}{8}$ ○ $\frac{1}{2}$

$\frac{4}{5}$ ○ $\frac{6}{10}$

$\frac{1}{8}$ ○ $\frac{1}{3}$

D. $\frac{1}{3}$ ○ $\frac{1}{5}$

$\frac{2}{8}$ ○ $\frac{1}{5}$

$\frac{1}{9}$ ○ $\frac{1}{4}$

$\frac{1}{11}$ ○ $\frac{1}{5}$

E. $\frac{1}{4}$ ○ $\frac{1}{3}$

$\frac{1}{5}$ ○ $\frac{1}{6}$

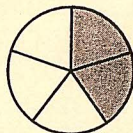
$\frac{2}{4}$ ○ $\frac{1}{2}$

$\frac{3}{8}$ ○ $\frac{1}{8}$

What is a Percent?

Give the percent of each figure that is shaded.

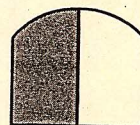
1. _____



2. _____



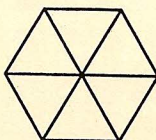
3. _____



4. _____



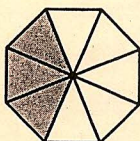
5. _____



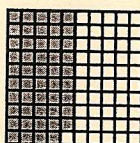
6. _____



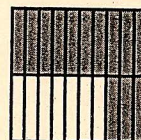
7. _____



8. _____

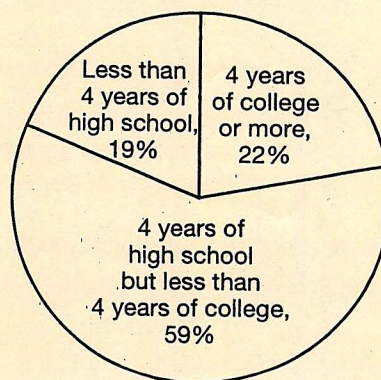


9. _____



The circle graph shows the educational attainment of Americans over 25 years old in 1994. Use the graph for Exercises 10–12.

Educational Attainment of Americans



10. What percent of the population has completed less than 4 years of high school? _____

4 years of high school or more? _____

11. Which category includes the highest percent of Americans over 25?

What is the percent? _____

12. Which two categories combined amount for 41% of Americans over 25?

13. **Geography** 22% of the land in Vietnam is arable (suitable for farming). What percent is not arable? _____