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FREE E-BOOK

DECIMALS, PERCENT, FRACTIONS

ULTIMATE MATH GUIDE

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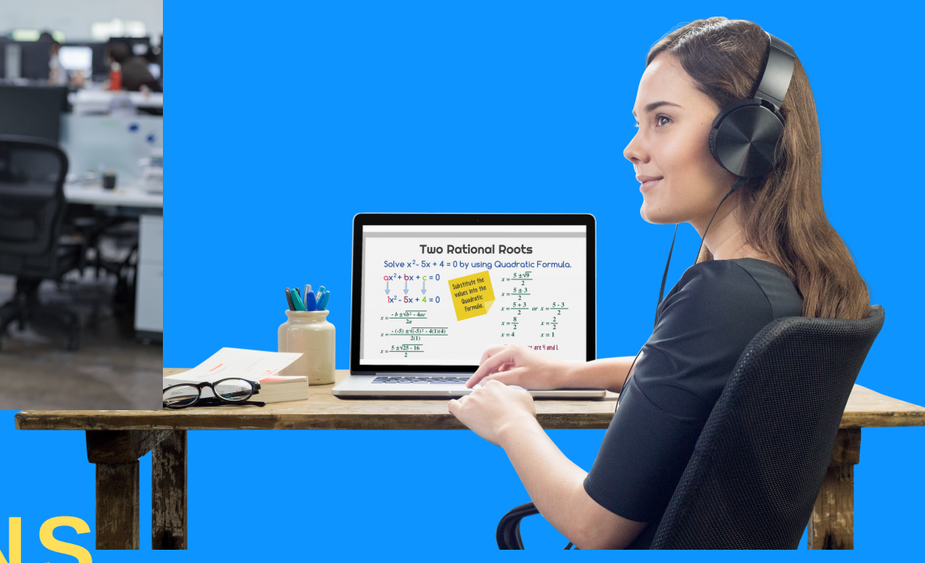

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Maria Torriente is currently a **Math teacher** at Miami Dade County Public Schools successful experience in teaching Mathematics. Maria is the FOUNDER and CEO of Excel Mathematics Learning Center and **Excel Mathematics online class videos** to assist students with practical tools **to help them succeed.**

Juan Jorrin is a **Math teacher** for Miami-Dade County Public Schools and the Co-Founder of Excel Mathematics online videos. Juan believes that any student can become an independent learner **and succeed in mathematics.**

ULTIMATE MATH GUIDE & HOW THEY WORK TOGETHER

MARIA TORRIENTE , JUAN JORRIN

DECIMALS, PERCENT, AND FRACTIONS

TABLE OF CONTENTS

INTRODUCTION

Did you know that 100 percent of my students improve their math skills when they know the concepts and work with decimals, fractions, and percent?

I know it's fun to talk about all of the strategies and variations and cool things we can do with world problems and solve any problem because they see the concept of numbers and their applications in daily life situations.

In fact, over the past years, we have helped thousands of students be successful in the classroom and prepared them to be ready for college and university.

A few years later, when I started teaching Math, just like everyone else, instead of focusing on teaching the concepts alone, the fundamentals, I began to teach math skills strategies...
Why?
Because they are fun to talk about and students get so excited when they see that using their memory to memorize the steps and solve the problem is amazing how applying the concepts, their abilities in Math improve so quickly.

THE FUNDAMENTALS

When I was in middle school, I realized that some students didn't understand the teacher in math class because they didn't explain all steps by step to get to the final answer.
I looked at my classmates and saw their faces so distracted because they couldn't understand what the teacher was saying. So, for many years I dedicated teaching my classmates the step-by-step solutions to get into the answers.

So, we wanted to put together this FREE e-book to continue helping students and inviting you to be part of the community in our platform at https://www.excelmathematics.com, and give you the only three things that you have to do to have success. I hope that you will make up in increased clarity and focus.

HOW THE THREE CHAPTERS WORK TOGETHER

Let me show you what it looks like:

CHAPTER #1
DECIMALS

The first chapter I want to share with you is my experience in the classroom from years working one on one, differentiated instructions, class groups, and with my students. They improve their math skills immensely when they know the concept of decimals, how to represent decimals in standard form and expanded form, and how to work all operations with decimals.

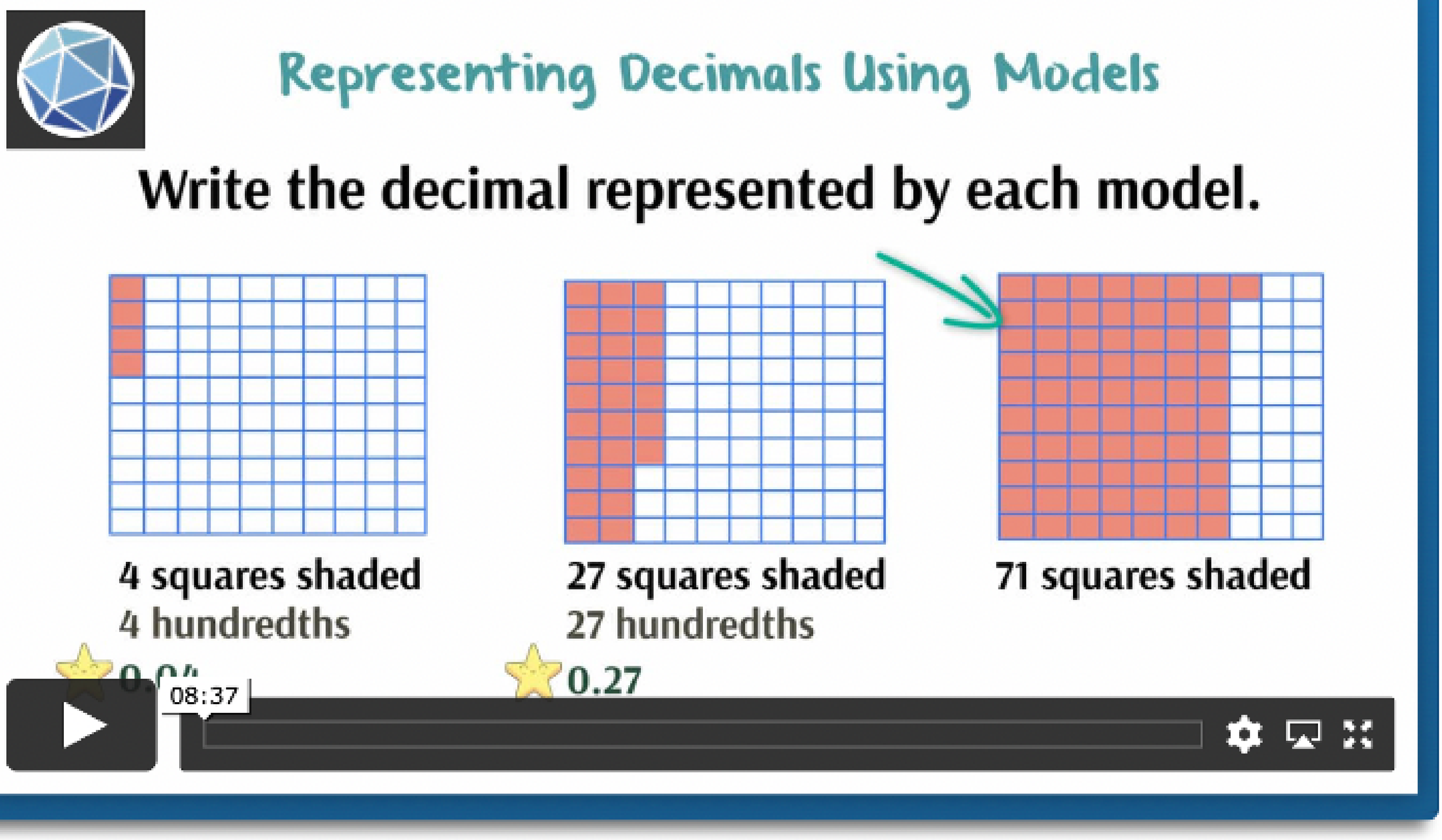
CHAPTER #2
FRACTIONS

The second chapter is Fractions. This topic is crucial in learning Math, and it is a fundamental base of concepts and applications. When you master the idea, it is easy to solve any real-life involving addition, subtracting, multiplication, and division of fractions.

CHAPTER #3
DECIMALS

The third chapter is about percent. If you want to buy a house, find taxes after purchasing anything, buy your car, or go to a restaurant and ask for a tip. Knowing how to find the percentage will help you understand all operations they use to give the final account. That's why it's so important to have the abilities in this critical chapter.

LESSON 1.01 REPRESENTING DECIMALS



- How to represent decimals in word form, standard form, and expanded form

Name: _____ **Date**_____ **Score**____

STUDY GUIDE AND REVIEW

1.01 Representing Decimals

Decimals can be written in standard form and expanded form.

Standard form is the usual way to write a decimal, such as 3.52. Expanded form is a sum of the products of each digit and its place, such as $(3 \times 1) + (5 \times 0.1) + (2 \times 0.01)$.

EXAMPLE 1

Write 128.0732 in word form.

Place-Value Chart							
thousands	hundreds	tens	ones	tenths	hundredths	thousandths	ten-thousandths
0	1	2	8 •	0	7	3	2

In words, 128.0732 is one hundred twenty-eight and seven hundred thirty-two ten-thousandths.

EXAMPLE

Write ninety-nine and two hundred seven thousandths in standard form and expanded form.

Place-Value Chart							
thousands	hundreds	tens	ones	tenths	hundredths	thousandths	ten-thousandths
0	0	9	9 •	2	0	7	0

Standard form: 99.207

Expanded form: $(9 \times 10) + (9 \times 1) + (2 \times 0.1) + (0 \times 0.01) + (7 \times 0.001)$

Name: _____ Date_____ Score____

PRACTICE
1.01 Representing Decimals

Write each decimal in word form.

1. 6.5
2. 0.83
3. 12.001
4. 0.3
5. 5.67
6. 0.5214
7. 39.2
8. 14.006
9. 12.0905

Write each decimal in standard form and expanded form.

10. three tenths
11. eight and four hundredths
12. one hundred and one hundredth
13. four hundred seven ten-thousandths
14. fifteen and one tenth
15. seventy-two and sixteen thousandths
16. four hundred seven thousandths
17. one hundred and one thousandth

18. Express $(2 \times 100) + (3 \times 10) + (1 \times 1) + (4 \times 0.1) + (5 \times 0.01)$ in word form.

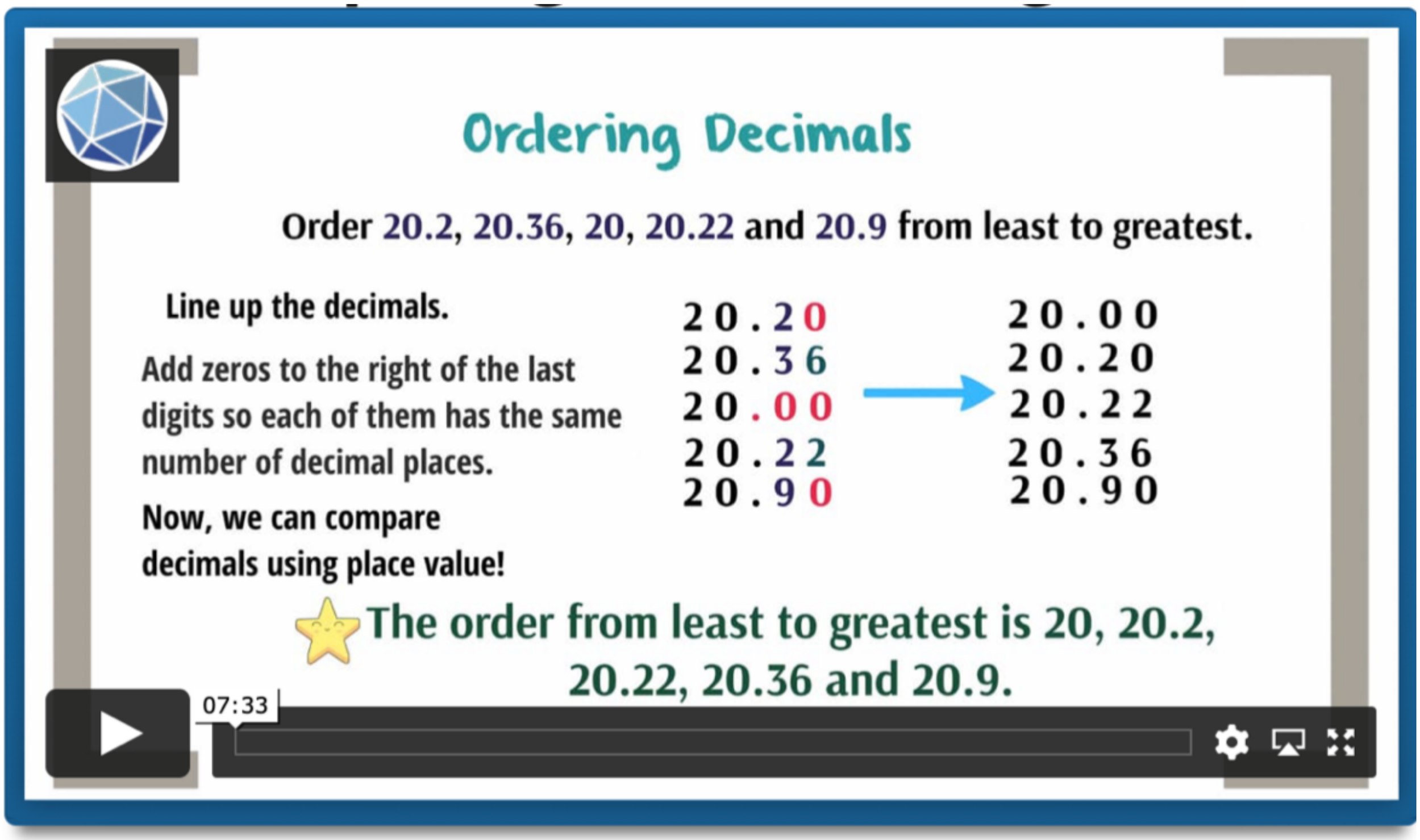
Name: _____ Date_____ Score____

PRACTICE
1.01 Representing Decimals

Answers

1. six and five tenths
2. eighty-three hundredths
3. twelve and one thousandth
4. three tenths
5. five and sixty-seven hundredths
6. five thousand two hundred fourteen ten-thousandths
7. thirty-nine and two tenths
8. fourteen and six thousandths
9. twelve and nine hundred five ten-thousandths
10. $0.3; (3 \times 0.1)$
11. $8.04; (8 \times 1) + (0 \times 0.1) + (4 \times 0.01)$
12. $100.01; (1 \times 100) + (0 \times 10) + (0 \times 1) + (0 \times 0.1) + (1 \times 0.01)$
13. $0.0407; (0 \times 0.1) + (4 \times 0.01) + (0 \times 0.001) + (7 \times 0.0001)$
14. $15.1; (1 \times 10) + (5 \times 1) + (1 \times 0.1)$
15. $72.016; (7 \times 10) + (2 \times 1) + (0 \times 0.1) + (1 \times 0.01) + (6 \times 0.001)$
16. $0.407; (4 \times 0.1) + (0 \times 0.01) + (7 \times 0.001)$
17. 100.001 ; $(1 \times 100) + (0 \times 10) + (0 \times 1) + (0 \times 0.1) + (0 \times 0.01) + (1 \times 0.001)$
18. two hundred thirty-one and forty-five hundredths

LESSON 1.02 COMPARING AND ORDERING DECIMALS



- How to compare and order decimals.

Name: _____ **Date**_____ **Score**____

STUDY GUIDE AND REVIEW

1.02 Comparing and Ordering Decimals

EXAMPLE 1

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

First, line up the decimal points.

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

Compare the digits.

Since $3 > 0$,

68.563

68.5603

$3 > 0$

$68.563 > 68.5603$

So, 68.563 is greater than 68.5603.

Name: _____ Date_____ Score____

PRACTICE

1.02 Comparing and Ordering Decimals

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

1. 2.4 ■ 2.04
2. 12.05 ■ 12.50
3. 0.849 ■ 0.0851
4. 0.0128 ■ 0.128
5. 28.003 ■ 28.03
6. 15.6243 ■ 15.6234
7. 6.23 ■ 6.32
8. 0.92 ■ 0.095
9. 12.1 ■ 12.10
10. 1.4601 ■ 1.460
11. 0.831 ■ 0.0835
12. 12.0905 ■ 12.10
13. 0.02 ■ 0.020
14. 39.21 ■ 39.021
15. 21.967 ■ 2.1968
16. 19.08 ■ 19.079
17. 39.020 ■ 39.0200
18. 56.7 ■ 5.67

Order each set of decimals from least to greatest.

19. 67.39, 68.004, 67.039, 67.04
20. 1.25,1.52, 1.02, 1.50

Name: _____ Date_____ Score____

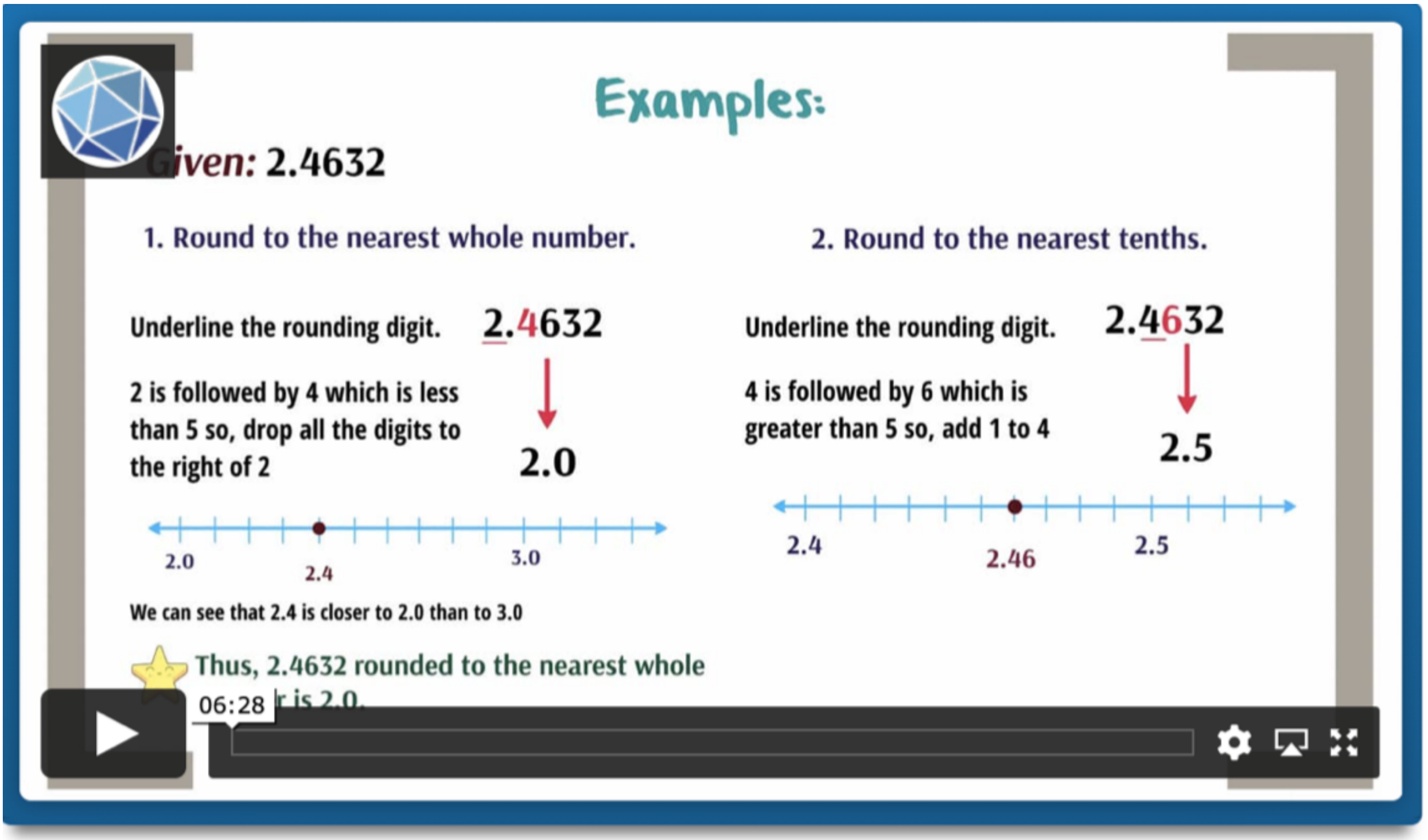
PRACTICE

1.02 Comparing and Ordering Decimals

Answers

1. >
2. <
3. >
4. <
5. <
6. >
7. <
8. >
9. =
10. >
11. >
12. <
13. =
14. >
15. >
16. >
17. =
18. >
19. 67.039, 67.04, 67.39, 68.004
20. 1.02, 1.25, 1.50, 1.52

LESSON 1.03 ROUNDING DECIMALS



- How to round decimals.

Name: _____ Date_____ Score____

STUDY GUIDE AND REVIEW
1.03 Rounding Decimals

To round a decimal, first underline the digit to be rounded. Then look at the digit to the right of the place being rounded.

- If the digit is 4 or less, the underlined digit remains the same.
- If the digit is 5 or greater, add 1 to the underlined digit.

EXAMPLE 1

Round 6.58 to the nearest tenth.

Underline the digit to be rounded.	Look at the digit to the right of the underlined digit.	Since the digit to the right is 8, add one to the underlined digit.
6.5̲8	6.5**8**	6.6

To the nearest tenth, 6.58 rounds to 6.6.

Name: _____ Date_____ Score____

PRACTICE
1.03 Rounding Decimals

Round each decimal to the indicated place-value position.

1. 54.38; ones

2. $87.01; tens

3. 441.031; ones

4. 20.2093; hundredths

5. 16.01; tens

6. 0.2859; hundredths

7. $10.65; ones

8. 0.01426; thousandths

9. 0.830528; ten-thousandths

10. 0.0523413; ten-thousandths

11. 2.671; tenths

12. 12.0905; tenths

13. 7.892; tenths

14. 5.5252; ones

15. 0.58; tenths

16. 145.15455; thounsandths

17. 3.0188; thousandths

18. 4.8255; thousandths

19. 143.09354; ten-thousandths

20. 137.892; hundreths

Name: _____ **Date**_____ **Score**____

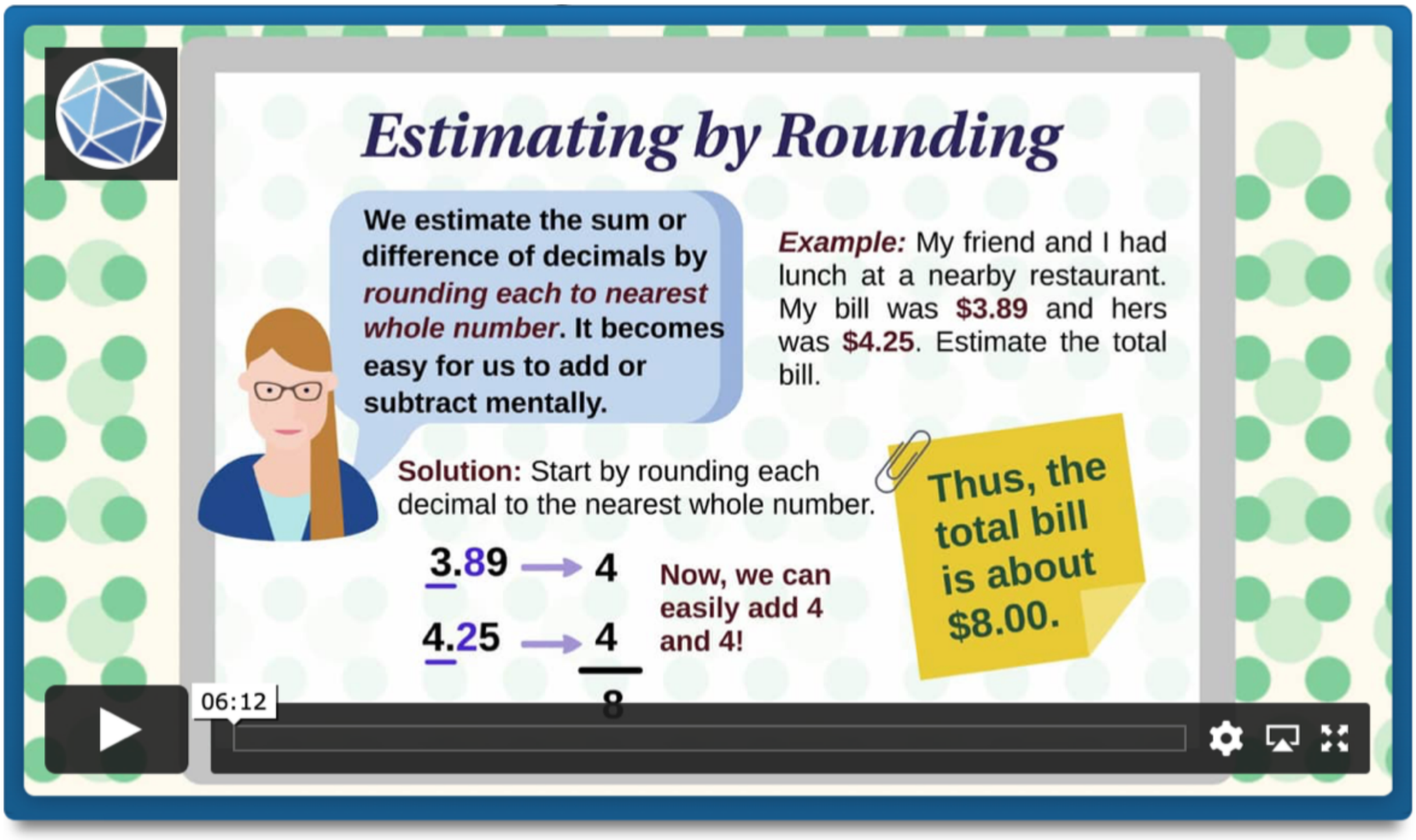
PRACTICE

1.03 Rounding Decimals

Answers

1. 54
2. $90
3. 441
4. 20.21
5. 20
6. 0.29
7. $11
8. 0.014
9. 0.8305
10. 0.0523
11. 2.7
12. 12.1
13. 7.9
14. 6
15. 0.6
16. 145.155
17. 3.019
18. 4.826
19. 143.0935
20. 137.89

LESSON 1.04 ESTIMATING SUMS AND DIFFERENCES



- How to estimate sums and differences of decimals.

Name: _____ Date_____ Score____

STUDY GUIDE AND REVIEW

1.04 Estimating Sums and Differences

Estimation Methods	
Rounding	Estimate by rounding each decimal to the nearest whole number that is easy for you to add or subtract mentally.
Front-End Estimation	Estimate by first adding or subtracting the front digits. Then add or subtract the next digits.
Clustering	Estimate by rounding a group of close numbers to the same number.

EXAMPLE 1

Estimate $14.07 + 43.22$ using front-end estimation.

Add the front digits.	Add the next digits.	
$\mathbf{1}4.07$	$1\mathbf{4}.07$	
$+\ \mathbf{4}3.22$	$+\ 4\mathbf{3}.22$	
5	57.00	An estimate for $14.07 + 43.22$ is 57

Name: _____ Date_____ Score____

PRACTICE

1.04 Estimating Sums and Differences

Estimate using rounding.

1. $2.32 + 2.52$

2. $18.93 + 27.45$

3. $\$13.23 - \$2.87$

4. $87.146 - 24.953$

5. $\$46.83 + \$18.60$

6. $43.058 - 15.726$

Estimate using front-end estimation.

7. $51.62 + 6.58$

8. $4.57360 - 0.58256$

9. $\$233.10 - 23.62$

10. $820.1 + 3.2$

11. $652.355 - 52.736$

12. $\$102.34 + \$23.00 + \$32.67$

Name: _____ Date_____ Score____

PRACTICE

1.04 Estimating Sums and Differences

Cont...

Estimate using clustering.

13. $59.62 + 60.4 + 60 + 61$

14. $8.2 + 7.8 + 7.2 + 7.99$

15. $15.044 + 14.765 + 14.689$

16. $\$4.79 + \$5.29 + 4.99$

17. $89.04 + 87.55 + 90.101 + 91$

18. $\$1.44 + \$0.86 + \$1.00 + \$0.7$

Name: _____ **Date**_____ **Score**____

PRACTICE

1.04 Estimating Sums and Differences

Answers

1. $2 + 3 = 5$

2. $20 + 30 = 50$

3. $\$13 - \$3 = \$10$

4. $90 - 20 = 70$

5. $\$50 + \$20 = \$70$

6. $40 - 20 = 20$

7. $50 + 7 = 57.00$

8. $4 - 0 = 4.0000$

9. $230 - 20 = \$210.00$

10. $820 + 3 = 823.0$

11. $650 - 50 = 600$

12. $\$100 + \$20 + \$30 = \$150$

13. $60 + 60 + 60 + 60 = 240$

14. $8 + 8 + 8 + 8 = 32$

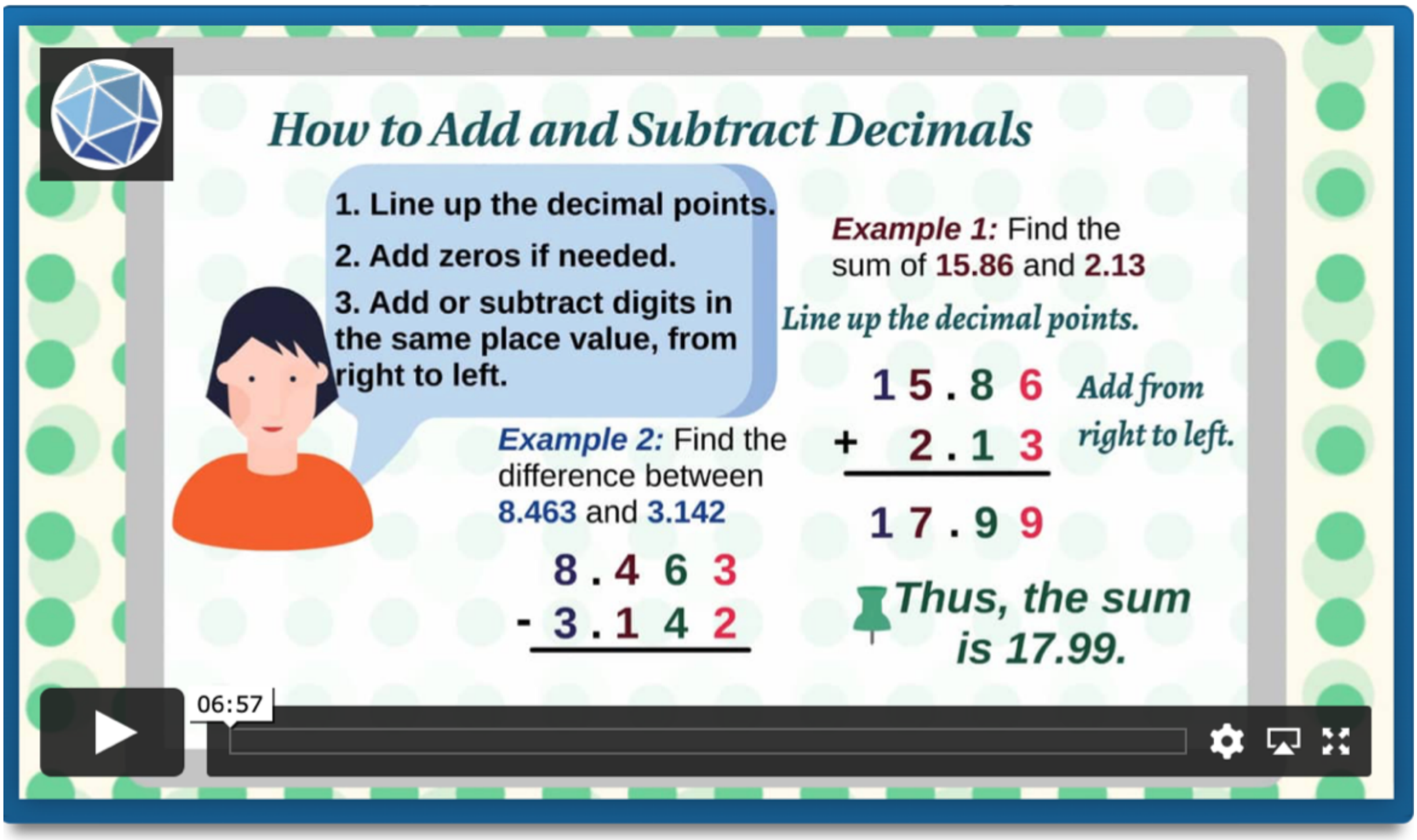
15. $15 + 15 + 15 = 45$

16. $\$5 + \$5 + \$5 = \$15$

17. $90 + 90 + 90 + 90 = 360$

18. $\$1 + \$1 + \$1 + \$1 = \$4$

LESSON 1.05 *ADDING AND SUBTRACTING DECIMALS*



- How to add and subtract decimals.

Name: _____ Date_____ Score____

STUDY GUIDE AND REVIEW
1.05 Adding and Subtracting Decimals

To add or subtract decimals, line up the decimal points then add or subtract digits in the same place-value position. Estimate first so you know if your answer is reasonable.

EXAMPLE 1

Find the sum of $61.32 + 8.26$.

First, estimate the sum using front-end estimation.

$61.32 + 8.26 \rightarrow 61 + 8 = 69$

$$\begin{array}{r} 61.32 \\ +\ 8.26 \\ \hline 69.58 \end{array}$$

Since the estimate is close, the answer is reasonable.

EXAMPLE 2

Find $2.65 - 0.2$.

First, estimate the difference using front-end estimation.

$2.65 - 0.2 \rightarrow 2 - 0 = 2$

$$\begin{array}{r} 2.65 \\ -\ 0.2 \\ \hline 2.45 \end{array}$$

Since the estimate is close, the answer is reasonable.

Name: _____ **Date**_____ **Score**____

PRACTICE
1.05 Adding and Subtracting Decimals

Add or subtract.

1. $\begin{array}{r} 0.581 \\ +\ 11 \\ \hline \end{array}$

2. $\begin{array}{r} 16.79 \\ -\ 0.51 \\ \hline \end{array}$

3. $\begin{array}{r} 4.78 \\ +\ 6 \\ \hline \end{array}$

4. $\begin{array}{r} 1.02 \\ -\ 0.38 \\ \hline \end{array}$

5. $\begin{array}{r} 9.6 \\ +\ 5.2 \\ \hline \end{array}$

6. $\begin{array}{r} 20.1 \\ +\ 3.2 \\ \hline \end{array}$

7. $\begin{array}{r} 7.8 \\ -\ 4.3 \\ \hline \end{array}$

8. $\begin{array}{r} 0.86 \\ +\ 0.38 \\ \hline \end{array}$

Add or subtract.

9. $8.5 + 0.5$

10. $3.4 + 3.2 - 6$

11. $19.4 - 7.86$

12. $8.3 + 7.9$

13. $0.485 + 9.32$

14. $4 + 8.5 + 2$

15. $5.21 + 4 + 0.2$

16. $362 - 145.9$

17. $8.3 + 5.41 + 3.2$

18. Evaluate $x + y$ if $x = 2.057$ and $y = 16.3$.

19. Evaluate $b - a$ if $a = 113.04$ and $b = 241.931$.

Find the value of each expression.

20. $16.9 - 2^2$

21. $7 + 2.3 - 5.8$

22. $3.4 \times 2 - 6$

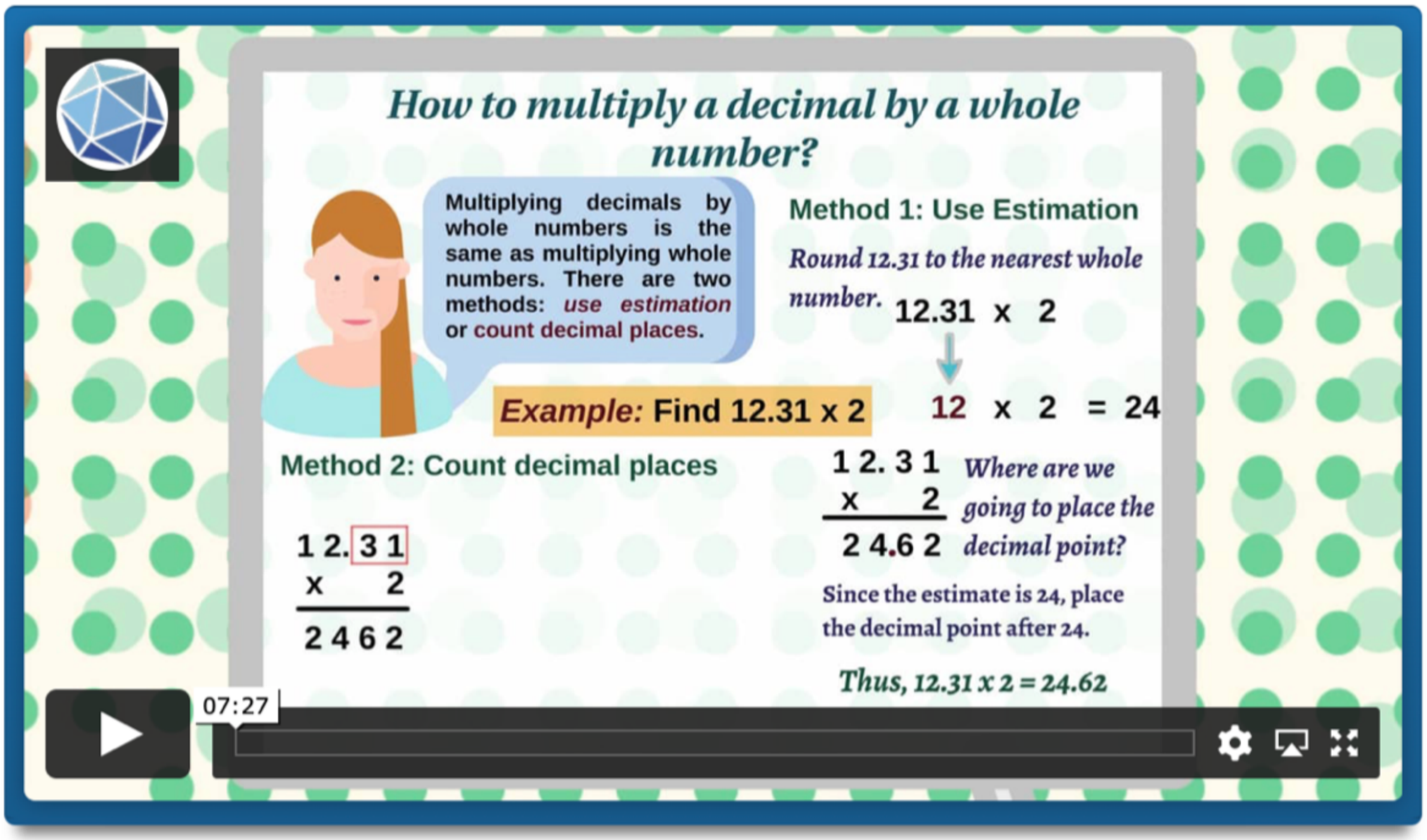
Name: _____ Date_____ Score____

PRACTICE
1.05 Adding and Subtracting Decimals

Answer

1. 11.581
2. 16.28
3. 10.78
4. 0.64
5. 14.8
6. 23.3
7. 3.5
8. 1.24
9. 9.0
10. 0.6
11. 11.54
12. 16.2
13. 9.805
14. 14.5
15. 9.41
16. 216.1
17. 16.91
18. 18.357
19. 128.891
20. 12.9
21. 3.5
22. 0.8

LESSON 1.06 MULTIPLYING DECIMALS BY WHOLE NUMBERS



- How to estimate and find the product of decimals and whole numbers.

Name: _____ **Date**_____ **Score**____

STUDY GUIDE AND REVIEW
1.06 Multiplying Decimals by Whole Numbers

When you multiply a decimal by a whole number, you multiply the numbers as if you were multiplying all whole numbers. Then you use estimation or you count the number of decimals places to decide where to place the decimal point. If there are not enough decimal places in the product, annex zeros to the left.

EXAMPLE 1

Find 6.25×5.

Method 1 Use estimation.

Round 6.25 to 6.

$6.25 \times 5 \rightarrow 6 \times 5$ or 30

$$\begin{array}{r} {\scriptstyle 1\ 2} \\ 6.25 \\ \times\ \ 5 \\ \hline 31.25 \end{array}$$

Since the estimate is 30 place the decimal point after 31.

Method 2 Count decimal places.

$$\begin{array}{r} 6.25 \\ \times\ \ 5 \\ \hline 31.25 \end{array}$$

There are two places to the right of the decimal point.

Count the same number of decimal places from right to left.

Name: _____ **Date**_____ **Score**____

PRACTICE
1.06 Multiplying Decimals by Whole Numbers

Add or subtract.

1. $\begin{array}{r} 1.5 \\ \times\ 3 \\ \hline \end{array}$

2. $\begin{array}{r} 3.47 \\ \times\ 5 \\ \hline \end{array}$

3. $\begin{array}{r} 6.3 \\ \times\ 9 \\ \hline \end{array}$

4. $\begin{array}{r} 0.9 \\ \times\ 6 \\ \hline \end{array}$

5. $\begin{array}{r} 2.08 \\ \times\ 6 \\ \hline \end{array}$

6. $\begin{array}{r} 0.02 \\ \times\ 3 \\ \hline \end{array}$

7. $\begin{array}{r} 0.45 \\ \times\ 5 \\ \hline \end{array}$

8. $\begin{array}{r} 9.14 \\ \times\ 2 \\ \hline \end{array}$

9. $\begin{array}{r} 9.12 \\ \times\ 4 \\ \hline \end{array}$

10. $\begin{array}{r} 3.12 \\ \times\ 8 \\ \hline \end{array}$

11. $\begin{array}{r} 0.82 \\ \times\ 9 \\ \hline \end{array}$

12. $\begin{array}{r} 27.3 \\ \times\ 8 \\ \hline \end{array}$

13. 1.006×4

14. 13×2.5

15. Evaluate $231a$ if $a = 3.6$.

16. Evaluate $42.3t$ if $t = 110$.

Write each number in standard form.

17. 2.6×10^5

18. 5×10^6

19. 3.15×10^4

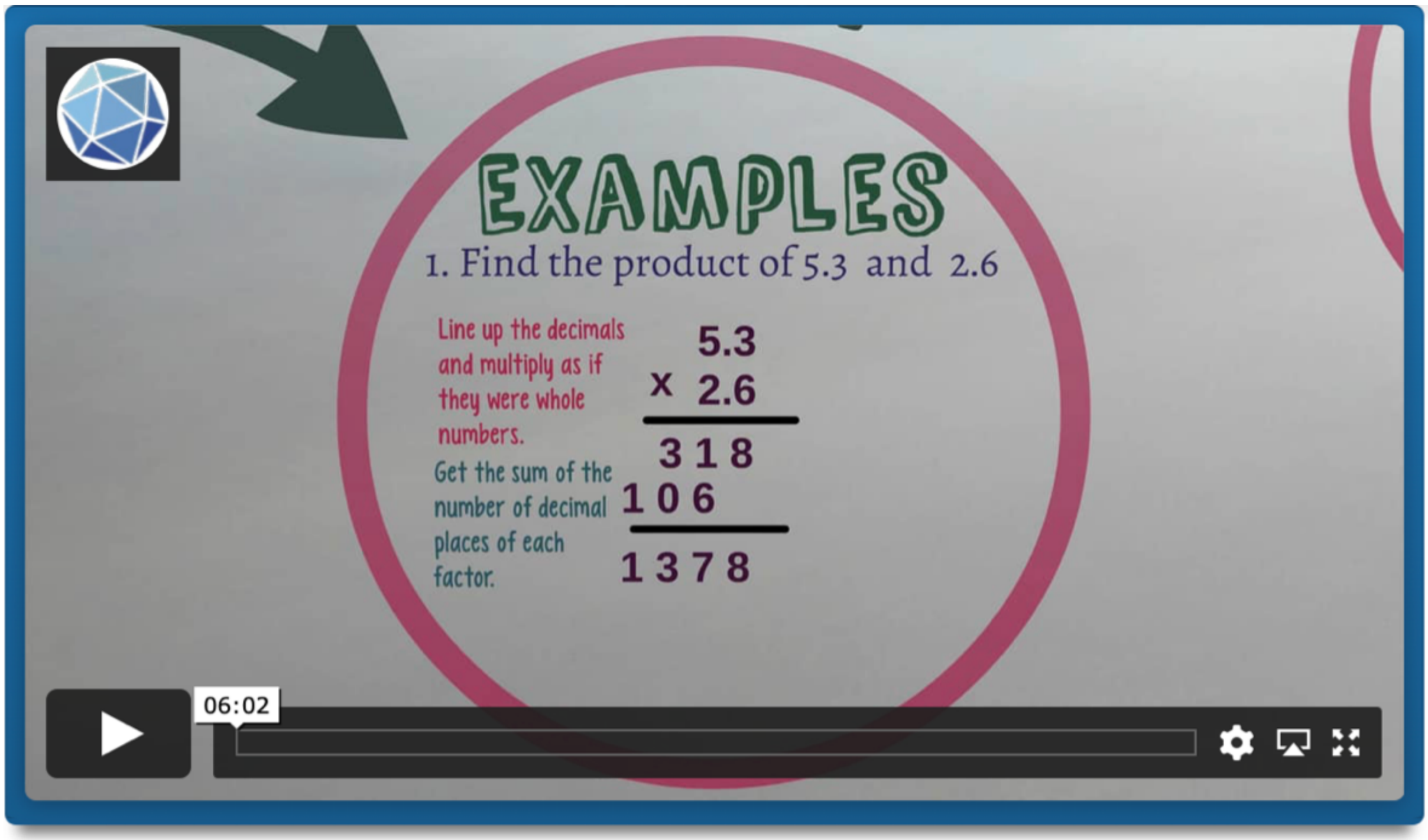
Name: _____ Date_____ Score____

PRACTICE
1.06 Multiplying Decimals by Whole Numbers

Answers

1. 4.5
2. 17.35
3. 56.7
4. 5.4
5. 12.48
6. 0.06
7. 2.25
8. 18.28
9. 36.48
10. 24.96
11. 7.38
12. 218.4
13. 4.024
14. 32.5
15. 831.6
16. 4,653
17. 260,000
18. 5,000,000
19. 31,500

LESSON 1.07 MUTIPLYING DECIMALS



- How to multiply decimals by decimals.

Name: _____ Date_____ Score____

STUDY GUIDE AND REVIEW
1.07 Multiplying Decimals

When you multiply a decimal by a decimal, multiply the numbers as if you were multiplying all whole numbers. To decide where to place the decimal point, find the sum of the number of decimal places in each factor. The product has the same number of decimal places.

EXAMPLE 1

Find 5.2×6.13.

Estimate: 5×6 or 30

$$\begin{array}{rl} 5.2 & \leftarrow \text{one decimal place} \\ \times\ 6.13 & \leftarrow \text{two decimal places} \\ \hline 156 & \\ 52 & \\ 312 & \\ \hline 31.876 & \leftarrow \text{three decimal places} \end{array}$$

The product is 31.876. Compared to the estimate, the product is reasonable.

Name: _____ Date_____ Score____

PRACTICE
1.07 Multiplying Decimals

Multiply.

1. 0.3×0.5

2. 2.5×6.7

3. 2.3×1.21

4. 6.5×0.04

5. 5.02×1.07

6. 0.93×6.8

7. 3.007×6.1

8. 2.6×5.46

9. 3.5×24.09

10. 11.04×6.18

11. 1.2×2.1

12. 0.4×8.3

13. 0.6×0.91

14. 8.54×3.27

15. 0.003×2.9

16. 7.1×0.004

17. 2.52×0.15

18. 16.25×1.3

19. 0.025×17.1

20. 14.83×16.7

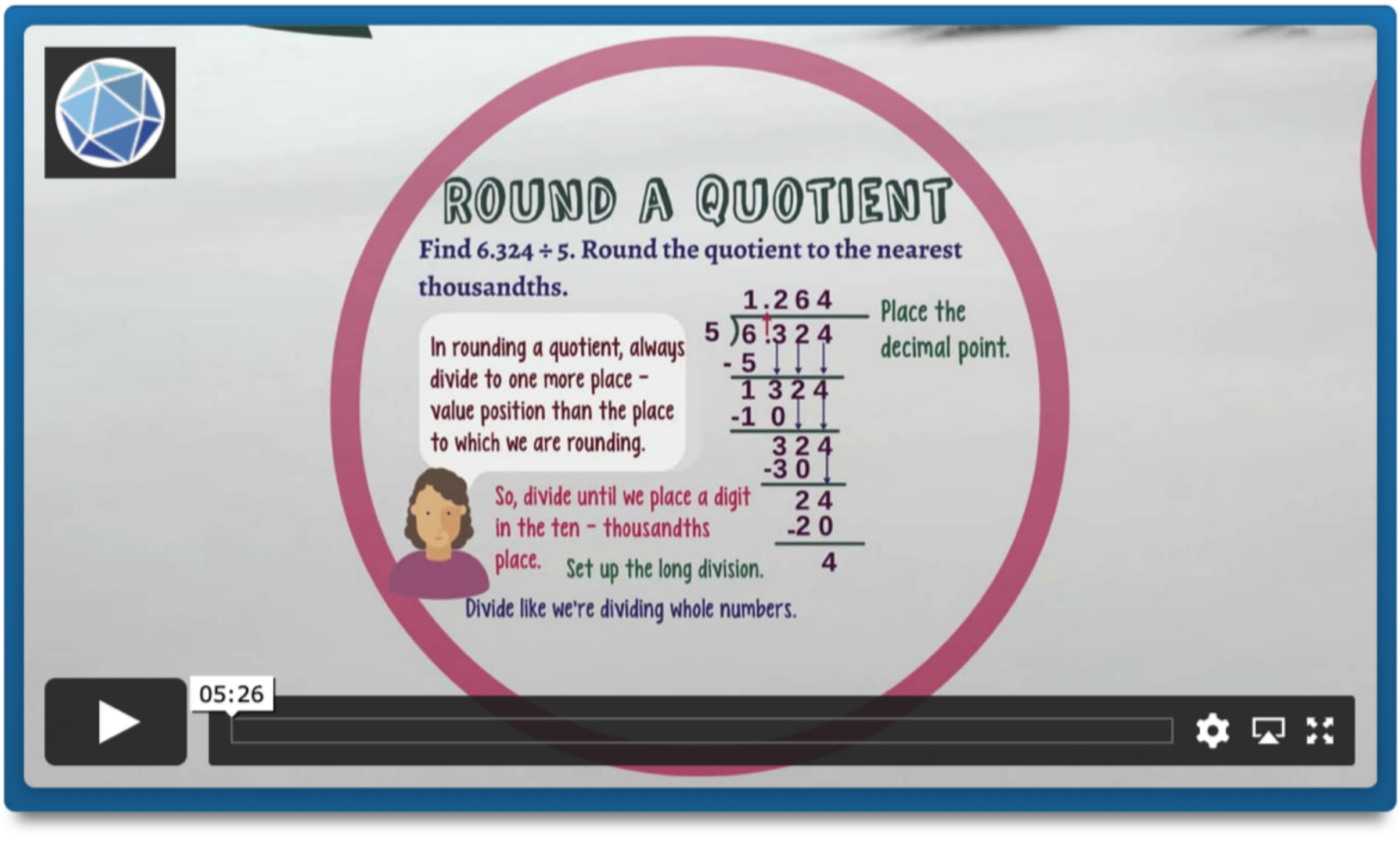
Name: _____ Date_____ Score____

PRACTICE
1.07 Multiplying Decimals

Answers

1. 0.15
2. 16.75
3. 2.783
4. 0.26
5. 5.3714
6. 6.324
7. 18.3427
8. 14.196
9. 84.315
10. 68.2272
11. 2.52
12. 3.32
13. 0.546
14. 27.9258
15. 0.0087
16. 0.0284
17. 0.378
18. 21.125
19. 0.4275
20. 247.661

LESSON 1.08 DIVIDING DECIMALS BY WHOLE NUMBERS



- How to divide decimals by whole numbers.

Name: _____ **Date**_____ **Score**____

STUDY GUIDE AND REVIEW
1.08 Dividing Decimals by Whole Numbers

When you divide a decimal by a whole number, place the decimal point in the quotient above the decimal point in the dividend. Then divide as you do with whole numbers.

EXAMPLE 1

Find $8.73 \div 9$.

Estimate $9 \div 9 = 1$.

$$
\begin{array}{r}
0.97 \\
9\overline{)8.73} \\
-0 \\
\hline
87 \\
-81 \\
\hline
63 \\
-63 \\
\hline
0
\end{array}
$$

Place the decimal point directly above the decimal point in the quotient.

Divide as with whole numbers.

$8.73 \div 9 = 0.97$ Compared to the estimate, the quotient is reasonable.

Name: _____ Date_____ Score____

PRACTICE

1.08 Dividing Decimals by Whole Numbers

Divide. Round to the nearest tenth if necessary.

1. $3\overline{)9.6}$

2. $2\overline{)16.08}$

3. $11\overline{)132.22}$

4. $79.2 \div 9$

5. $217.14 \div 21$

6. $8\overline{)20.72}$

7. $15\overline{)57.48}$

8. $34\overline{)317.594}$

9. $42.48 \div 18$

10. $5\overline{)5.15}$

11. $7\overline{)24.64}$

12. $16\overline{)142.4}$

13. $47.4 \div 15$

14. $5\overline{)34.65}$

15. $10\overline{)72.6}$

16. $25\overline{)264.5}$

17. $122.32 \div 11$

18. $323.316 \div 24$

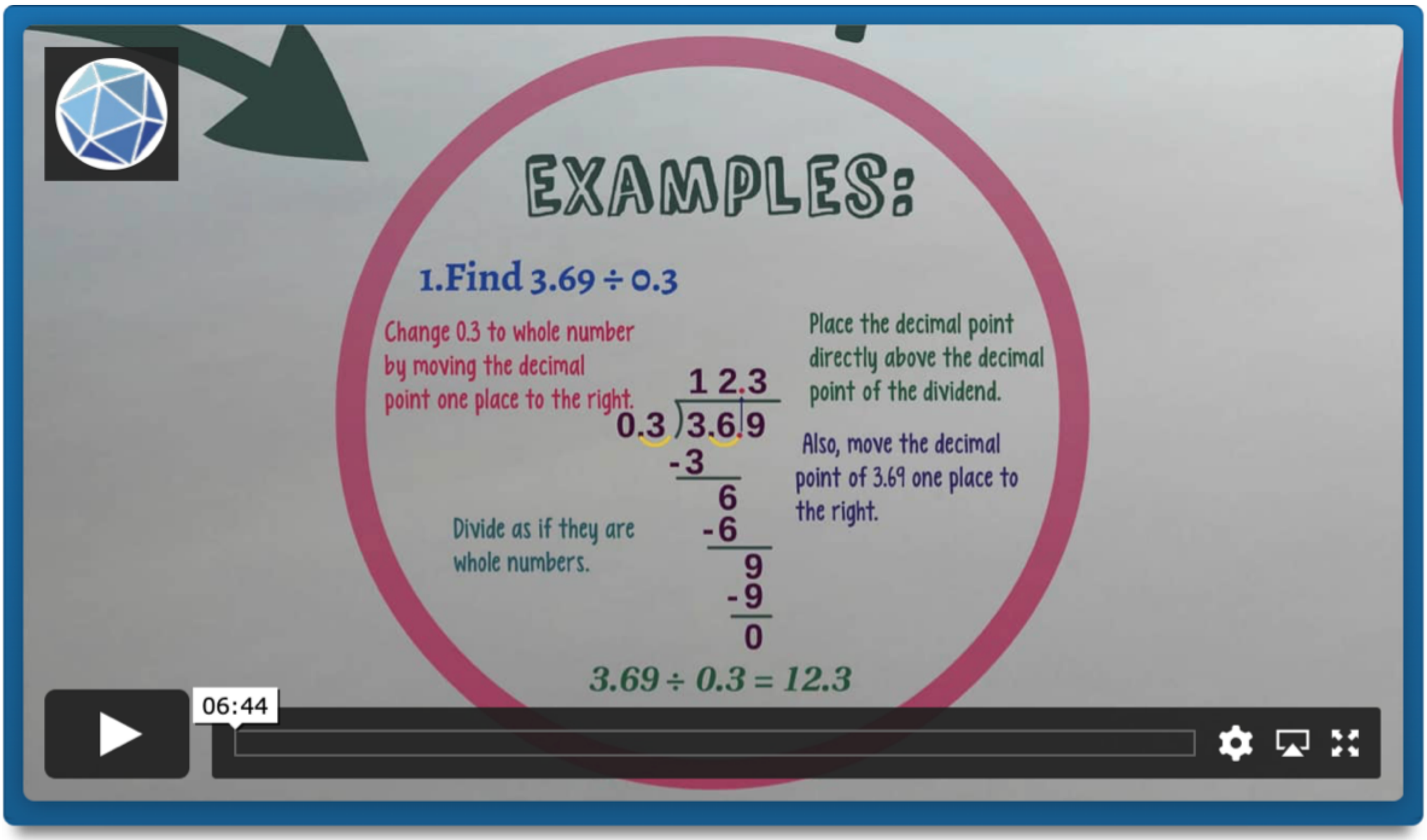
Name: _____ Date_____ Score____

PRACTICE
1.08 Dividing Decimals by Whole Numbers

Answers

1. 3.2
2. 8.0
3. 12.0
4. 8.8
5. 10.3
6. 2.6
7. 3.8
8. 9.3
9. 2.4
10. 1.0
11. 3.5
12. 8.9
13. 3.2
14. 6.9
15. 7.3
16. 10.6
17. 11.1
18. 13.5

LESSON 1.09 DIVIDING DECIMALS



- How to divide decimals by decimals

Name: _____ **Date**_____ **Score**____

STUDY GUIDE AND REVIEW
1.09 Dividing Decimals

When you divide a decimal by a decimal, multiply both the divisor and the dividend by the same power of ten. Then divide as with whole numbers.

Example 1

Find $10.14 \div 5.2$.

Estimate: $10 \div 5 = 2$

Multiply by 10 to make a whole number.

$$5.2\overline{)10.14} \longrightarrow 52\overline{)101.40}$$

Multiply by the same number, 10.

Place the decimal point.

Divide as with whole numbers.

$$\begin{array}{r} 1.95 \\ 52\overline{)101.40} \\ -\,52 \\ \hline 494 \\ -468 \\ \hline 260 \\ -\,260 \\ \hline 0 \end{array}$$

Annex a zero to continue.

10.14 divided by 5.2 is 1.95.

Compare to the estimate.

Check: $1.95 \times 5.2 = 10.14$✓

Name: _____ Date_____ Score____

PRACTICE
1.09 Dividing Decimals

Divide. Round to the nearest hundredth if necessary.

1. $0.2\overline{)4.86}$

2. $1.2\overline{)14.4}$

3. $1.32\overline{)3.96}$

4. $0.105 \div 0.5$

5. $3.825 \div 2.5$

6. $0.8\overline{)0.9944}$

7. $0.75\overline{)13.59}$

8. $4.02\overline{)16.1604}$

9. $246.3293 \div 13.3$

10. $0.7\overline{)2.52}$

11. $3.8\overline{)17.1}$

12. $34.9\overline{)628.2}$

13. $1.296 \div 0.16$

14. $0.5\overline{)8.253}$

15. $0.32\overline{)1.50048}$

16. $1.8\overline{)4.4208}$

17. $160.3639 \div 25.1$

18. $106.288 \div 6.5$

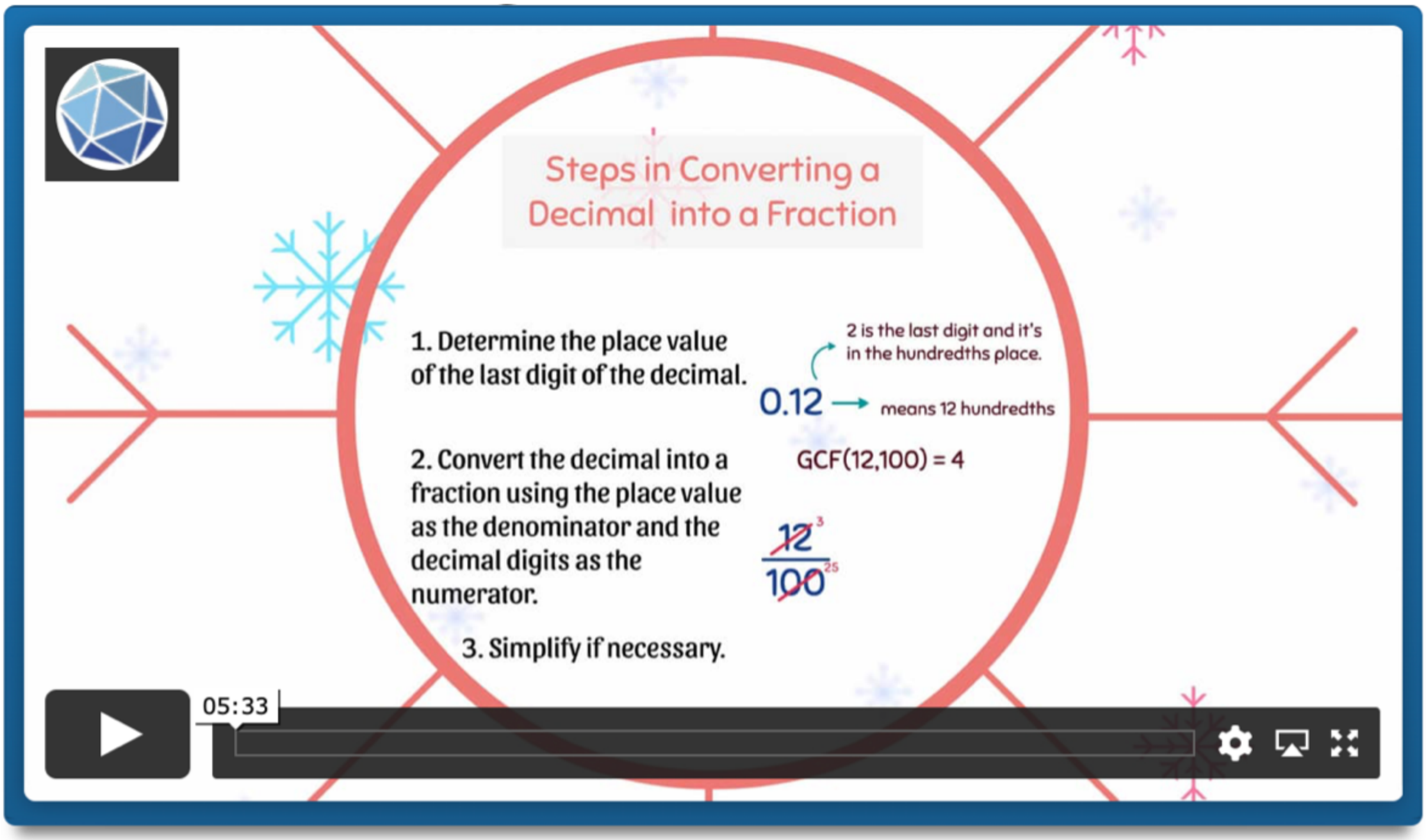
Name: _____ Date_____ Score____

PRACTICE
1.09 Dividing Decimals

Answers

1. 24.3
2. 12
3. 3
4. 0.21
5. 1.53
6. ≈ 1.24
7. 18.12
8. 4.02
9. ≈ 18.52
10. 3.6
11. 4.5
12. 18
13. 8.1
14. ≈ 16.51
15. ≈ 4.69
16. ≈ 2.46
17. ≈ 6.39
18. ≈ 16.35

LESSON 1.10 WRITING DECIMALS AS FRACTIONS



- How to write decimals as fractions or mixed numbers in simplest form

Name: _____ Date_____ Score____

STUDY GUIDE AND REVIEW
1.10 Writing Decimals as Fractions

Any fraction can be written as a decimal using division. Decimals like 0.5 and 0.516 are called terminating decimals because the digits end. A decimal like $0.\overline{87} = 0.878787\ldots$ is called a repeating decimal because the digits repeat.

EXAMPLE 1

Write $\frac{3}{8}$ as a decimal.

Divide.

$$
\begin{array}{r}
0.375 \\
8\overline{)\,3.000} \\
-24 \\
\hline
60 \\
-56 \\
\hline
40 \\
-40 \\
\hline
0
\end{array}
$$

Therefore, $\frac{3}{8} = 0.375$.

Name: _____ Date_____ Score____

STUDY GUIDE AND REVIEW
1.10 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.

$= \frac{\cancel{5}^{1}}{\cancel{10}^{2}}$ 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 $\frac{7}{20}$.

Name: _____ Date_____ Score____

PRACTICE

1.10 Writing Decimals as Fractions

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

1. 0.6	2. 6.25	3. 9.35
4. 21.5	5. 5.006	6. 2.015
7. 4.95	8. 10.9	9. 4.125
10. 3.56	11. 0.055	12. 3.875
13. 6.48	14. 8.425	15. 0.08
16. 0.075	17. 8.016	18. 7.42
19. 1.29	20. 0.004	21. 9. 74

Name: _____ Date_____ Score____

PRACTICE

1.10 Writing Decimals as Fractions

Answers

1. $\frac{3}{5}$
2. $6\frac{1}{4}$
3. $9\frac{7}{20}$
4. $21\frac{1}{2}$
5. $5\frac{3}{500}$
6. $2\frac{3}{200}$
7. $4\frac{19}{20}$
8. $10\frac{9}{10}$
9. $4\frac{1}{8}$
10. $3\frac{14}{25}$
11. $\frac{11}{200}$
12. $3\frac{7}{8}$
13. $6\frac{12}{25}$
14. $8\frac{17}{40}$
15. $\frac{2}{25}$
16. $\frac{3}{40}$
17. $8\frac{2}{125}$
18. $7\frac{21}{50}$
19. $1\frac{29}{100}$
20. $\frac{1}{250}$
21. $9\frac{37}{50}$

LESSON 1.11 SIMPLIFYING FRACTIONS

- How to express fractions in simplest form.

Name: _____ Date_____ Score____

STUDY GUIDE AND REVIEW
1.11 Simplifying Fractions

Fractions that name the same number are equivalent fractions. To find equivalent fractions, you can multiply or divide the numerator and denominator by the same nonzero number.

EXAMPLE 1

Replace the ■ with a number so that $\frac{1}{2} = \frac{■}{10}$

Since $2 \times 5 = 10$, multiply the numerator and denominator by 5.

$$\frac{1}{2} \overset{\times 5}{=} \frac{■}{10} \qquad \frac{1}{2} \overset{\times 5}{=} \frac{5}{10}$$

When the GCF of the numerator and denominator is 1, the fraction is in simplest form. To write a fraction in simplest form, you can divide the numerator and denominator by the GCF.

Name: _____ **Date**_____ **Score**____

PRACTICE
1.11 Simplifying Fractions

Replace each ■ with a number so that the fractions are equivalent.

1. $\frac{1}{5} = \frac{■}{35}$
2. $\frac{10}{15} = \frac{2}{■}$
3. $\frac{1}{3} = \frac{27}{■}$
4. $\frac{■}{15} = \frac{2}{5}$
5. $\frac{4}{■} = \frac{20}{45}$
6. $\frac{■}{7} = \frac{8}{28}$
7. $\frac{1}{6} = \frac{■}{24}$
8. $\frac{1}{■} = \frac{4}{16}$
9. $\frac{18}{24} = \frac{■}{4}$

Write each fraction in simplest form. If the fraction is already in simplest form, write *simplest form*.

10. $\frac{1}{2}$
11. $\frac{6}{15}$
12. $\frac{27}{81}$
13. $\frac{90}{100}$
14. $\frac{8}{10}$
15. $\frac{15}{60}$
16. $\frac{7}{12}$
17. $\frac{8}{21}$
18. $\frac{20}{60}$
19. $\frac{7}{8}$
20. $\frac{28}{36}$ |
21. $\frac{14}{35}$

Name: _____ Date_____ Score____

PRACTICE
1.11 Simplifying Fractions

Answers

1. 7

2. 3

3. 81

4. 6

5. 9

6. 2

7. 4

8. 4

9. 3

10. simplest form

11. $\frac{2}{5}$

12. $\frac{1}{3}$

13. $\frac{9}{10}$

14. $\frac{4}{5}$

15. $\frac{1}{4}$

16. simplest form

17. simplest form

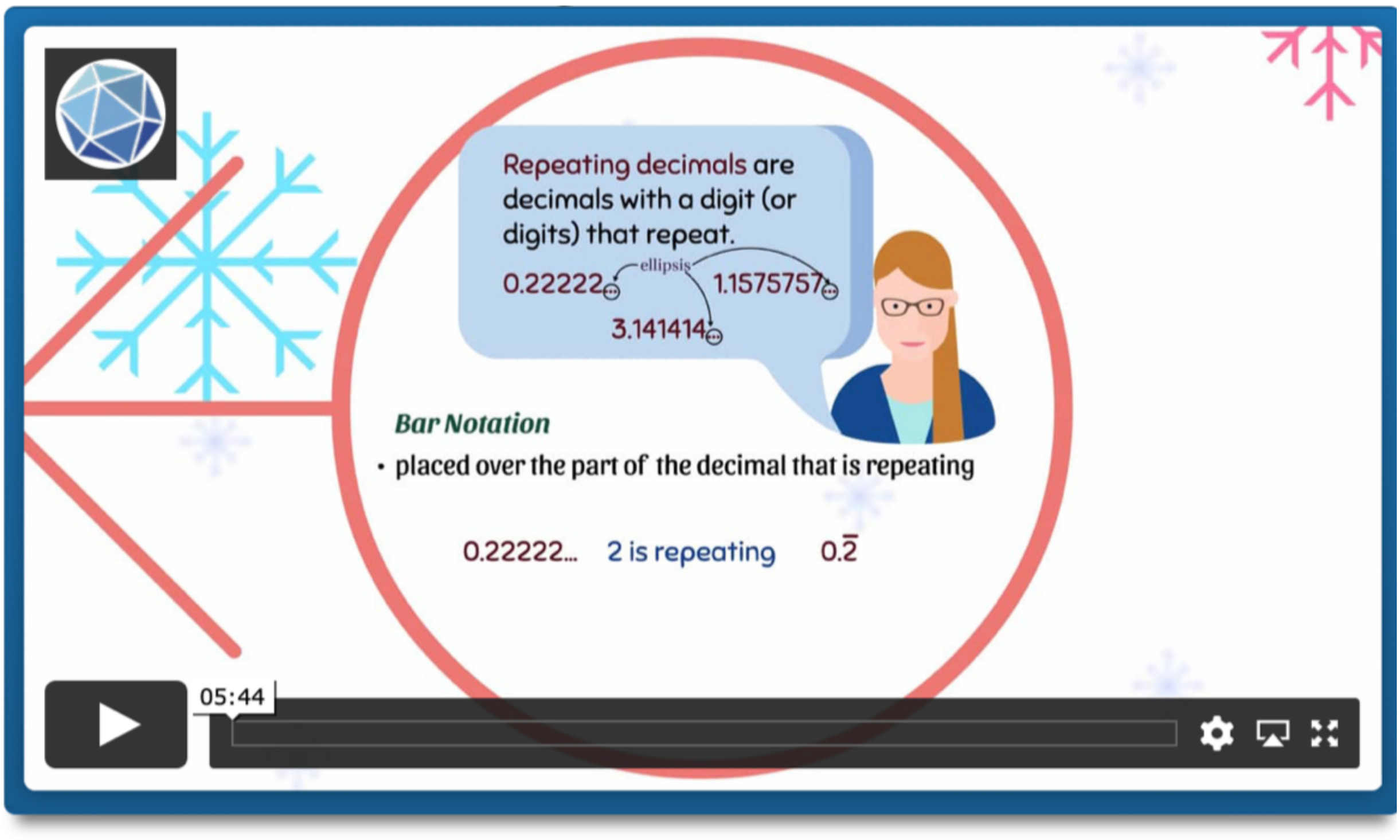
18. $\frac{1}{3}$

19. simplest form

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

21. $\frac{2}{5}$

LESSON 1.12 *CONVERTING FRACTIONS TO DECIMALS*



- How to write fractions as terminating and repeating decimals.

Name: _____ Date_____ Score____

STUDY GUIDE AND REVIEW
1.12 Writing Fractions as Decimals

Any fraction can be written as a decimal using division. Decimals like 0.5 and 0.516 are called terminating decimals because the digits end. A decimal like $0.\overline{87} = 0.878787\ldots$ is called a repeating decimal because the digits repeat.

EXAMPLE 1

Write $\frac{3}{8}$ as a decimal.

Divide.

$$
\begin{array}{r}
0.375 \\
8\overline{)\,3.000} \\
-24 \\
\hline
60 \\
-56 \\
\hline
40 \\
-40 \\
\hline
0
\end{array}
$$

Therefore, $\frac{3}{8} = 0.375$.

EXCEL MATHEMATICS

Name: _____ **Date**_____ **Score**____

PRACTICE
1.12 Writing Fractions as Decimals

Write each fraction or mixed number as a decimal.

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

2. $\frac{1}{2}$

3. $\frac{4}{9}$

4. $\frac{8}{11}$

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

6. $2\frac{11}{18}$

7. $1\frac{5}{9}$

8. $\frac{21}{100}$

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

10. $3\frac{7}{8}$

11. $4\frac{2}{3}$

12. $12\frac{3}{8}$

13. $3\frac{11}{16}$

14. $10\frac{1}{8}$

15. $\frac{3}{4}$

16. $\frac{5}{6}$

17. $9\frac{2}{5}$

18. $6\frac{5}{8}$

19. $10\frac{17}{20}$

20. $6\frac{4}{5}$

21. $2\frac{13}{18}$

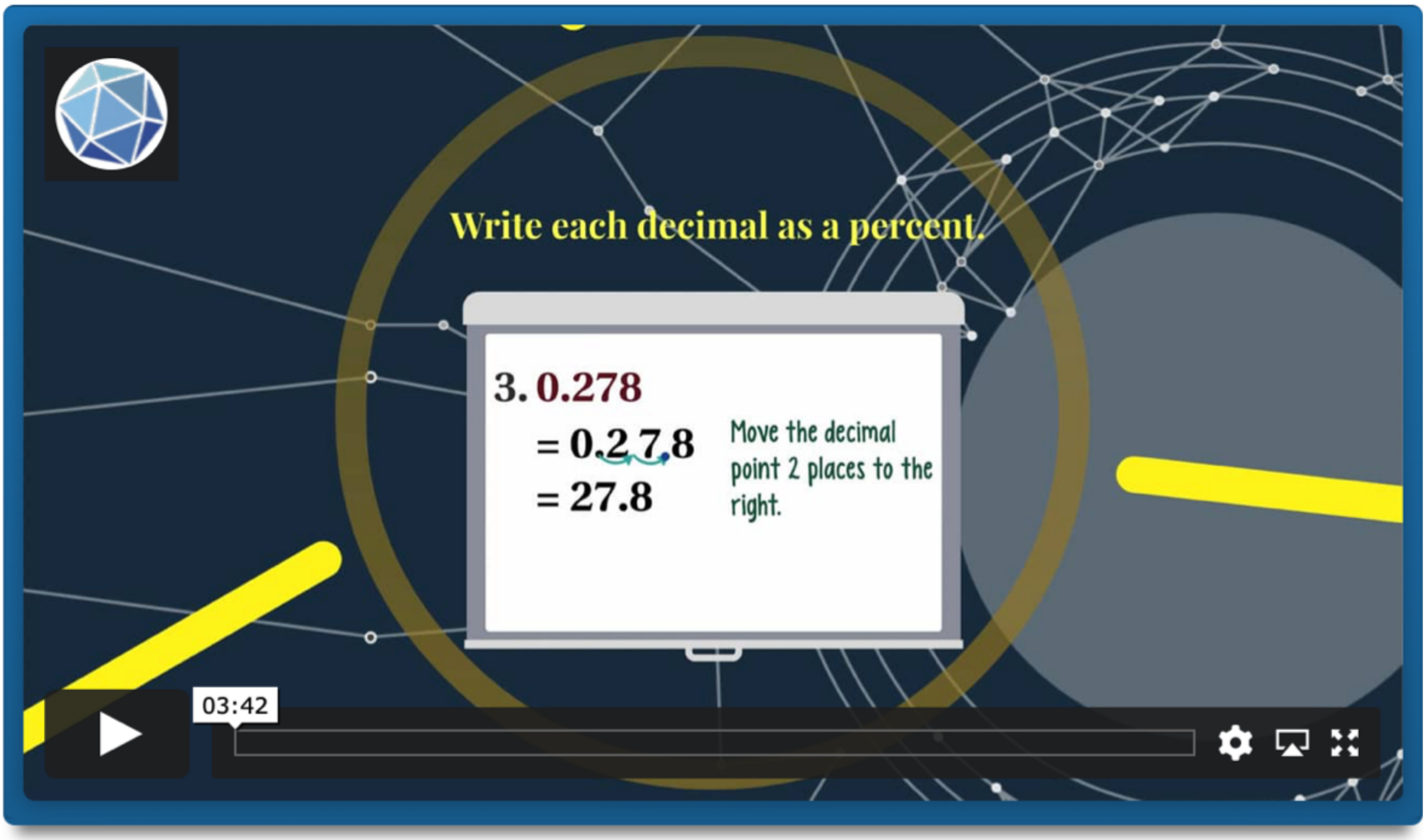
Name: _____ Date_____ Score____

PRACTICE
1.12 Writing Fractions as Decimals

Answers

1. 0.9
2. 0.5
3. $0.\overline{4}$
4. $0.\overline{72}$
5. $5.\overline{3}$
6. $2.6\overline{1}$
7. $1.\overline{5}$
8. 0.21
9. $0.1\overline{6}$
10. 3.875
11. $4.\overline{6}$
12. 12.375
13. 3.6875
14. 10.125
15. 0.75
16. $0.8\overline{3}$
17. 9.4
18. 6.625
19. 10.85
20. 6.8
21. $2.7\overline{2}$

LESSON 1.13 PERCENTS AND DECIMALS



- How to express percents as decimals and vice versa.

Name: _____ Date_____ Score____

STUDY GUIDE AND REVIEW
1.13 Percent and Decimals

To write a percent as a decimal, first rewrite the percent as a fraction with a denominator of 100. Then write the fraction as a decimal.

EXAMPLE 1

Write 23% as a decimal.

$23\% = \frac{23}{100}$ Rewrite the percent as a fraction with a denominator of 100.

$= 0.23$ Write the fraction as a decimal.

EXAMPLE 2

Write 127% as a decimal.

$127\% = \frac{127}{100}$ Rewrite the percent as a fraction with a denominator of 100.

$= 1.27$ Write the fraction as a decimal.

EXAMPLE 3

Write 0.8% as a decimal.

$0.8\% = \frac{0.8}{100}$ Rewrite the percent as a fraction with a denominator of 100.

$0.8\% = \frac{0.8}{\cancel{100}_{10}} \times \frac{\cancel{10}^{1}}{10}$ Multiply by $\frac{10}{10}$ to eliminate the decimal in the numerator.

$= 0.008$ Write the fraction as a decimal.

To write a decimal as a percent, first write the decimal as a fraction with a denominator of 100. Then write the fraction as a percent.

Name: _____ Date_____ Score____

PRACTICE
1.13 Percent and Decimals

Write each percent as a decimal.

1. 5%

2. 37%

3. 29%

4. 48%

5. 0.1%

6. 0.2%

7. 123%

8. 135%

9. 8%

10. 12%

11. 54%

12. 79%

13. 0.6%

14. 0.5%

15. 102%

16. 310%

Write each decimal as a percent.

17. 0.3

18. 0.19

19. 0.7

20. 0.74

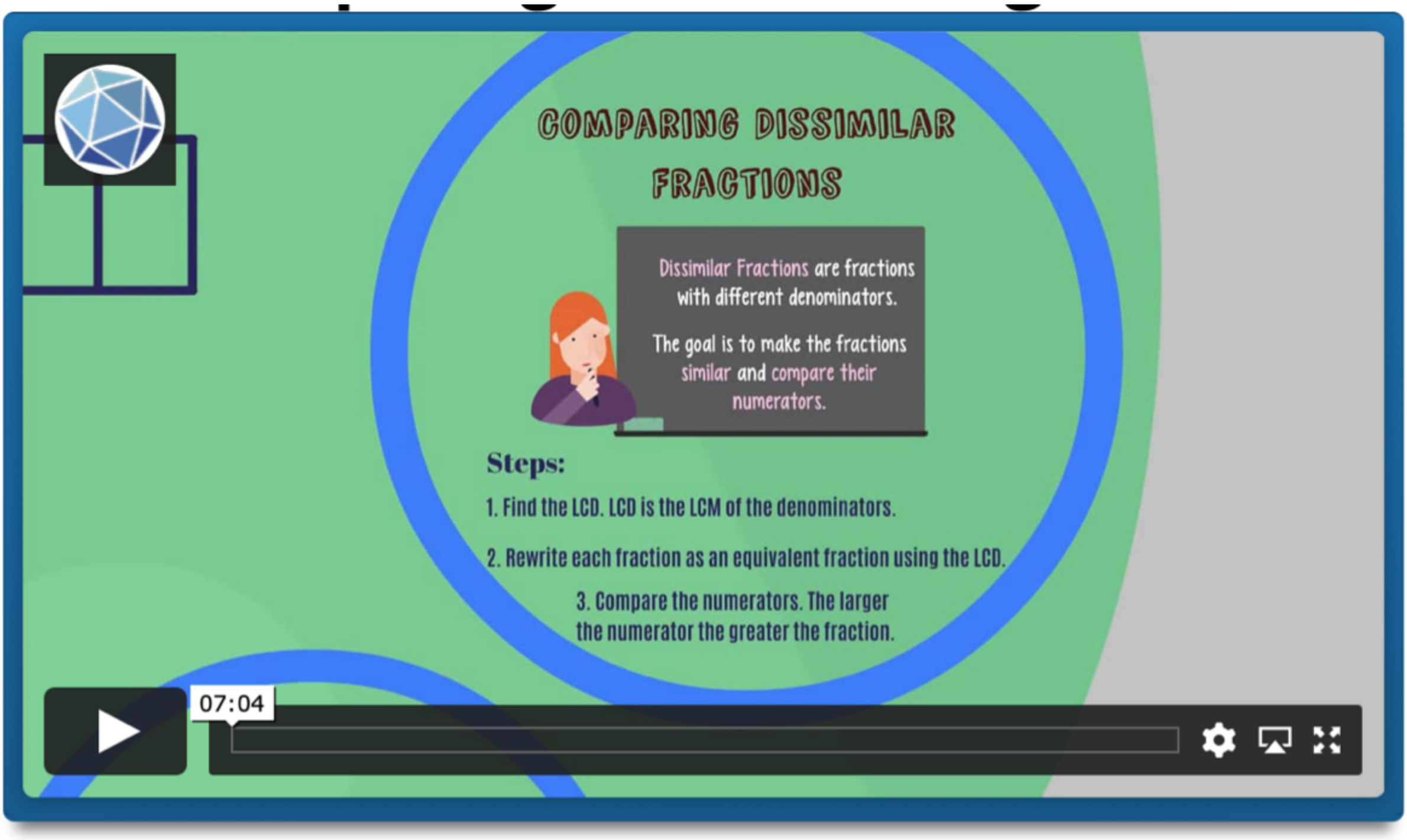
Name: _____ Date_____ Score____

PRACTICE
1.13 Percent and Decimals

Answers

1. 0.05
2. 0.37
3. 0.29
4. 0.48
5. 0.001
6. 0.002
7. 1.23
8. 1.35
9. 0.08
10. 0.12
11. 0.54
12. 0.79
13. 0.006
14. 0.005
15. 1.02
16. 3.1
17. 30%
18. 19%
19. 70%
20. 74%

LESSON 1.14 COMPARING AND ORDERING FRACTIONS



- How to compare and order fractions.

Name: _____ Date_____ Score____

STUDY GUIDE AND REVIEW
1.14 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 ■ with $<$, $>$, or $=$ to make $\frac{1}{3}$ ■ $\frac{5}{12}$.

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

$\frac{1}{3} = \frac{\blacksquare}{12}$ (multiply by 4), so $\frac{1}{3} = \frac{4}{12}$ $\quad\quad$ $\frac{5}{12} = \frac{5}{12}$

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

Name: _____ Date_____ Score____

PRACTICE
1.14 Comparing and Ordering Fractions

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

1. $\frac{2}{3}$ ■ $\frac{3}{4}$
2. $\frac{1}{2}$ ■ $\frac{6}{7}$
3. $\frac{5}{6}$ ■ $\frac{7}{8}$
4. $\frac{6}{7}$ ■ $\frac{4}{5}$
5. $\frac{5}{7}$ ■ $\frac{7}{10}$
6. $\frac{3}{10}$ ■ $\frac{5}{14}$
7. $\frac{1}{6}$ ■ $\frac{2}{12}$
8. $\frac{3}{8}$ ■ $\frac{6}{16}$
9. $\frac{3}{9}$ ■ $\frac{1}{3}$
10. $\frac{5}{8}$ ■ $\frac{5}{12}$
11. $\frac{5}{12}$ ■ $\frac{3}{16}$
12. $\frac{2}{15}$ ■ $\frac{1}{6}$
13. $\frac{4}{9}$ ■ $\frac{3}{7}$
14. $\frac{7}{9}$ ■ $\frac{4}{7}$
15. $\frac{5}{8}$ ■ $\frac{7}{12}$
16. $\frac{1}{6}$ ■ $\frac{9}{10}$
17. $\frac{4}{5}$ ■ $\frac{2}{3}$
18. $\frac{3}{4}$ ■ $\frac{2}{9}$
19. $\frac{5}{12}$ ■ $\frac{2}{5}$
20. $\frac{3}{5}$ ■ $\frac{5}{9}$
21. $\frac{9}{10}$ ■ $\frac{11}{12}$

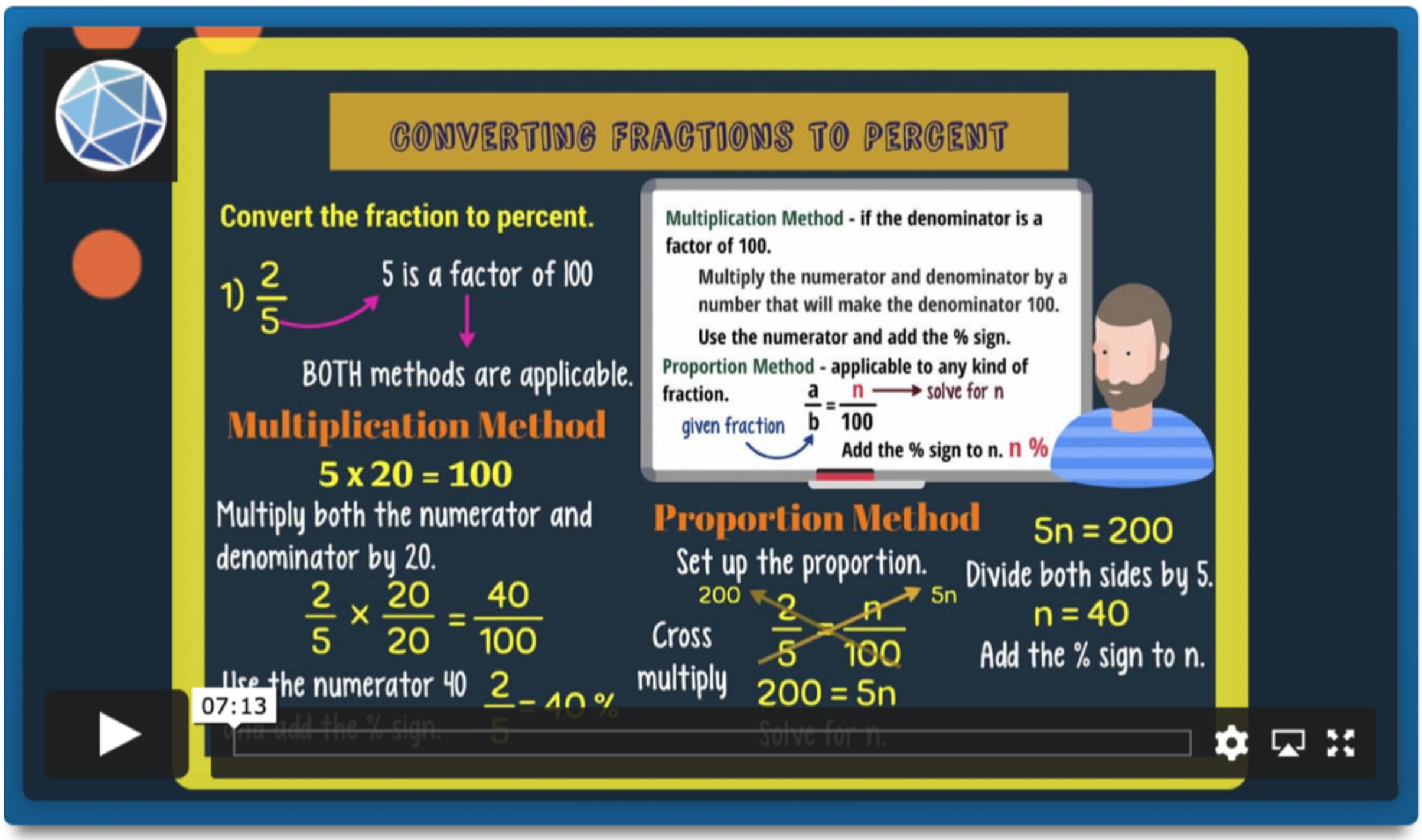
Name: _____ Date_____ Score____

PRACTICE
1.14 Comparing and Ordering Fractions

Answers

1. <
2. <
3. <
4. >
5. >
6. <
7. =
8. =
9. =
10. >
11. >
12. <
13. >
14. >
15. >
16. <
17. >
18. >
19. >
20. >
21. <

LESSON 1.15 FRACTIONS, DECIMALS, AND PERCENTS



- How to write fractions as decimals and percents.

Name: _____ Date_____ Score____

STUDY GUIDE AND REVIEW

1.15 Fractions, Decimals, and Percent

- To write a percent as a decimal, divide by 100 and remove the percent symbol.
- To write a decimal as a percent, multiply 100 and add the percent symbol.
- To express a fraction as a percent, you can use a proportion. Alternatively, you can write the fraction as a decimal, and then express the decimal as a percent.

EXAMPLE 1

Write 56% as a decimal.

$56\% = 5\,6\,\%$ Divide by 100 and remove the percent symbol.

$= 0.56$

EXAMPLE 2

Write 0.17 as a percent.

$0.17 = 0.1\,7\,$ Multiply by 100 and add the percent symbol.

$= 17\%$

EXAMPLE 3

Write $\frac{7}{20}$ as a percent.

Method 1: Use a proportion

$\frac{7}{20} = \frac{x}{100}$	Write the proportion.
$7 \cdot 100 = 20 \cdot x$	Find cross products.
$700 = 20x$	Multiply.
$\frac{700}{20} = \frac{20x}{20}$	Divide each side by 20.
$35 = x$	Simplify.

So, $\frac{7}{20}$ can be written as 35%.

Method 2: Write as a decimal.

$\frac{7}{20} = 0.3\,5\,$	Convert to a decimal by dividing.
$= 35\%$	Multiply by 100 and add the percent symbol.

EXCEL MATHEMATICS

Name: _____ **Date**_____ **Score**____

PRACTICE
1.15 Fractions, Decimals, and Percent

Write each percent as a decimal.

1. 50%
2. 41%
3. 17.5%
4. 13%
5. 79%
6. 33.4%
7. 26%
8. 9.1%
9. 91.5%

Write each decimal as a percent.

10. 0.6
11. 0.38
12. 0.572
13. 0.05
14. 0.81
15. 0.737
16. 0.17
17. 0.453
18. 0.061

Write each fraction as a percent.

19. $\frac{9}{20}$
20. $\frac{33}{40}$
21. $\frac{2}{25}$
22. $\frac{3}{80}$
23. $\frac{5}{16}$
24. $\frac{13}{16}$

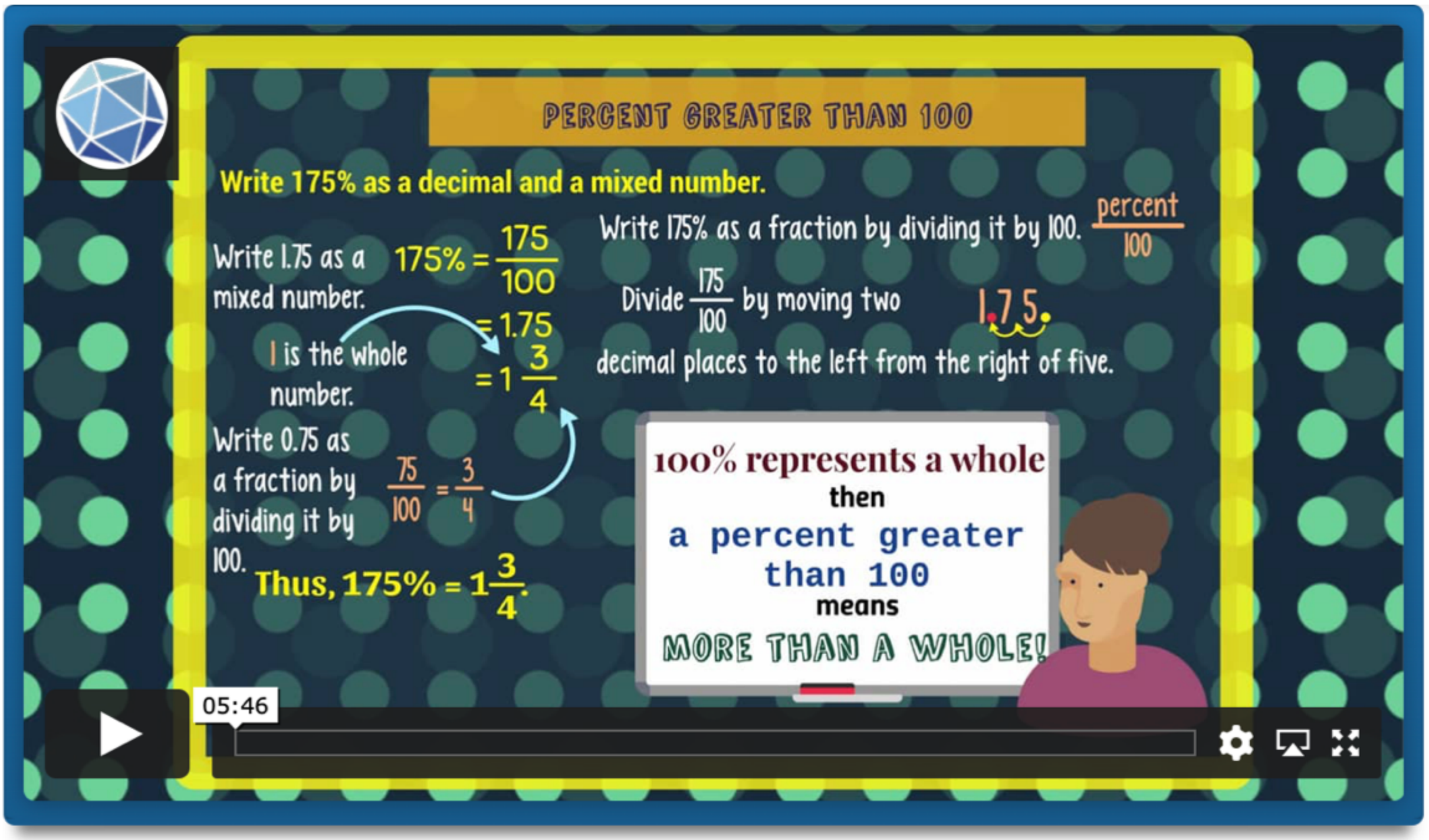
Name: _____ Date_____ Score____

PRACTICE
1.15 Fractions, Decimals, and Percent

Answers

1. 0.5
2. 0.41
3. 0.175
4. 0.13
5. 0.79
6. 0.334
7. 0.26
8. 0.091
9. 0.915
10. 60%
11. 38%
12. 57.2%
13. 5%
14. 81%
15. 73.7%
16. 17%
17. 45.3%
18. 6.1%
19. 45%
20. 82.5%
21. 8%
22. 3.75%
23. 31.25%
24. 81.25%

LESSON 1.16 PERCENT GREATER THAN 100 AND LESS THAN 1



- How to write percents greater than 100% and percents less than 1% as fractions and as decimals, and vice versa.

Name: _____ **Date**_____ **Score**____

STUDY GUIDE AND REVIEW

1.16 Percent Greater Than 100% and Less Than 1 %

A percent greater than 100% equals a number greater than 1. A percent less than 1% equals a number less than 0.01 or $\frac{1}{100}$.

EXAMPLE 1

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

a. 280%

$280\% = \frac{280}{100}$ Definition of percent

$= 2.8$ or $2\frac{4}{5}$

b. 0.12%

$0.12\% = \frac{0.12}{100}$ Definition of percent

$= 0.0012$ or $\frac{3}{2{,}500}$

EXAMPLE 2

Write each decimal as a percent.

c. 2.17

$2.17 =$ Multiply by 100.

$2\overset{\frown}{1}\overset{\frown}{7}.$

$= 217\%$

d. 0.0034

$0.0034 =$ Multiply by 100.

$0\overset{\frown}{0}\overset{\frown}{0}.3\ 4$

$= 34\%$

Name: _____ Date_____ Score____

PRACTICE
1.16 Percent Greater Than 100% and Less Than 1 %

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

1. 900%	2. 245%	3. 0.08%
4. 150%	5. 120%	6. 0.12%
7. 675%	8. 0.2%	9. 0.35%

Write each decimal as a percent.

10. 3.9	11. 6.75	12. 0.0046
13. 81	14. 2.81	15. 0.0069
16. 25	17. 0.001	18. 0.0083

Write each number as a percent.

19. $2\frac{1}{2}$	20. $5\frac{1}{4}$	21. $6\frac{1}{2}$

Name: _____ Date_____ Score____

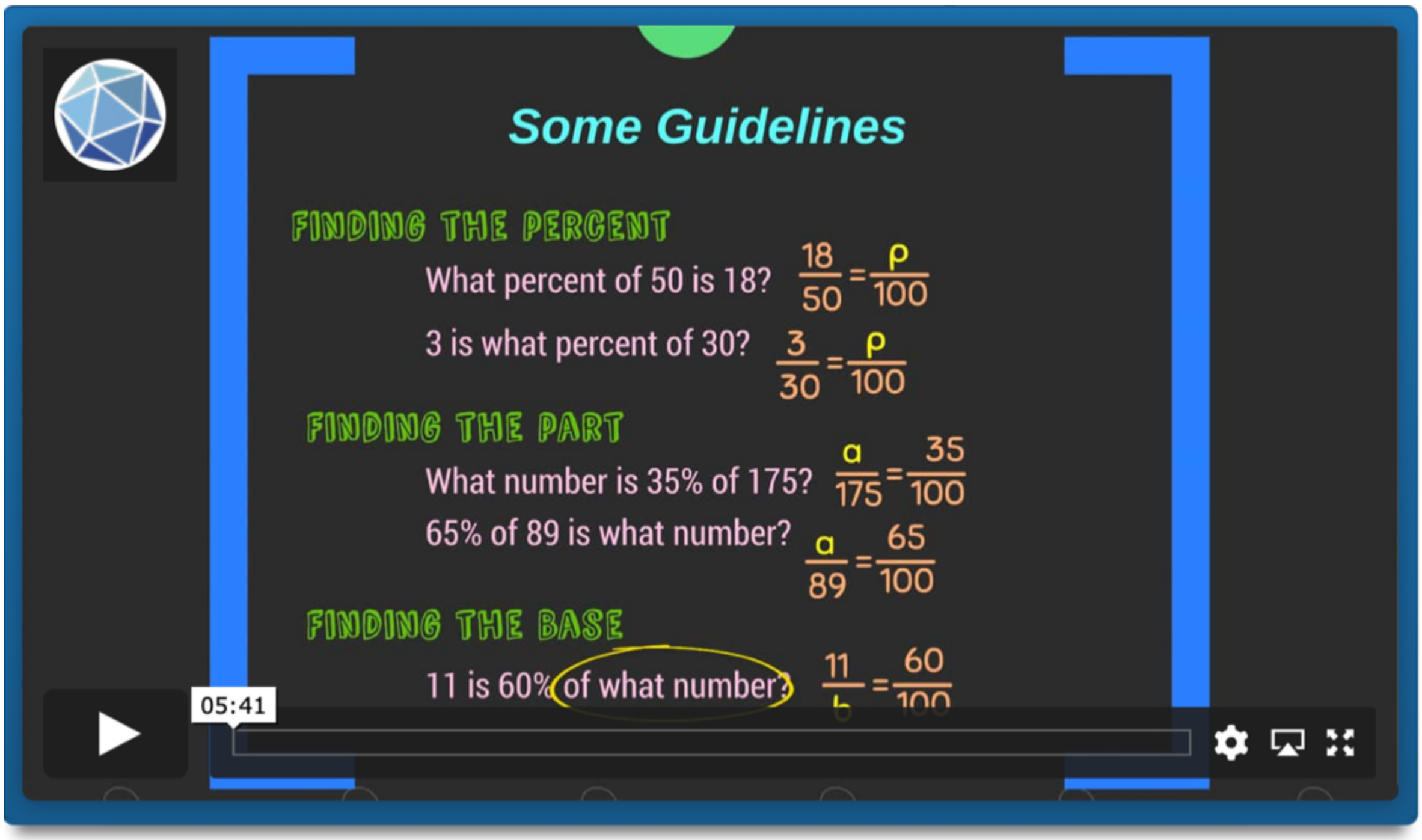
PRACTICE

1.16 Percent Greater Than 100% and Less Than 1 %

Answers

1. 9
2. $2.45; 2\frac{9}{20}$
3. $0.0008; \frac{1}{1,250}$
4. $1.5; 1\frac{1}{2}$
5. $1.2; 1\frac{1}{5}$
6. $0.0012; \frac{3}{2,500}$
7. $6.75; 6\frac{3}{4}$
8. $0.002; \frac{1}{500}$
9. $0.0035; \frac{7}{2,000}$
10. 390%
11. 675%
12. 0.46%
13. 8,100%
14. 281%
15. 0.69%
16. 2,500%
17. 0.1%
18. 0.83%
19. 250%
20. 525%
21. 650%

LESSON 1.17 THE PERCENT PROPORTION



- How to solve problems using the percent proportion.

Name: _____ Date_____ Score____

STUDY GUIDE AND REVIEW
1.17 The Percent Proportion

A percent proportion compares part of a quantity to the whole quantity, called the base, using a percent. In symbols, the percent proportion can be written as $\frac{a}{b} = \frac{p}{100}$, where a is the part, b is the base, and p is the percent.

EXAMPLE 1

What percent of 24 is 18?

18 is the part, and 24 is the base. You need to find the percent p.

$\frac{a}{b} = \frac{p}{100}$	Percent proportion	$1{,}800 = 24p$	Simplify.
$\frac{18}{24} = \frac{p}{100}$	Replace a with 18 and b with 24.	$\frac{1{,}800}{24} = \frac{24p}{24}$	Divide each side by 24.
$18 \cdot 100 = 24 \cdot p$	Find the cross products.	$75 = p$	Simplify.

So, 75% of 24 is 18.

EXAMPLE 2

What number is 60% of 150?

60 is the percent, and 150 is the base. You need to find the part.

$\frac{a}{b} = \frac{p}{100}$	Percent proportion	$100a = 9000$	Simplify.
$\frac{a}{150} = \frac{60}{100}$	Replace b with 150 and p with 60.	$\frac{100a}{100} = \frac{9{,}000}{100}$	Divide each side by 100.
$a \cdot 100 = 150 \cdot 60$	Find the cross products.	$a = 90$	Simplify.

So, 60% of 150 is 90.

Name: _____ Date_____ Score____

PRACTICE
1.17 The Percent Proportion

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

1. 50 is 20% of what number?

2. What number is 70% of 250?

3. What number is 45% of 180?

4. What percent of 90 is 36?

5. What number is 32% of 1,000?

6. 73 is 20% of what number?

7. What percent of 185 is 35?

8. 85% of 190 is what number?

9. What percent of 128 is 24?

10. What is 82% of 230?

11. What percent of 20 is 4?

12. 10 is 5% of what number?

13. 40% of what number is 82?

14. 60 is 25% of what number?

15. What percent of 125 is 5?

16. 57% of 109 is what number?

17. 25 is what percent of 365?

18. 12.5 is 25% of what number?

19. 5.25% of 170 is what number?

20. What percent of 49 is 7?

Name: _____ Date_____ Score____

PRACTICE
1.17 The Percent Proportion

Answers

1. 250
2. 175
3. 81
4. 40%
5. 320
6. 365
7. 18.9%
8. 161.5
9. 18.8%
10. 188.6
11. 20%
12. 200
13. 205
14. 240
15. 4%
16. 62.1
17. 6.8%
18. 50
19. 8.9
20. 14.3%

LESSON 1.18 PERCENT AND FRACTIONS

- How to express percents as fractions and vice versa.

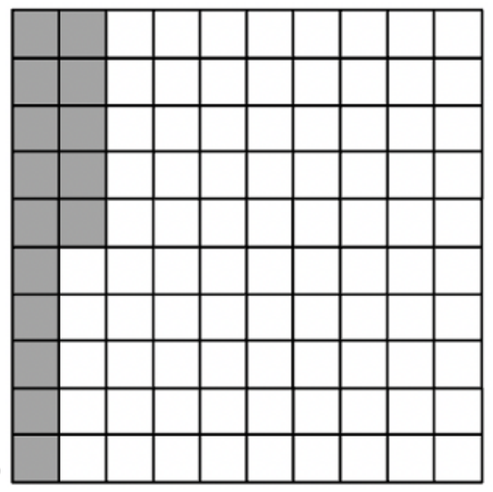
Name: _____ Date_____ Score____

STUDY GUIDE AND REVIEW
1.18 Percent and Fractions

To write a percent as a fraction, write it as a fraction with a denominator of 100. Then simplify.

EXAMPLE 1

Write 15% as a fraction in simplest form.



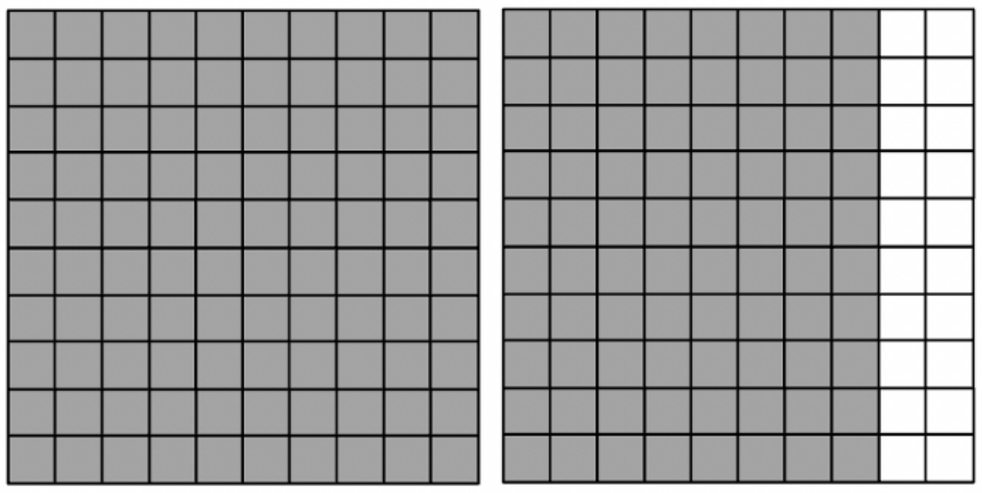
15% means 15 out of 100.

$15\% = \frac{15}{100}$ Write the percent as a fraction with a denominator of 100.

$= \frac{\cancel{15}^{3}}{\cancel{100}_{20}}$ or $\frac{3}{20}$ Simplify. Divide the numerator and denominator by the GCF, 5.

EXAMPLE 2

Write 180% as a fraction in simplest form.



180% means 180 out of 100.

$180\% = \frac{180}{100}$ Write the percent as a fraction with a denominator of 100.

$= \frac{\cancel{180}^{4}}{\cancel{100}_{5}}$ or $1\frac{4}{5}$ Simplify.

You can also write fractions as precents. To write a fraction as percent, write a proportion and solve.

Name: _____ Date_____ Score____

PRACTICE
1.18 Percent and Fractions

Model each percent.

1. 40%
2. 75%
3. 24%
4. 92%
5. 18%
6. 30%
7. 140%
8. 68%
9. 110%
10. 74%
11. 55%
12. 175%
13. 44%
14. 155%
15. 43%

Write each fraction as a percent.

16. $\frac{4}{5}$
17. $\frac{3}{5}$
18. $\frac{3}{20}$
19. $\frac{3}{2}$
20. $\frac{7}{10}$
21. $\frac{5}{4}$

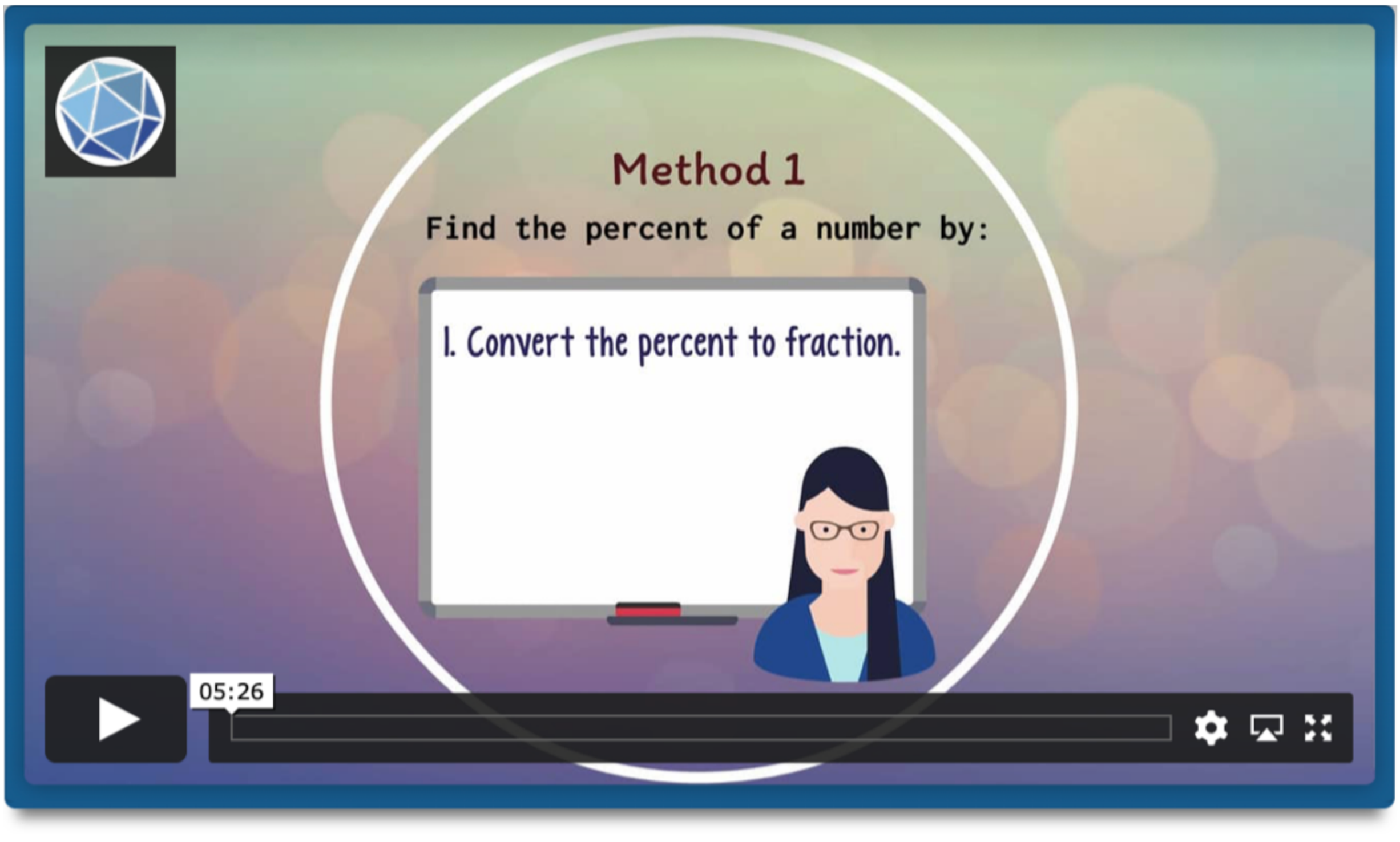
Name: _____ Date_____ Score____

PRACTICE
1.18 Percent and Fractions

Answers

1. $\frac{2}{5}$
2. $\frac{3}{4}$
3. $\frac{6}{25}$
4. $\frac{23}{25}$
5. $\frac{9}{50}$
6. $\frac{3}{10}$
7. $1\frac{2}{5}$
8. $\frac{17}{25}$
9. $1\frac{1}{10}$
10. $\frac{37}{50}$
11. $\frac{11}{20}$
12. $1\frac{3}{4}$
13. $\frac{11}{25}$
14. $1\frac{11}{20}$
15. $\frac{43}{100}$
16. 80%
17. 60%
18. 15%
19. 150%
20. 70%
21. 125%

LESSON 1.19 PERCENT OF A NUMBER



- How to find the percent of a number

Name: _____ Date_____ Score____

STUDY GUIDE AND REVIEW
1.19 Percent of a Number

One way to find the percent of a number is to write the percent as a fraction and then multiply. Another way is to write the percent as a decimal and then multiply.

EXAMPLE 1

Find 70% of 40.

Method 1: Write the percent as a fraction.

$70\% = \frac{70}{100}$ or $\frac{7}{10}$

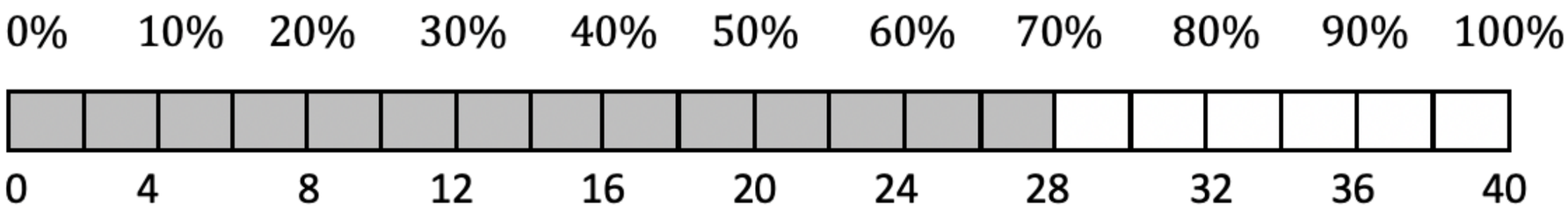
$\frac{7}{10}$ of $40 = \frac{7}{10} \times 40$ or 28

Method 2: Write the percent as a decimal.

$70\% = \frac{70}{100}$ or 0.7

0.7 of $40 = 0.7 \times 40$ or 28

So, 70% of 40 is 28. Use a model to check the answer.



The model confirms that 70% of 40 is 28

Name: _____ Date_____ Score____

PRACTICE
1.19 Percent of a Number

Find the percent of each number.

1.25% of 16

2. 60% of 40

3. 30% of 110

4. 4% of 100

5. 125% of 40

6. 110% of 50

7. 6.5% of 40

8. 50% of 70

9. 75% of 20

10. 50% of 140

11. 75% of 36

12. 8% of 25

13. 125% of 60

14. 0.5% of 14

15. 10% of 30

16. 20% of 90

17. 25% of 80

18. 90% of 120

19. 150% of 22

20. 0.4% of 5

21. 0.1% of 29

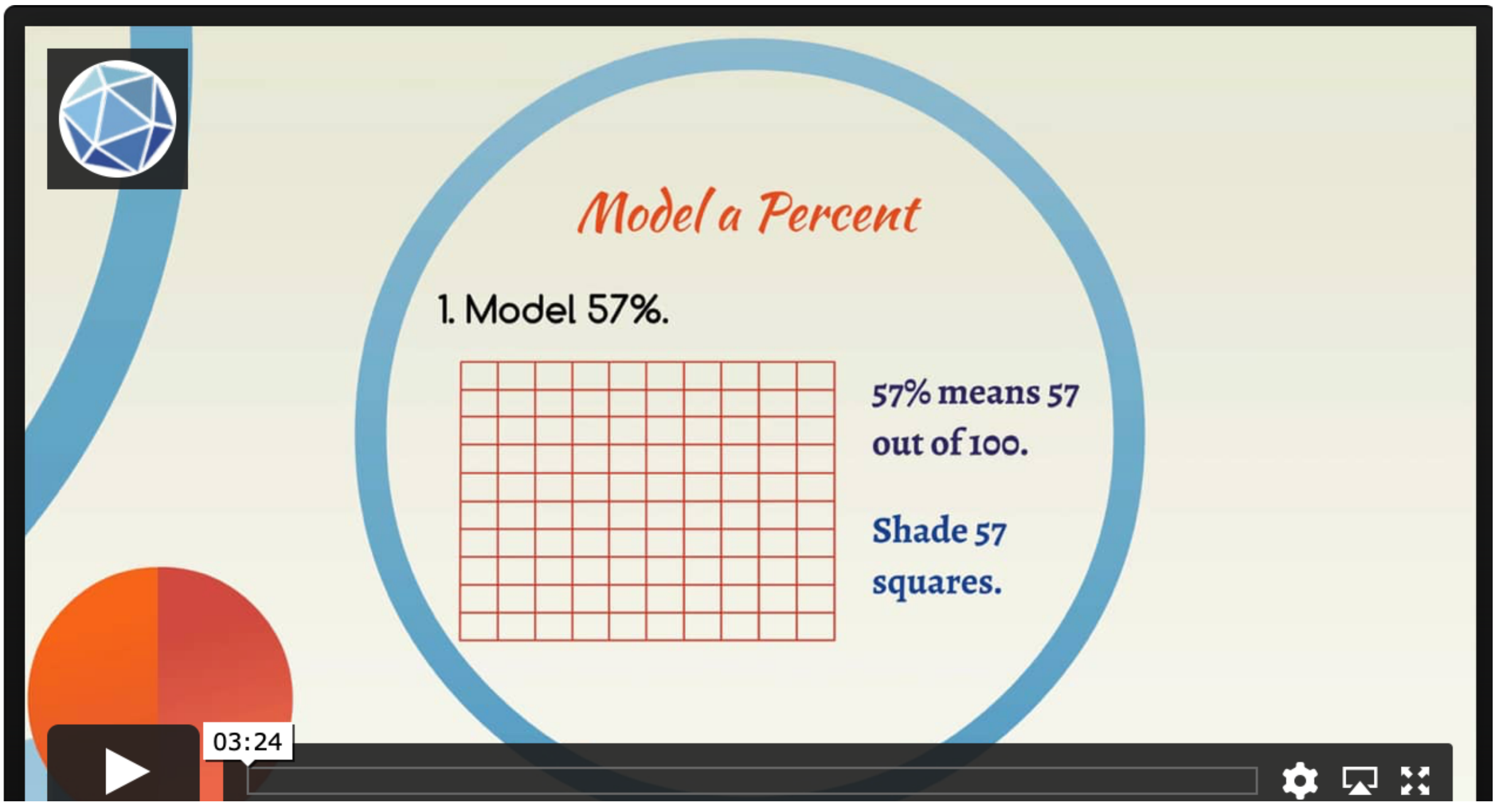
Name: _____ Date_____ Score____

PRACTICE
1.19 Percent of a Number

Answers

1. 4
2. 24
3. 33
4. 4
5. 50
6. 55
7. 2.6
8. 35
9. 15
10. 70
11. 27
12. 2
13. 75
14. 0.07
15. 3
16. 18
17. 20
18. 108
19. 33
20. 0.02
21. 0.029

LESSON 1.20 MODELING PERCENTS



How to solve problems using the percent proportion

Name: _____ Date_____ Score____

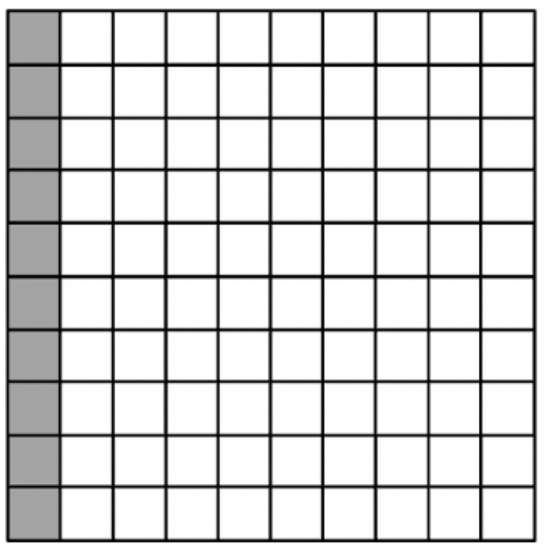
STUDY GUIDE AND REVIEW
1.20 Modeling Percent

Ratios like 41 out of 100, 25 out of 100, or 2 out of 100 can be written as percents. A percent (%) is a ratio that compares a number to 100. Since the word percent means "out of one hundred", you can use a 10×10 grid to model percent.

EXAMPLE 1

Model 10%.

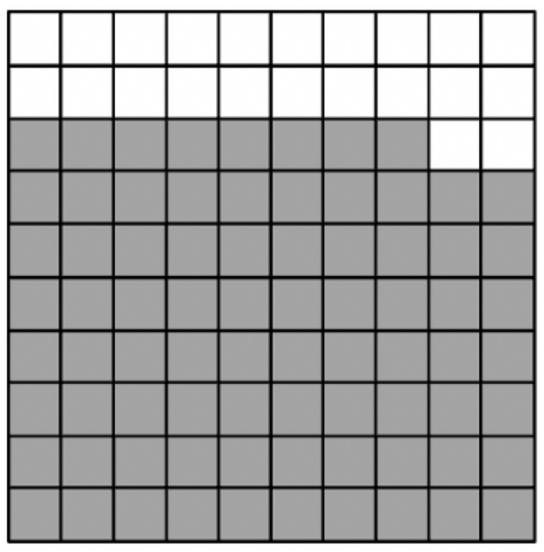
10% means 10 out of 100.
So, shade 10 out of 100 squares.



EXAMPLE 2

Model 78%.

78% means 78 out of 100.
So, shade 78 out of 100 squares.



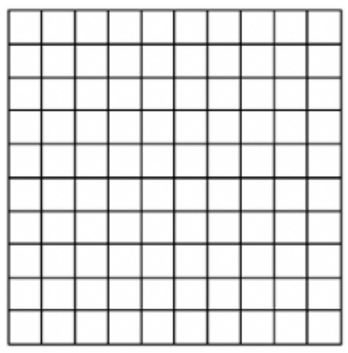
You can use what you know about decimal models and percent to identify the percent of a model that is shaded.

Name: _____ Date_____ Score____

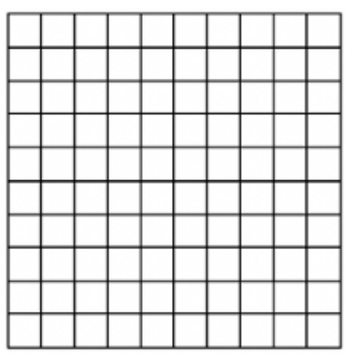
PRACTICE
1.20 Modeling Percent

Model each percent.

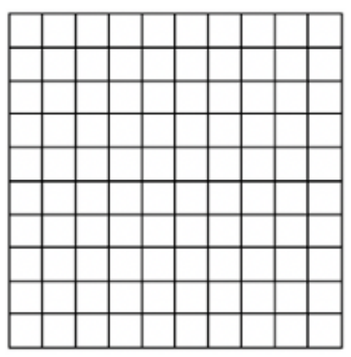
1. 15%



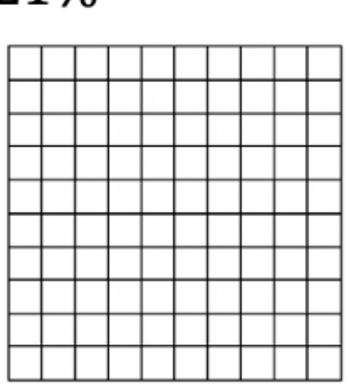
2. 80%



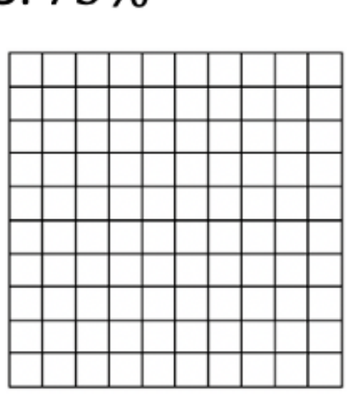
3. 50%



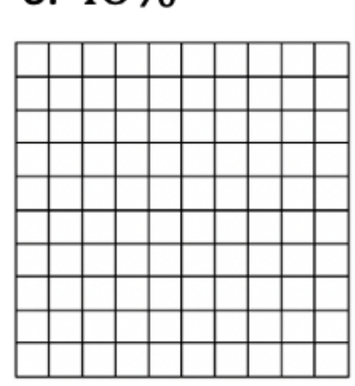
4. 21%



5. 75%

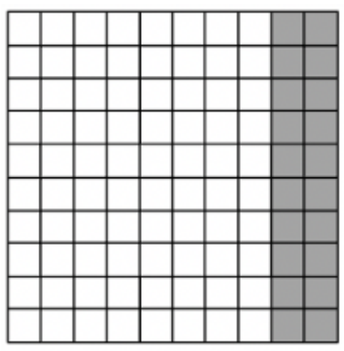


6. 48%

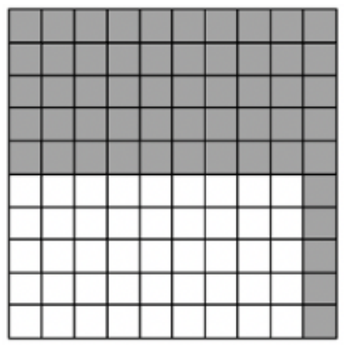


Identify each percent that is modeled.

7.



8.



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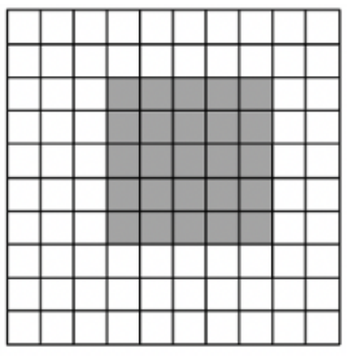

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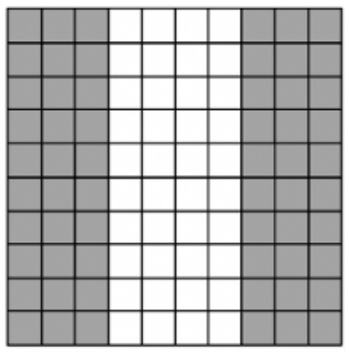

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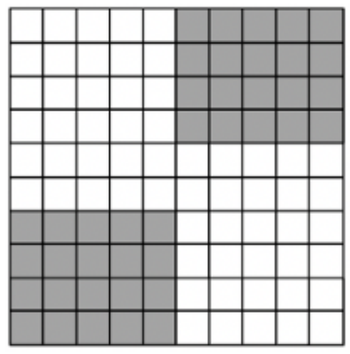
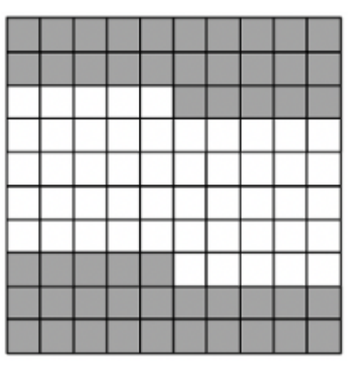
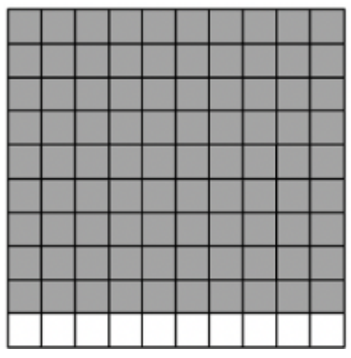


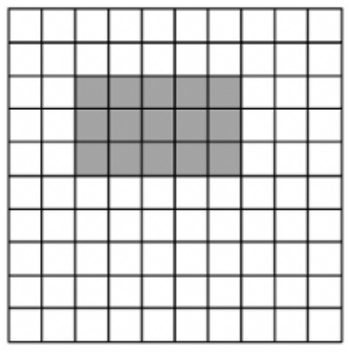
12.



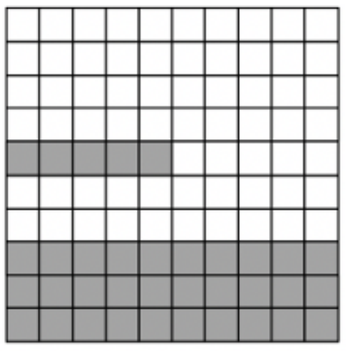
13.



14.



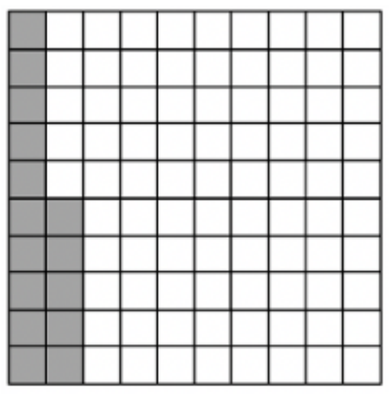
15.

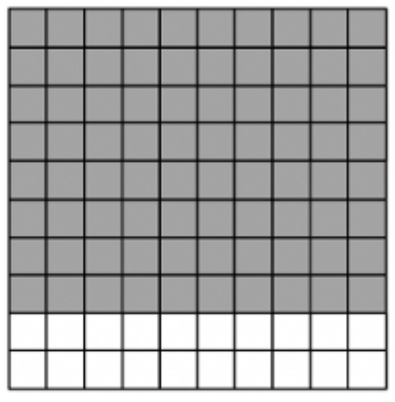


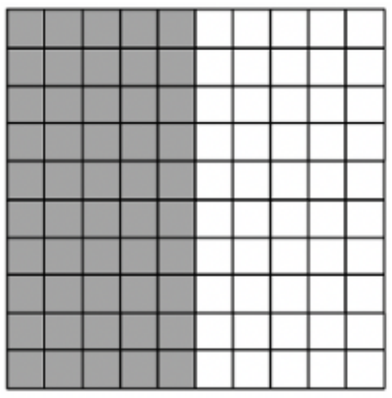
Name: _____ Date_____ Score____

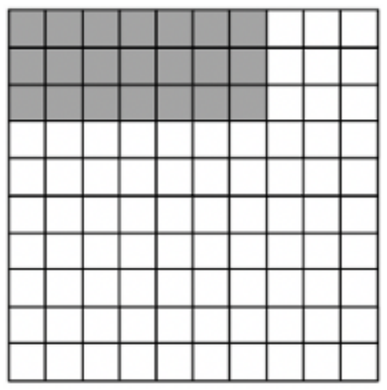
PRACTICE
1.20 Modeling Percent

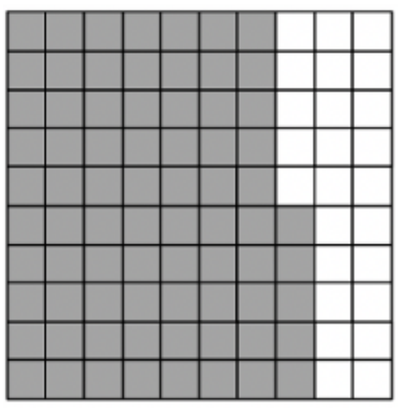
Answers (1-6 Sample answers given)

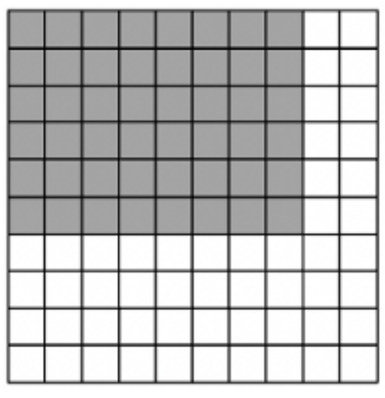
1. 

2. 

3. 

4. 

5. 

6. 

7. 20%

8. 55%

9. 25%

10. 60%

11. 40%

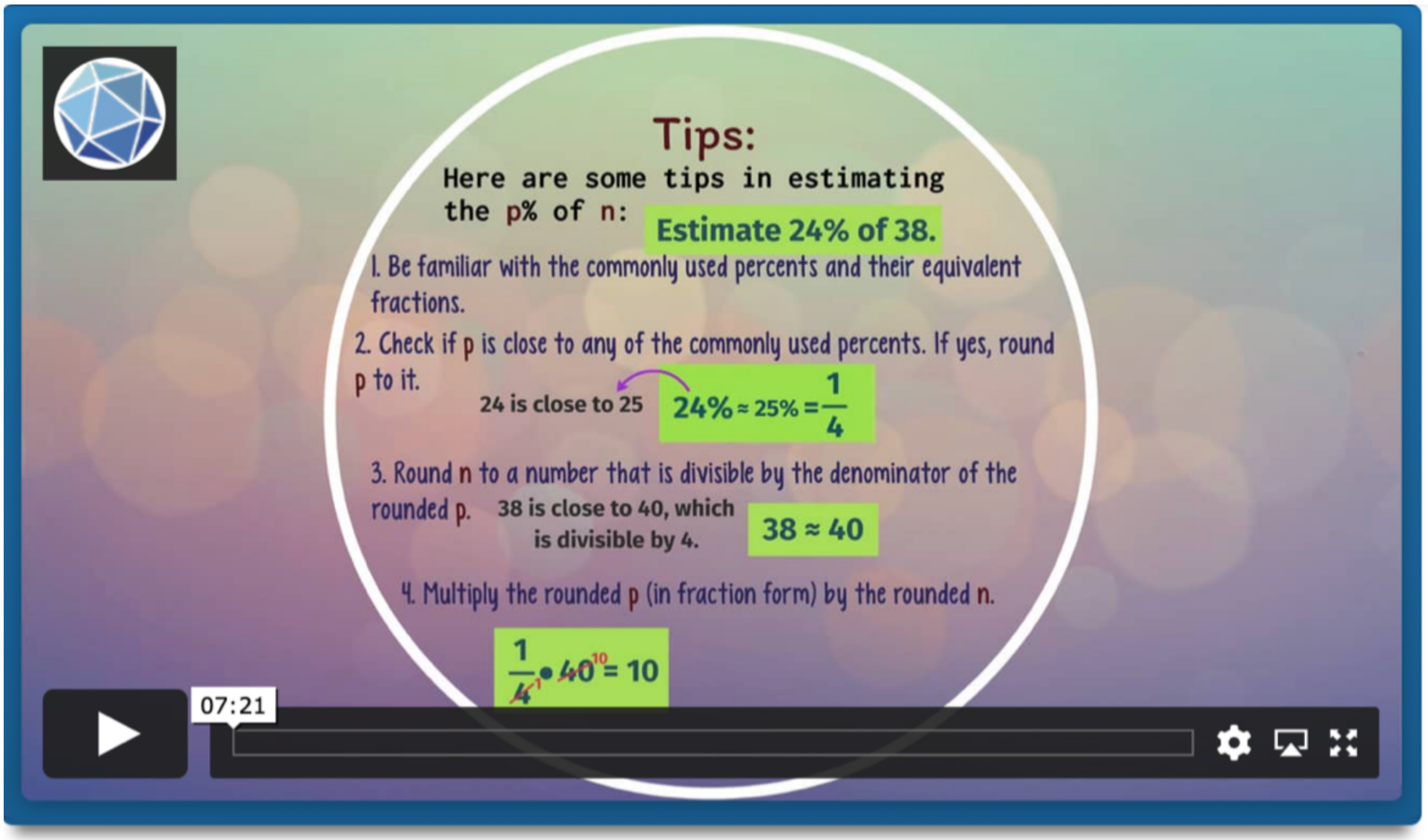
12. 50%

13. 90%

14. 15%

15. 35%

LESSON 1.21 ESTIMATING WITH PERCENTS



- How to estimate the percent of a number.

Name: _____ Date_____ Score____

STUDY GUIDE AND REVIEW
1.21 Estimating with Percent

The table below shows some commonly used percents and their fraction equivalents.

Percent-Fraction Equivalents				
$20\% = \frac{1}{5}$	$50\% = \frac{1}{2}$	$80\% = \frac{4}{5}$	$25\% = \frac{1}{4}$	$33\frac{1}{3}\% = \frac{1}{3}$
$30\% = \frac{3}{10}$	$60\% = \frac{3}{5}$	$90\% = \frac{9}{10}$	$75\% = \frac{3}{4}$	$66\frac{2}{3}\% = \frac{2}{3}$
$40\% = \frac{2}{5}$	$70\% = \frac{7}{10}$	$100\% = 1$		

EXAMPLE 1

Estimate ach percent.

1. 20% of 58

20% is $\frac{1}{5}$.

Round 58 to 60 since it is divisible by 5.

$$\frac{1}{5} \times 60 = \frac{1}{1\cancel{5}} \times \frac{\cancel{60}^{12}}{1}$$

$$= 12$$

So, 20% of 58 is about 12.

2. 76% of 25.

76% is close to 75% or $\frac{3}{4}$.

Round 25 to 24 since it is divisible by 4.

$$\frac{3}{4} \times 24 = \frac{3}{\cancel{4}_{1}} \times \frac{\cancel{24}^{6}}{1}$$

$$= 18$$

So, 76% of 25 is about 18.

Name: _____ Date_____ Score____

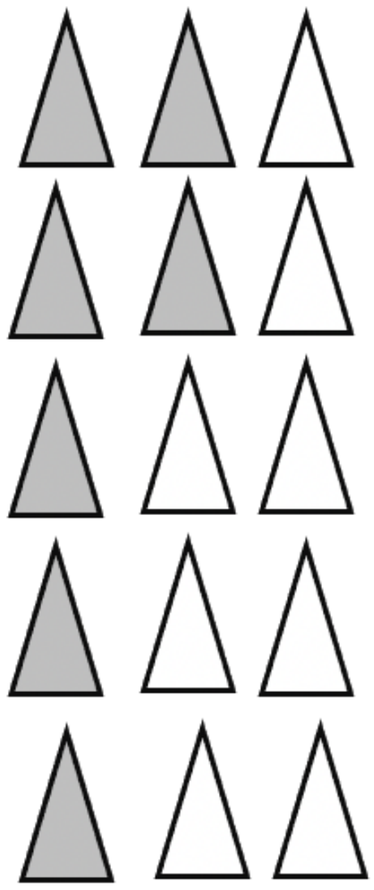
PRACTICE
1.21 Estimating with Percent

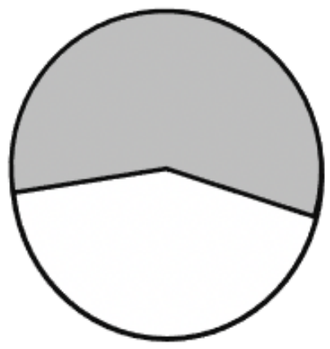
Estimate each percent.

1. 58% of 5
2. 50% of 39
3. 19% of 31
4. 49% of 71
5. 79% of 16
6. 33% of 61
7. 41% of 10
8. 24% of 13
9. 73% of 61
10. 38% of 42
11. 52% of 118
12. 91% of 82
13. 75% of 17
14. 82% of 24
15. 62% of 34
16. 27% of 81
17. 19% of 94
18. 67% of 241

Estimate the percent of the figure that is shaded.

19. 

20. 

21. 

Name: _____ Date_____ Score____

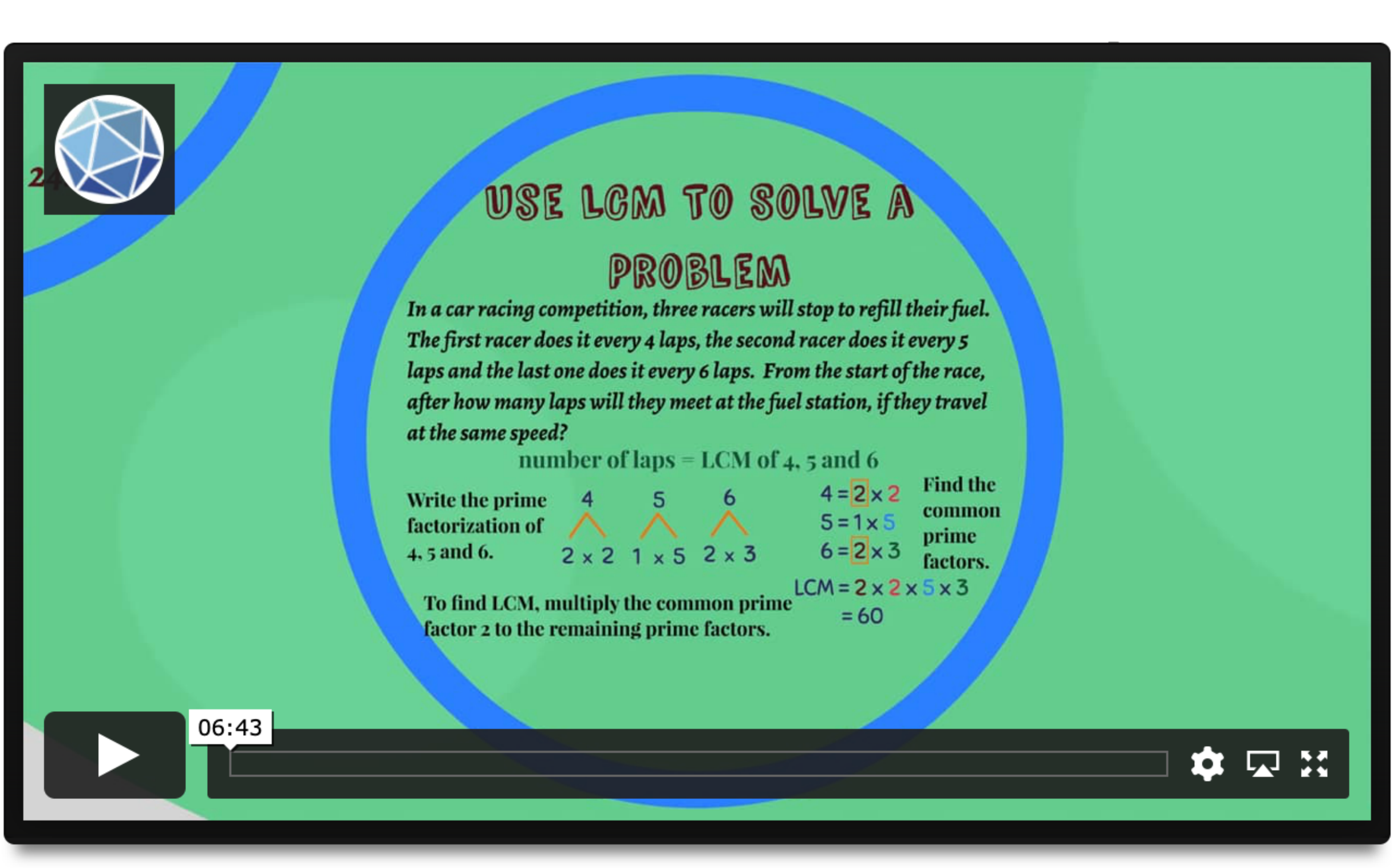
PRACTICE
1.21 Estimating with Percent

Answers

1. $\frac{3}{5} \times 5 = 3$
2. $\frac{1}{2} \times 40 = 20$
3. $\frac{1}{5} \times 30 = 6$
4. $\frac{1}{2} \times 70 = 35$
5. $\frac{4}{5} \times 15 = 12$
6. $\frac{1}{3} \times 60 = 20$
7. $\frac{2}{5} \times 10 = 4$
8. $\frac{1}{4} \times 12 = 3$
9. $\frac{3}{4} \times 60 = 45$
10. $\frac{2}{5} \times 40 = 16$
11. $\frac{1}{2} \times 120 = 60$
12. $\frac{9}{10} \times 80 = 72$
13. $\frac{3}{4} \times 16 = 12$
14. $\frac{4}{5} \times 25 = 20$
15. $\frac{3}{5} \times 35 = 21$
16. $\frac{1}{4} \times 80 = 20$
17. $\frac{1}{5} \times 95 = 19$
18. $\frac{2}{3} \times 240 = 160$
19. about 75%
20. about 50%
21. about 50%

Name: _____ Date_____ Score____

LESSON 1.22 *LEAST COMMON MULTIPLE*



How to find the least common multiple of two or more numbers

Name: _____ Date_____ Score____

STUDY GUIDE AND REVIEW
1.22 Least Common Multiple

A multiple of a number is the product of the number and any whole number. The multiples of 2 are below.

$1 \times 2 = 2$ $2 \times 2 = 4$ $3 \times 2 = 6$ $4 \times 2 = 8$ $5 \times 2 = 10$

The smallest number other than 0 that is a multiple of two or more whole numbers is the least common multiple (LCM) of the numbers.

EXAMPLE 1

Find the LCM of 4 and 6 by making a list.

Step 1: List the nonzero multiples.

multiples of 4: 4, 8, 12, 16, 20, ...

multiples of 6: 6, 12, 18, 24, 30, ...

Step 2: Identify the LCM from the common multiples.

The LCM of 4 and 6 is 12.

Name: _____ **Date**_____ **Score**____

PRACTICE
1.22 Least Common Multiple

Find the LCM of each set of numbers.

1. 4 and 36
2. 4 and 5
3. 7 and 10
4. 6 and 30
5. 8 and 28
6. 12 and 15
7. 12 and 14
8. 5 and 25
9. 3 and 8
10. 7 and 49
11. 5 and 6
12. 6 and 14
13. 9 and 24
14. 3, 5, and 12
15. 3 and 42
16. 5 and 13
17. 6 and 9
18. 12 and 18
19. 5 and 14
20. 15 and 18
21. 6, 16, and 24

Name: _____ Date_____ Score____

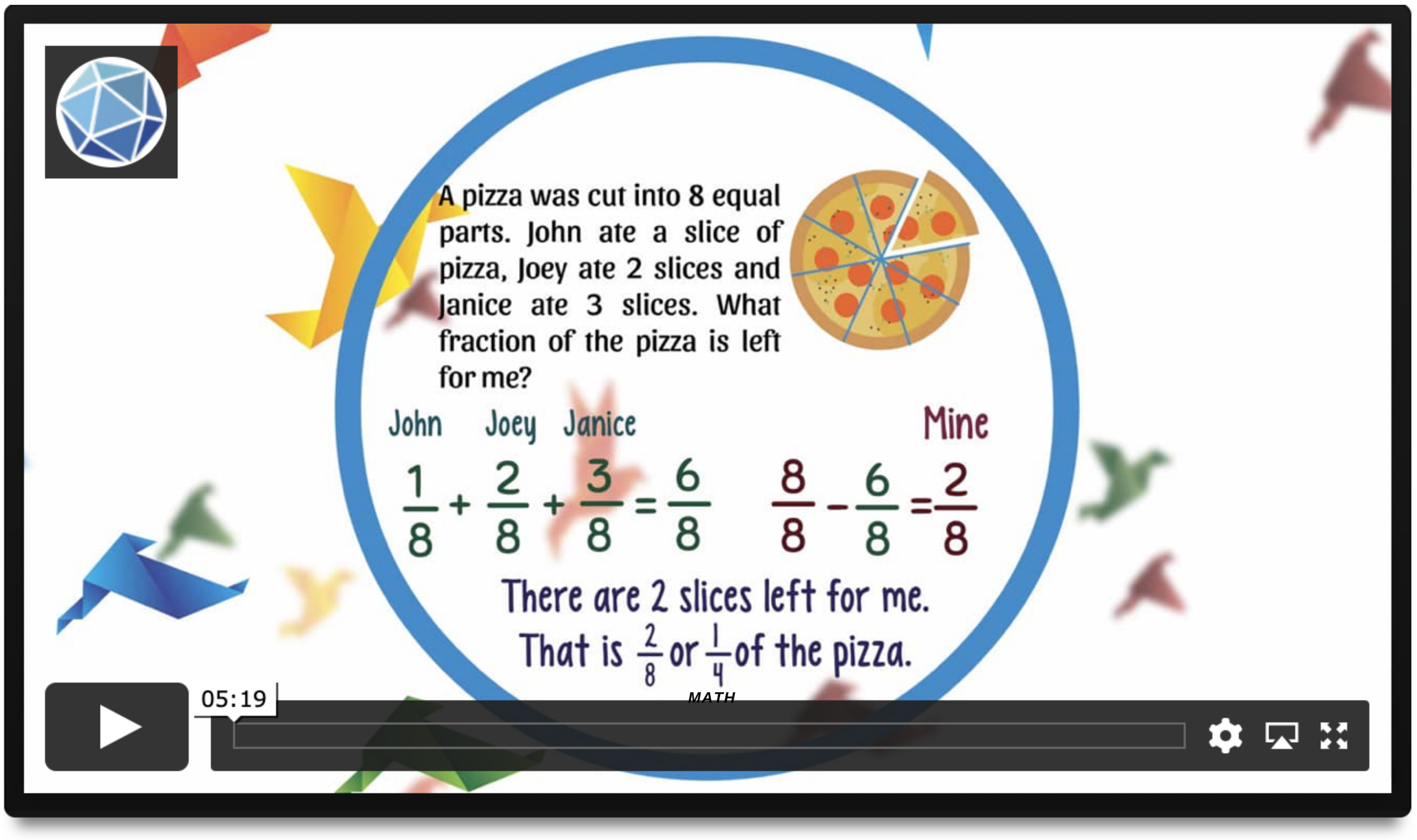
PRACTICE

1.22 Least Common Multiple

Answers

1. 36
2. 20
3. 70
4. 30
5. 56
6. 60
7. 84
8. 25
9. 24
10. 49
11. 30
12. 42
13. 72
14. 60
15. 42
16. 65
17. 18
18. 36
19. 70
20. 90
21. 48

LESSON 1.23 *ADDING AND SUBTRACTING FRACTIONS WITH LIKE DENOMINATORS*



How to add and subtract fractions with like denominators

Name: _____ Date_____ Score____

STUDY GUIDE AND REVIEW

1.23 Adding and Subtracting Fractions with Like Denominators

Fractions with the same denominator are called like fractions.

- To add like fractions, add the numerators. Use the same denominator in the sum.
- To subtract like fractions, subtract the numerators. Use the same denominator in the difference.

EXAMPLE 1

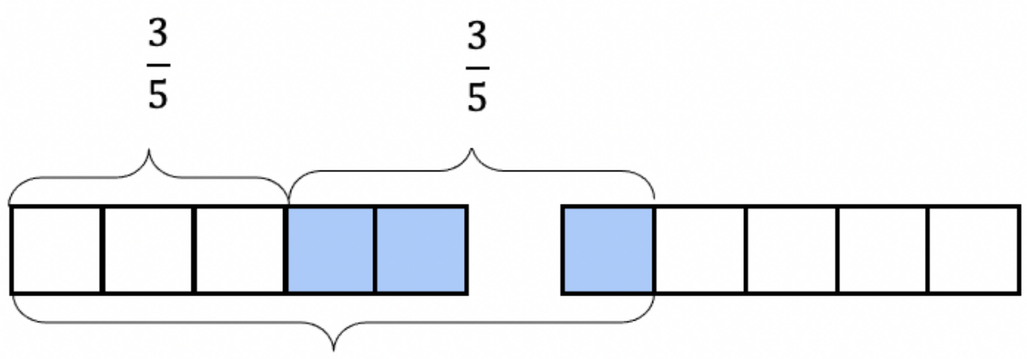
Find the sum of $\frac{3}{5}$ and $\frac{3}{5}$.

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

$\frac{3}{5} + \frac{3}{5} = \frac{3+3}{5}$ Add the numerators.

$= \frac{6}{5}$ Simplify.

$= 1\frac{1}{5}$ Write the improper fraction as a mixed number.



Compared to the estimate, the answer is reasonable.

Name: _____ Date_____ Score____

PRACTICE

1.23 Adding and Subtracting Fractions with Like Denominators

Add or subtract. Write in simplest form.

1. $\frac{2}{9}+\frac{4}{9}$
2. $\frac{3}{4}+\frac{1}{4}$
3. $\frac{5}{6}-\frac{1}{6}$
4. $\frac{7}{8}+\frac{3}{8}$
5. $\frac{10}{11}-\frac{2}{11}$
6. $\frac{3}{10}-\frac{1}{10}$
7. $\frac{5}{8}-\frac{3}{8}$
8. $\frac{2}{5}+\frac{4}{5}$
9. $\frac{7}{8}-\frac{3}{8}$
10. $\frac{1}{6}+\frac{5}{6}$
11. $\frac{9}{10}-\frac{4}{10}$
12. $\frac{7}{9}+\frac{2}{9}$
13. $\frac{3}{10}+\frac{3}{10}$
14. $\frac{5}{7}-\frac{2}{7}$
15. $\frac{2}{3}-\frac{1}{3}$
16. $\frac{9}{12}+\frac{3}{12}$
17. $\frac{11}{12}-\frac{7}{12}$
18. $\frac{3}{8}+\frac{1}{8}$
19. $\frac{5}{6}+\frac{4}{6}$
20. $\frac{5}{6}+\frac{3}{6}$
21. $\frac{6}{7}+\frac{5}{7}$

Name: _____ Date_____ Score____

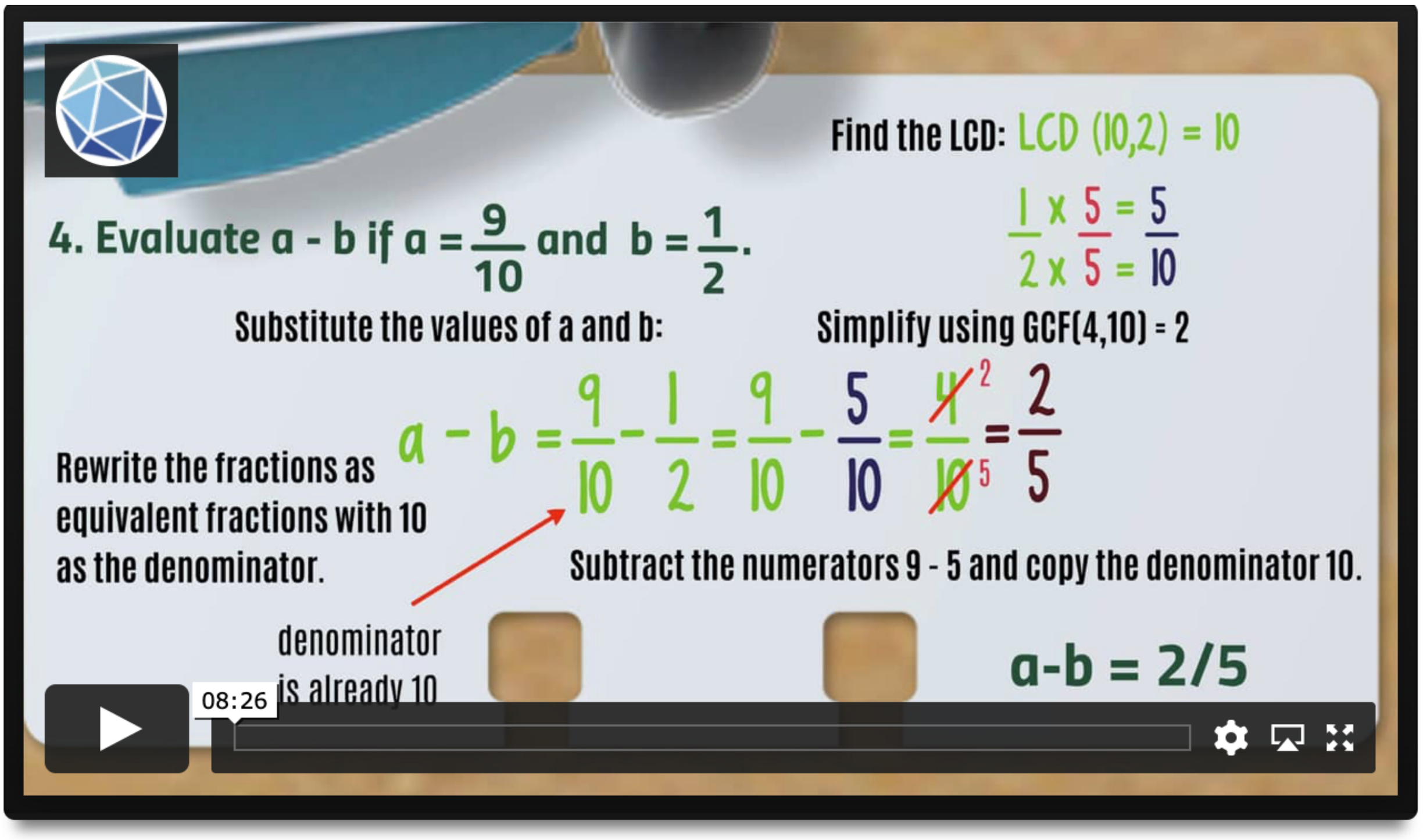
PRACTICE

1.23 Adding and Subtracting Fractions with Like Denominators

Answers

1. $\frac{2}{3}$
2. 1
3. $\frac{2}{3}$
4. $1\frac{1}{4}$
5. $\frac{8}{11}$
6. $\frac{1}{5}$
7. $\frac{1}{4}$
8. $1\frac{1}{5}$
9. $\frac{1}{2}$
10. 1
11. $\frac{1}{2}$
12. 1
13. $\frac{3}{5}$
14. $\frac{3}{7}$
15. $\frac{1}{3}$
16. 1
17. $\frac{1}{3}$
18. $\frac{1}{2}$
19. $1\frac{1}{2}$
20. $1\frac{1}{3}$
21. $1\frac{4}{7}$

LESSON 1.24 *ADDING AND SUBTRACTING FRACTIONS WITH UNLIKE DENOMINATORS*



How to add and subtract fractions with unlike denominators

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STUDY GUIDE AND REVIEW

1.24 Adding and Subtracting Fractions with Unlike Denominators

To find the sum or difference of two fractions with unlike denominators, rename the fractions using least common denominator (LCD). Then add or subtract and simplify.

EXAMPLE 1

Find $\frac{1}{3}+\frac{5}{6}$.

The LCD of $\frac{1}{3}$ and $\frac{5}{6}$ is 6.

Write the problem.

$$\begin{array}{r} \frac{1}{3} \\ +\frac{5}{6} \\ \hline \end{array}$$

$\longrightarrow$

Rename $\frac{1}{3}$ as $\frac{2}{6}$.

$$\frac{1}{3}\times\frac{2}{2}=\frac{2}{6}$$

$$\frac{5}{6}$$

$\longrightarrow$

Add the fractions.

$$\begin{array}{r} \frac{2}{6} \\ +\frac{5}{6} \\ \hline \end{array}$$

$$\frac{7}{6} \text{ or } 1\frac{1}{6}$$

Name: _____ **Date**_____ **Score**____

PRACTICE
1.24 Adding and Subtracting Fractions with Unlike Denominators

Add or subtract. Write in simplest form.

1. $\begin{array}{r} \frac{2}{3} \\ +\frac{5}{6} \\ \hline \end{array}$

2. $\begin{array}{r} \frac{2}{3} \\ -\frac{1}{6} \\ \hline \end{array}$

3. $\begin{array}{r} \frac{4}{7} \\ -\frac{1}{2} \\ \hline \end{array}$

4. $\begin{array}{r} \frac{5}{6} \\ +\frac{3}{4} \\ \hline \end{array}$

5. $\begin{array}{r} \frac{1}{2} \\ +\frac{7}{8} \\ \hline \end{array}$

6. $\begin{array}{r} \frac{1}{6} \\ -\frac{1}{12} \\ \hline \end{array}$

7. $\frac{5}{8} - \frac{1}{4}$

8. $\frac{1}{5} + \frac{5}{6}$

9. $\frac{1}{2} - \frac{2}{5}$

10. $\frac{3}{4} - \frac{1}{12}$

11. $\frac{3}{5} + \frac{2}{3}$

12. $\frac{11}{12} - \frac{1}{6}$

13. $\frac{1}{3} + \frac{5}{7}$

14. $\frac{3}{4} + \frac{11}{12}$

Name: _____ Date_____ Score____

15. $\frac{11}{12} - \frac{3}{4}$

16. $\frac{4}{5} + \frac{1}{2}$

17. $\frac{2}{3} - \frac{1}{4}$

18. $\frac{3}{5} + \frac{9}{10}$

19. How much more is $\frac{3}{4}$ ounce than $\frac{1}{3}$ ounce?

20. How much more is $\frac{3}{8}$ gallon than $\frac{1}{4}$ gallon?

Name: _____ **Date**_____ **Score**____

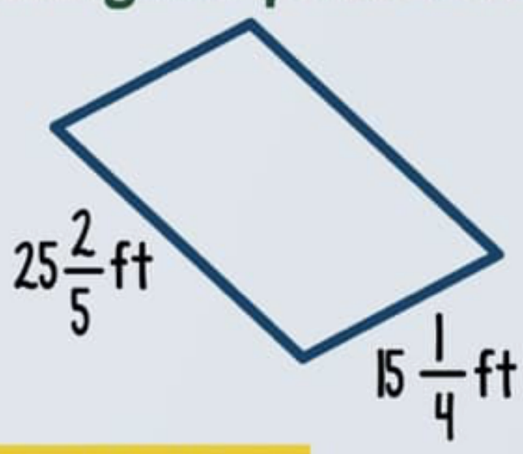
PRACTICE
1.24 Adding and Subtracting Fractions with Unlike Denominators

Answers

1. $1\frac{1}{2}$
2. $\frac{1}{2}$
3. $\frac{1}{14}$
4. $1\frac{7}{12}$
5. $1\frac{3}{8}$
6. $\frac{1}{12}$
7. $\frac{3}{8}$
8. $1\frac{1}{30}$
9. $\frac{1}{10}$
10. $\frac{2}{3}$
11. $1\frac{4}{15}$
12. $\frac{3}{4}$
13. $1\frac{1}{21}$
14. $1\frac{2}{3}$
15. $\frac{1}{6}$
16. $1\frac{3}{10}$
17. $\frac{5}{12}$
18. $1\frac{1}{2}$
19. $\frac{5}{12}$ oz
20. $\frac{1}{8}$ gal

LESSON 1.25 *ADDING AND SUBTRACTING MIXED NUMBERS*

4. Find the perimeter of the rectangular fence below:



Perimeter is the distance around the 2D shape.

It is the sum of all the sides.

To find the perimeter of the given fence, add the 4 sides.

Change dissimilar fractions to similar fractions.

Find the LCD.

LCD (5,4): 20

$$25\frac{2}{5} \times 4$$

$$+\ 15\frac{1}{4} \times 5$$

Rewrite the fractions with denominator 20.

$$25\frac{8}{20}$$

$$+\ 15\frac{5}{20}$$

$$\frac{13}{20}$$

Add the numerators: $8 + 5 = 13$

Copy the denominator: 20

09:29

How to add and subtract mixed numbers

Name: _____ **Date**_____ **Score**____

STUDY GUIDE AND REVIEW

1.25 Adding and Subtracting Mixed Numbers

To add or subtract mixed numbers:

1. Add or subtract the fractions.
2. Then add or subtract the whole numbers.
3. Rename and simplify if necessary.

EXAMPLE 1

Find $2\frac{1}{3}+4\frac{1}{4}$.

Estimate $2+4=6$.

The LCM of 3 and 4 is 12. Rename the fractions. Add the fractions. Add the whole numbers.

$$\begin{array}{r} 2\frac{1}{3}\times\frac{4}{4} \\ +\,4\frac{1}{4}\times\frac{3}{3} \\ \hline \end{array} \longrightarrow \begin{array}{r} 2\frac{4}{12} \\ +\,4\frac{3}{12} \\ \hline \end{array} \longrightarrow \begin{array}{r} 2\frac{4}{12} \\ +\,4\frac{3}{12} \\ \hline \frac{7}{12} \end{array} \longrightarrow \begin{array}{r} 2\frac{4}{12} \\ +\,4\frac{3}{12} \\ \hline 6\frac{7}{12} \end{array}$$

$2\frac{1}{3}+4\frac{1}{4}=6\frac{7}{12}$. Compared to the estimate, the answer is reasonable.

Name: _____ **Date**_____ **Score**____

PRACTICE
1.25 Adding and Subtracting Mixed Numbers

Add or subtract. Write in simplest form.

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

2. $2\frac{3}{7} + 4\frac{2}{7}$

3. $4\frac{5}{6} - 3\frac{1}{6}$

4. $6\frac{2}{3} + 3\frac{4}{9}$

5. $8\frac{5}{12} - 1\frac{1}{12}$

6. $8\frac{7}{12} - 5\frac{5}{12}$

7. $9\frac{3}{4} - 7\frac{1}{2}$

8. $10\frac{3}{5} - 2\frac{1}{2}$

9. $5\frac{2}{3} - \frac{1}{6}$

10. $7\frac{11}{12} - 3\frac{7}{12}$

11. $2\frac{1}{8} + 5\frac{7}{8}$

12. $6\frac{5}{6} + \frac{3}{8}$

13. $8\frac{1}{2} - 5\frac{3}{10}$

14. $5\frac{8}{9} - 3\frac{1}{6}$

15. $1\frac{2}{3} + 4\frac{8}{9}$

16. $9\frac{4}{5} + 2\frac{2}{3}$

17. $4\frac{3}{5} + 9\frac{1}{3}$

18. $8\frac{3}{4} + 6\frac{2}{5}$

Evaluate each expression if $a = 1\frac{2}{3}$, $b = \frac{1}{4}$, and $c = 3\frac{5}{6}$.

19. $c + a$

20. $a + b$

EXCEL MATHEMATICS

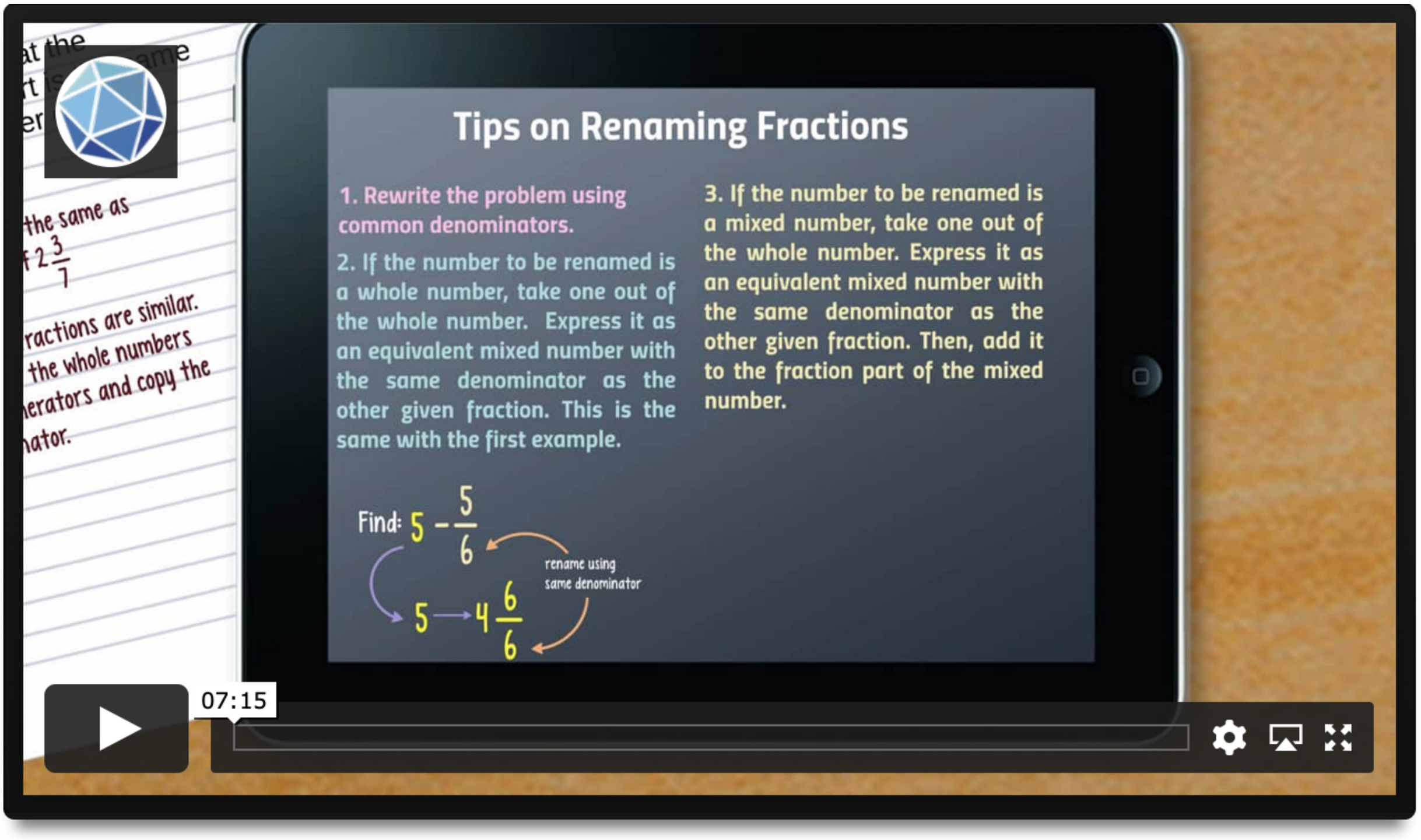
Name: _____ **Date**_____ **Score**____

PRACTICE
1.25 Adding and Subtracting Mixed Numbers

Answers

1. 6
2. $6\frac{5}{7}$
3. $1\frac{2}{3}$
4. $10\frac{1}{9}$
5. $7\frac{1}{3}$
6. $3\frac{1}{6}$
7. $2\frac{1}{4}$
8. $8\frac{1}{10}$
9. $5\frac{1}{2}$
10. $4\frac{1}{3}$
11. 8
12. $7\frac{5}{24}$
13. $3\frac{1}{5}$
14. $2\frac{13}{18}$
15. $6\frac{5}{9}$
16. $12\frac{7}{15}$
17. $13\frac{14}{15}$
18. $15\frac{3}{20}$
19. $5\frac{1}{2}$
20. $1\frac{11}{12}$

LESSON 1.26 *SUBTRACTING MIXED NUMBERS WITH RENAMING*



How to subtract mixed numbers involving remaining

Name: _____ **Date**_____ **Score**____

STUDY GUIDE AND REVIEW

1.26 Subtracting Mixed Numbers with Renaming

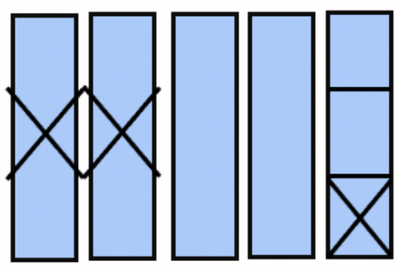
Sometimes it is necessary to rename the fraction part of a mixed number as an improper fraction before you can subtract.

EXAMPLE 1

Find $5 - 2\frac{1}{4}$.

Write the problem. Rename 5 as $4\frac{4}{4}$. Subtract.

$$\begin{array}{r} 5 \\ -\,2\frac{1}{4} \\ \hline \end{array} \longrightarrow \begin{array}{r} 4\frac{4}{4} \\ -\,2\frac{1}{4} \\ \hline \end{array} \longrightarrow \begin{array}{r} 4\frac{4}{4} \\ -\,2\frac{1}{4} \\ \hline 2\frac{3}{4} \end{array}$$



Rename 5 as $4\frac{4}{4}$.

Then cross out $2\frac{1}{4}$.

So, $5 - 2\frac{1}{4} = 2\frac{3}{4}$.

Name: _____ **Date**_____ **Score**____

PRACTICE

1.26 Subtracting Mixed Numbers with Renaming

Subtract. Write in simplest form.

1. $4\frac{5}{7} - 1\frac{6}{7}$

2. $10\frac{5}{9} - 2\frac{2}{3}$

3. $12\frac{2}{5} - 4\frac{3}{4}$

4. $13\frac{1}{2} - 7\frac{4}{5}$

5. $4 - 3\frac{1}{3}$

6. $11\frac{1}{4} - 5\frac{3}{8}$

7. $10 - 5\frac{1}{4}$

8. $8\frac{1}{3} - 2\frac{5}{9}$

9. $7\frac{1}{6} - 3\frac{5}{6}$

10. $3\frac{1}{4} - 1\frac{5}{8}$

11. $12\frac{5}{8} - 3\frac{3}{4}$

12. $9\frac{7}{10} - 6\frac{4}{5}$

13. $6\frac{1}{5} - 2\frac{7}{10}$

14. $15\frac{1}{3} - 6\frac{1}{2}$

15. $9\frac{2}{5} - 7\frac{9}{10}$

16. $12 - 5\frac{7}{11}$

17. $5\frac{1}{2} - \frac{5}{8}$

18. $7 - 2\frac{3}{8}$

17. $4\frac{1}{5} - 1\frac{1}{2}$

18. $7\frac{1}{4} - 6\frac{5}{6}$

Name: _____ **Date**_____ **Score**____

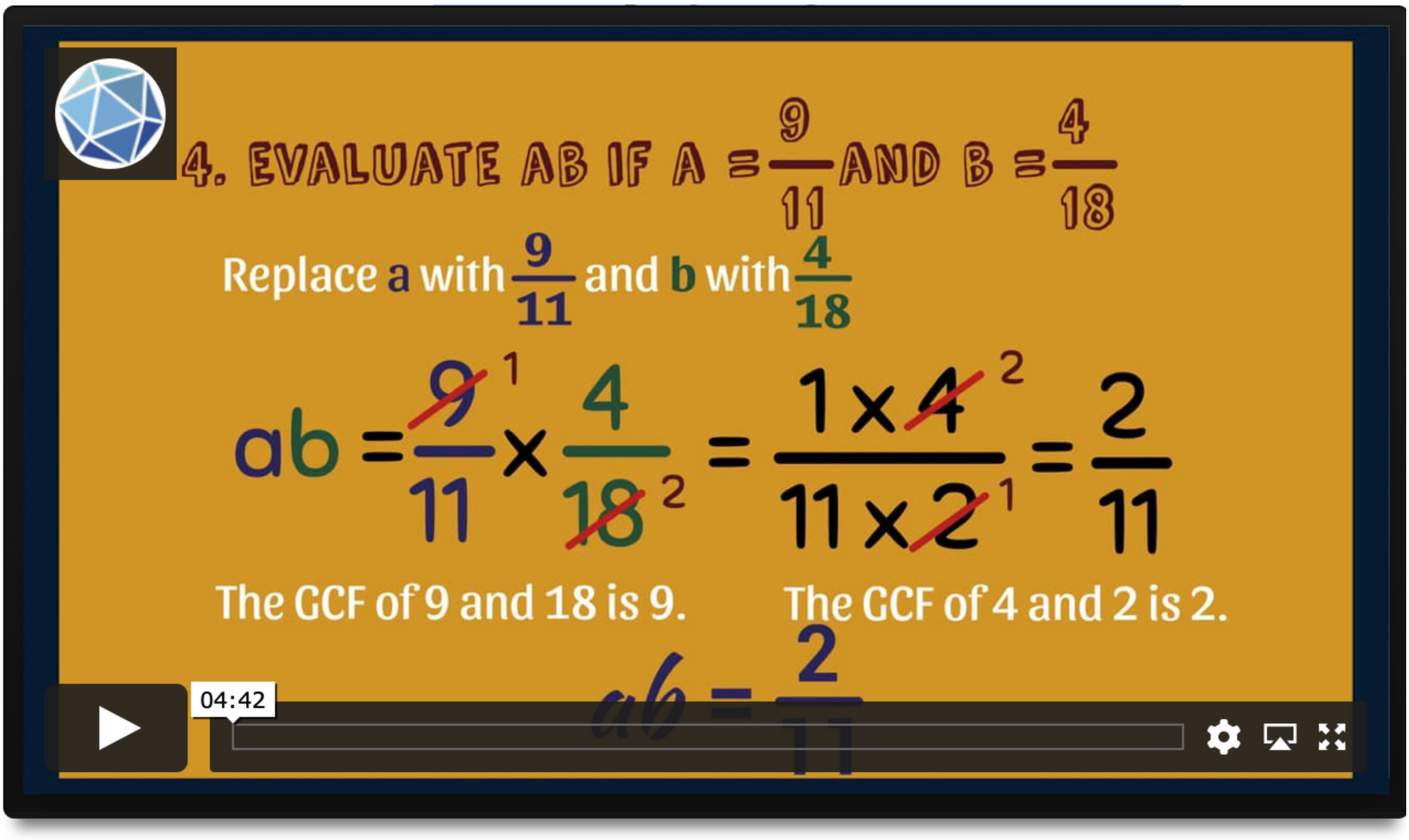
PRACTICE

1.26 Subtracting Mixed Numbers with Renaming

Answers

1. $2\frac{6}{7}$
2. $7\frac{8}{9}$
3. $7\frac{13}{20}$
4. $5\frac{7}{10}$
5. $\frac{2}{3}$
6. $5\frac{7}{8}$
7. $4\frac{3}{4}$
8. $5\frac{7}{9}$
9. $3\frac{1}{3}$
10. $1\frac{5}{8}$
11. $8\frac{7}{8}$
12. $2\frac{9}{10}$
13. $3\frac{1}{2}$
14. $8\frac{5}{6}$
15. $1\frac{1}{2}$
16. $6\frac{4}{11}$
17. $4\frac{7}{8}$
18. $4\frac{5}{8}$
19. $2\frac{7}{10}$
20. $\frac{5}{12}$

LESSON 1.27 *MULTIPLYING FRACTIONS*



How to multiply fractions

Name: _____ **Date**_____ **Score**____

STUDY GUIDE AND REVIEW
1.27 Multiplying Fractions

Type of Product	What To Do	Example
two fractions	Multiply the numerators. Then multiply the denominators.	$\frac{2}{3} \times \frac{4}{5} = \frac{2 \times 4}{3 \times 5} = \frac{8}{15}$
fraction and a whole number	Rename the whole number as an improper fraction. Multiply the numerators. Then multiply the denominators.	$\frac{3}{11} \times 6 = \frac{3}{11} \times \frac{6}{1} = \frac{18}{11} = 1\frac{7}{11}$

EXAMPLE 1

Find $\frac{2}{5} \times \frac{3}{4}$.

Estimate: $\frac{1}{2} \times 1 = \frac{1}{2}$

$\frac{2}{5} \times \frac{3}{4} = \frac{2 \times 3}{5 \times 4}$ Multiply the numerators. Multiply the denominators.

$= \frac{6}{20}$ or $\frac{3}{10}$ Simplify. Compare to the estimate.

EXCEL MATHEMATICS

Name: _____ **Date**_____ **Score**____

PRACTICE
1.27 Multiplying Fractions

Multiply. Write in simplest form.

1. $\frac{3}{4} \times \frac{1}{2}$
2. $\frac{2}{5} \times \frac{3}{7}$
3. $\frac{1}{3} \times \frac{2}{5}$
4. $\frac{3}{8} \times 10$
5. $\frac{1}{3} \times 6$
6. $\frac{1}{6} \times \frac{3}{5}$
7. $\frac{1}{5} \times \frac{10}{11}$
8. $21 \times \frac{4}{7}$
9. $\frac{5}{12} \times \frac{3}{8}$
10. $\frac{5}{9} \times 18$
11. $\frac{1}{10} \times \frac{4}{7}$
12. $\frac{5}{6} \times \frac{8}{9}$

For exercises 13-21, evaluate each expression if $x = 4, y = \frac{2}{3}$, and $z = \frac{1}{4}$.

13. $\frac{3}{8}x$
14. xy
15. yz
16. xz
17. $9y$
18. $8z$
19. $3x$
20. $\frac{1}{3}x$
21. xyz

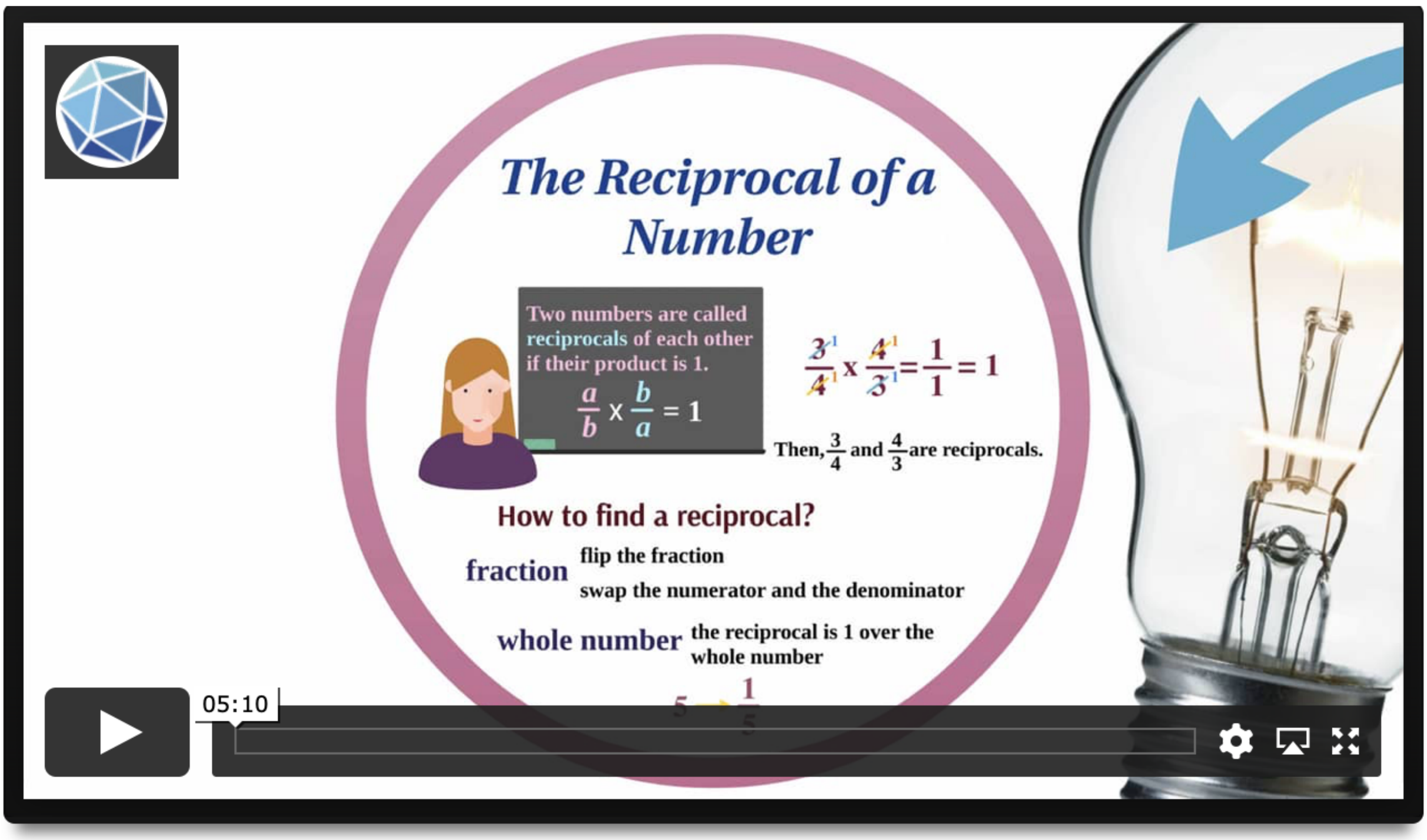
Name: _____ Date_____ Score____

PRACTICE
1.27 Multiplying Fractions

Answers

1. $\frac{3}{8}$
2. $\frac{6}{35}$
3. $\frac{2}{15}$
4. $3\frac{3}{4}$
5. 2
6. $\frac{1}{10}$
7. $\frac{2}{11}$
8. 12
9. $\frac{5}{32}$
10. 10
11. $\frac{2}{35}$
12. $\frac{20}{27}$
13. $1\frac{1}{2}$
14. $2\frac{2}{3}$
15. $\frac{1}{6}$
16. 1
17. 6
18. 2
19. $\frac{3}{4}$
20. $1\frac{1}{3}$
21. $\frac{2}{3}$

LESSON 1.28 *DIVIDING FRACTIONS*



How to divide fractions

Name: _____ **Date**_____ **Score**____

STUDY GUIDE AND REVIEW
1.28 Dividing Fractions

When the product of two numbers is 1, the numbers are called reciprocals. You can use reciprocals to divide fractions. To divide by a fraction, multiply by its reciprocal.

EXAMPLE 1

Find $\frac{2}{3} \div \frac{4}{5}$.

$\frac{2}{3} \div \frac{4}{5} = \frac{2}{3} \times \frac{5}{4}$ Multiply by the reciprocal, $\frac{5}{4}$.

$= \frac{\overset{1}{\cancel{2}}}{3} \times \frac{5}{\underset{2}{\cancel{4}}}$ Divide 2 and 4 by the GCF, 2.

$= \frac{5}{6}$ Multiply numerators and denominators.

Name: _____ **Date**_____ **Score**____

PRACTICE
1.28 Dividing Fractions

Find the reciprocal of each number.

1. $\frac{1}{2}$ 2. 7 3. $\frac{8}{11}$ 4. $\frac{3}{5}$

Divide. Write in simplest form.

5. $\frac{5}{6} \div \frac{1}{3}$ 6. $8 \div \frac{4}{5}$ 7. $\frac{3}{8} \div 9$

8. $15 \div \frac{5}{9}$ 9. $\frac{5}{6} \div \frac{5}{12}$ 10. $\frac{9}{10} \div \frac{1}{2}$

11. $\frac{7}{12} \div \frac{5}{6}$ 12. $\frac{9}{10} \div \frac{3}{4}$ 13. $\frac{6}{7} \div \frac{3}{11}$

14. $\frac{10}{11} \div 5$ 15. $\frac{1}{2} \div \frac{3}{5}$ 16. $\frac{9}{10} \div \frac{1}{4}$

17. $\frac{2}{5} \div \frac{4}{7}$ 18. $\frac{1}{9} \div \frac{5}{12}$ 19. $\frac{7}{9} \div \frac{1}{7}$

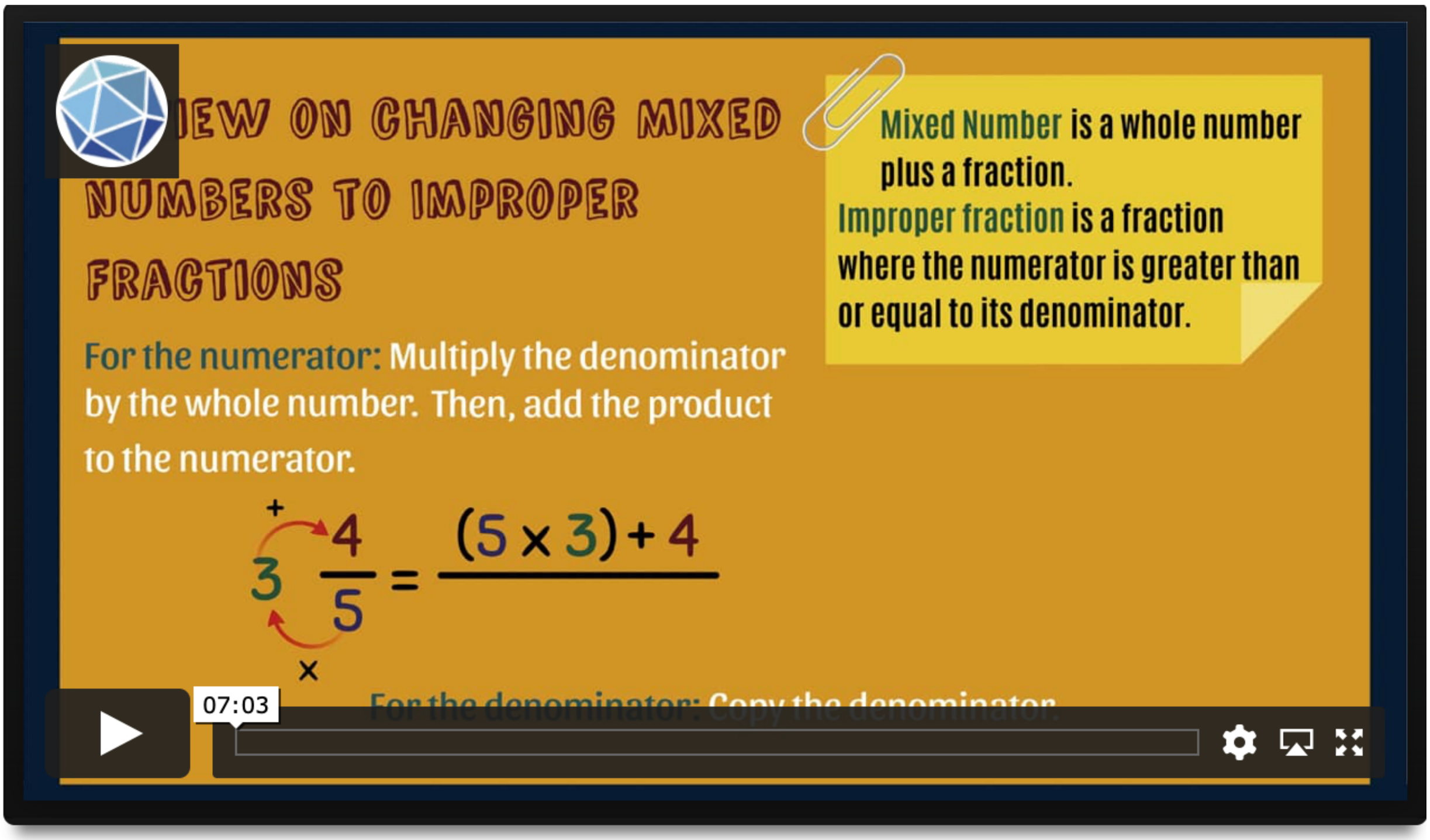
Name: _____ **Date**_____ **Score**____

PRACTICE
1.28 Dividing Fractions

Answers

1. 2
2. $\frac{1}{7}$
3. $\frac{11}{8}$
4. $\frac{5}{3}$
5. $2\frac{1}{2}$
6. 10
7. $\frac{1}{24}$
8. 27
9. 2
10. $1\frac{4}{5}$
11. $\frac{7}{10}$
12. $1\frac{1}{5}$
13. $3\frac{1}{7}$
14. $\frac{2}{11}$
15. $\frac{5}{6}$
16. $3\frac{3}{5}$
17. $\frac{7}{10}$
18. $\frac{4}{15}$
19. $5\frac{4}{9}$

LESSON 1.29 *MULTIPLYING MIXED NUM*



How to multiply mixed numbers

Name: _____ Date_____ Score____

STUDY GUIDE AND REVIEW
1.29 Multiplying Mixed Numbers

To multiply mixed numbers, write the mixed numbers as improper fractions, and then multiply as with fractions.

EXAMPLE 1

Find $2\frac{1}{4} \times 1\frac{2}{3}$.

Estimate: $2 \times 2 = 4$

$2\frac{1}{4} \times 1\frac{2}{3} = \frac{9}{4} \times \frac{5}{3}$

Write mixed numbers as improper fractions.

$= \frac{\overset{3}{\cancel{9}} \times 5}{4 \times \cancel{3}_{1}}$

Divide the numerator and denominator by their common factor, 3.

$= \frac{15}{4}$ or $3\frac{3}{4}$

Simplify. Compare to the estimate.

Name: _____ Date_____ Score____

PRACTICE

1.29 Multiplying Mixed Numbers

Multiply. Write in simplest form.

1. $\frac{1}{3} \times 1\frac{1}{4}$

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

3. $1\frac{3}{5} \times 3\frac{2}{3}$

4. $\frac{4}{7} \times 3\frac{1}{9}$

5. $4\frac{1}{6} \times \frac{9}{10}$

6. $\frac{8}{9} \times 5\frac{1}{7}$

7. $3\frac{3}{4} \times 2\frac{4}{5}$

8. $20 \times 1\frac{2}{5}$

9. $5\frac{3}{4} \times 1\frac{1}{11}$

10. $2\frac{1}{2} \times \frac{3}{5}$

11. $6\frac{1}{5} \times \frac{1}{2}$

12. $\frac{5}{7} \times 4\frac{1}{5}$

13. $1\frac{3}{8} \times 2\frac{2}{7}$

14. $3\frac{1}{3} \times 2\frac{1}{4}$

15. $2\frac{5}{8} \times 6$

16. $\frac{5}{7} \times 4\frac{3}{8}$

17. $2\frac{4}{9} \times \frac{6}{11}$

18. $14 \times 2\frac{5}{7}$

For exercises $19 - 20$, evaluate each expression if $r = 1\frac{2}{3}$, $s = 2\frac{1}{5}$, and $t = \frac{3}{4}$.

19. st

20. $4t$

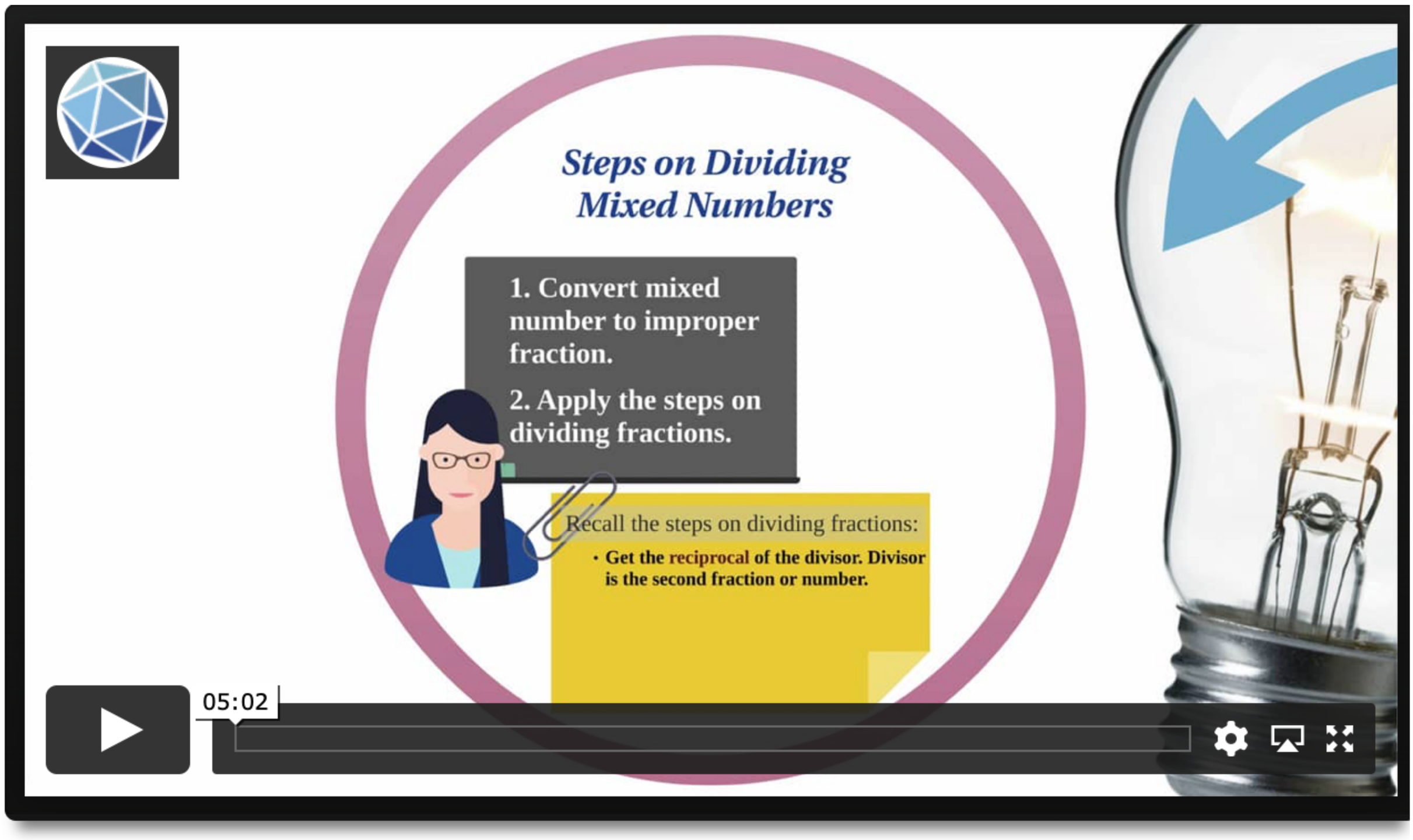
Name: _____ **Date**_____ **Score**____

PRACTICE
1.29 Multiplying Mixed Numbers

Answers

1. $\frac{5}{12}$
2. $2\frac{1}{2}$
3. $5\frac{13}{15}$
4. $1\frac{7}{9}$
5. $3\frac{3}{4}$
6. $4\frac{4}{7}$
7. $10\frac{1}{2}$
8. 28
9. $6\frac{3}{11}$
10. $1\frac{1}{2}$
11. $3\frac{1}{10}$
12. 3
13. $3\frac{1}{7}$
14. $7\frac{1}{2}$
15. $15\frac{3}{4}$
16. $3\frac{1}{8}$
17. $1\frac{1}{3}$
18. 38
19. $1\frac{13}{20}$
20. 3

LESSON 1.30 *DIVING MIXED NUMBERS*



How to divide mixed numbers

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STUDY GUIDE AND REVIEW
1.30 Dividing Mixed Numbers

To divide mixed numbers, express each mixed number as an improper fraction. Then divide as with fractions.

EXAMPLE 1

Find $2\frac{2}{3} \div 1\frac{1}{5}$.

Estimate: $3 \div 1 = 3$

$2\frac{2}{3} \div 1\frac{1}{5} = \frac{8}{3} \div \frac{6}{5}$

Write mixed numbers as improper fractions.

$= \frac{8}{3} \times \frac{5}{6}$

Multiply by the reciprocal, $\frac{5}{6}$.

$= \frac{\overset{4}{\cancel{8}} \times 5}{3 \times \underset{3}{\cancel{6}}}$

Divide 8 and 6 by the GCF, 2.

$= \frac{20}{9}$ or $2\frac{2}{9}$

Simplify. Compare to the estimate.

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PRACTICE
1.30 Dividing Mixed Numbers

Divide. Write in simplest form.

1. $2\frac{5}{6} \div 6\frac{4}{5}$
2. $1\frac{1}{3} \div 3$
3. $2\frac{1}{2} \div 4\frac{2}{7}$
4. $1\frac{2}{9} \div 1\frac{5}{6}$
5. $3\frac{5}{6} \div 1\frac{1}{3}$
6. $2\frac{2}{9} \div 1\frac{1}{3}$
7. $4\frac{6}{7} \div 3\frac{2}{5}$
8. $6 \div 2\frac{2}{5}$
9. $3\frac{1}{9} \div 7$
10. $6\frac{3}{4} \div 1\frac{7}{20}$
11. $1\frac{7}{9} \div \frac{4}{9}$
12. $3\frac{1}{5} \div 1\frac{7}{9}$
13. $31\frac{2}{3} \div 7\frac{3}{5}$
14. $1\frac{3}{4} \div \frac{3}{4}$
15. $6\frac{2}{3} \div \frac{4}{5}$
16. $\frac{7}{10} \div 2\frac{5}{8}$
17. $5 \div 8\frac{3}{4}$
18. $6\frac{1}{6} \div 3\frac{1}{3}$

Evaluate each expression if $a = 1\frac{3}{8}, b = 4\frac{5}{7}$, and $c = 3\frac{3}{10}$.

19. $a \div c$
20. $c \div b$
21. $b \div a$

EXCEL MATHEMATICS

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PRACTICE
1.30 Dividing Mixed Numbers

Answers

1. $\frac{5}{12}$
2. $\frac{4}{9}$
3. $\frac{7}{12}$
4. $\frac{2}{3}$
5. $2\frac{7}{8}$
6. $1\frac{2}{3}$
7. $1\frac{3}{7}$
8. $2\frac{1}{2}$
9. $\frac{4}{9}$
10. 5
11. 4
12. $1\frac{4}{5}$
13. $4\frac{1}{6}$
14. $2\frac{1}{3}$
15. $8\frac{1}{3}$
16. $\frac{4}{15}$
17. $\frac{4}{7}$
18. $1\frac{17}{20}$
19. $\frac{5}{12}$
20. $\frac{7}{10}$
21. $3\frac{3}{7}$

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