**1-2****Divisibility Patterns** (pages 10–13)

When you divide a whole number by another whole number, and the quotient is a whole number, then the first number is divisible by the second. For example, 12 is divisible by 2 because the quotient $12 \div 2$ is 6. You can test for divisibility mentally by using the divisibility rules below.

<p>Divisibility Rules for 2, 3, 4, 5, 6, 9, 10</p>	<p>A number is divisible by:</p> <ul style="list-style-type: none"> • 2 if the ones digit is divisible by 2. • 3 if the sum of the digits is divisible by 3. • 4 if the number formed by the last two digits is divisible by 4. • 5 if the ones digit is 0 or 5. • 6 if the number is divisible by both 2 and 3. • 9 if the sum of the digits is divisible by 9. • 10 if the ones digit is 0.
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EXAMPLES

A Is 34 divisible by 2?

The ones digit is 4. Since $4 \div 2 = 2$, 4 is divisible by 2. So, 34 is divisible by 2.

B Is 52 divisible by 3?

The sum of the digits is $5 + 2$, or 7. Since 7 is not divisible by 3, 52 is not divisible by 3.

Try These Together

1. Is 70 divisible by 5?

HINT: Is the ones digit 0 or 5?

2. Is 208 divisible by 9?

HINT: Is the sum of the digits divisible by 9?

PRACTICE

Tell whether the first number is divisible by the second number.

3. 984; 2

4. 533; 4

5. 935; 5

6. 570; 3

7. 2,861; 2

8. 626; 6

9. 5,650; 10

10. 8,844; 6

11. 77,787; 9

Tell whether each number is divisible by 2, 3, 4, 5, 6, 9, or 10.

12. 365

13. 1,170

14. 887

15. 486

16. 620

17. 2,865

18. 350

19. 4,544

20. 51

21. **Design** The fourth grade class at Chavez Elementary School is having a group photo taken. There are 102 students in the fourth grade. Can they form 6 equal rows for the photo?

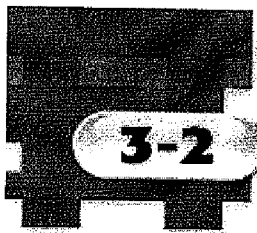
22. **Standardized Test Practice** Which number is divisible by both 2 and 9?

A 5,148

B 5,618

C 8,364

D 9,782

**3-2****Comparing and Ordering Decimals** (pages 108–110)

You can compare decimals by comparing the digits in each place-value position or by placing the decimals on a number line. Recall that $<$ means *less than* and $>$ means *greater than*.

Comparing Decimals

Line up the decimal points of the two numbers you want to compare. Then starting at the left, compare the digits in the same place-value position. When you come to a place where the digits are not equal, the decimal with the greater digit is the greater decimal number. On a number line, numbers to the right are greater than numbers to the left.

EXAMPLES

- A** Which number is greater, 1.09 or 1.9?

1.09
1.9

The digits are the same in the ones place but the second number has a greater digit in the tenths place, so 1.9 is the greater number.
 $1.9 > 1.09$

- B** Order 21.98, 24.03, 2.4, and 2.198 from least to greatest.

21.98
24.03
2.4
2.198

2.198, 2.4, 21.98, 24.03

Try These Together

1. Which of these numbers is to the left of 4.5 on a number line: 40.5 or 4.05?

HINT: Which number is less than 4.5?

2. Order 0.01, 0.002, and 0.02 from greatest to least.

HINT: You can also look at hundredths as money. Which is greater, 2 cents or 1 cent?

PRACTICE

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

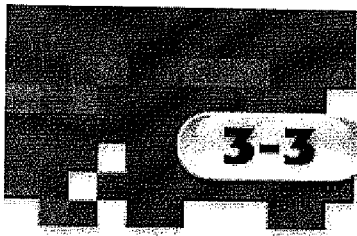
3. $0.41 \bullet 0.45$ 4. $1.8 \bullet 1.80$ 5. $8.25 \bullet 8.31$
6. $46.85 \bullet 46.96$ 7. $0.06 \bullet 0.61$ 8. $0.78 \bullet 0.45$
9. $1.363 \bullet 1.367$ 10. $458.6 \bullet 458.4$ 11. $1.03 \bullet 1.01$

Order each set of decimals from least to greatest.

12. 12.56, 12.58, 12.36, 12.41 13. 456.9, 455.8, 455.4, 456.3
14. Which is the greatest, 5.06, 5.60, or 5.006?

15. **Standardized Test Practice** Which of these numbers is the smallest: 4.015, 4.014, 4.018, or 4.011?

A 4.011 **B** 4.014 **C** 4.018 **D** 4.015



Rounding Decimals (pages 111–113)

You can round decimals to any place-value position.

Rounding Decimals	<ul style="list-style-type: none">• Underline the digit to be rounded.• Look at the digit to the right of the place being rounded.• Leave the underlined digit the same if the digit to the right is 0, 1, 2, 3, or 4.• Round up by adding 1 to the underlined digit if the digit to the right is 5, 6, 7, 8, or 9.• Then drop all the digits to the right of the underlined digit.
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EXAMPLES

A Round 25.0743 to the nearest tenth.

Underline the digit in the tenths place (0). Look at the digit to the right (7). Since 7 is greater than 5, add one to the 0. Then drop all the digits to the right. 25.1

B Round 324.67 to the nearest ten.

Underline the digit in the tens place (2). Because the next digit to the right is less than 5, leave the 2 the same. Replace the 4 with a 0 to keep the digits to the left of the decimal in the proper places. Drop the digits to the right of the decimal. 320

Try These Together

1. Round \$6.50 to the nearest dollar.

HINT: Remember that with a 5 you round up.

2. Is 0.345 closer to 0.3 or 0.4?

HINT: Use zeros to write each number with the same number of decimal places.

PRACTICE

Round each decimal to the indicated place-value position.

- | | | |
|------------------------|--------------------------|--------------------------|
| 3. 1.21; tenths | 4. 8.63; ones | 5. 38.622; hundredths |
| 6. 4.37; tenths | 7. 24.8568; thousandths | 8. 27.53; ones |
| 9. 13.58; tenths | 10. 23.2594; thousandths | 11. 99.3482; thousandths |
| 12. 95.524; hundredths | 13. 9.64; tenths | 14. 87.635; hundredths |

15. Round 67.687 to the nearest tenth.

16. Round \$12.35 to the nearest dollar.

17. **Entertainment** It costs \$3.99 to rent a movie from the video store. If you rented a movie, how much would you probably say it cost? (Round \$3.99 to the nearest dollar.)

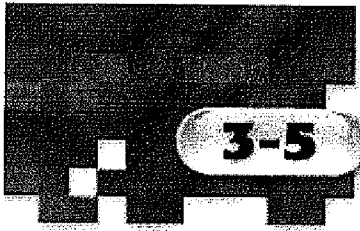
18. **Standardized Test Practice** People in the United States are living longer than ever before. The average life span is 76.1 years. What is this number rounded to the nearest year?

A 77

B 76.2

C 76.1

D 76



Adding and Subtracting Decimals

(pages 121–124)

You add and subtract decimals the same way you do whole numbers, after you line up the decimal points.

Adding and Subtracting Decimals

- Write the numbers you want to add or subtract so that the decimal points are in a line. Add zeros if they are needed.
- Estimate the sum or difference so you can check to see if your final answer is reasonable.
- Add or subtract. Compare the result with your estimate.

EXAMPLES

- A**
- Find the sum of 2.45 and 30.7.

Line up the decimal points and add a zero.

$$\begin{array}{r} 2.45 \\ + 30.70 \\ \hline 33.15 \end{array}$$

*Estimate first.
This is about $31 + 2$ or 33.
This is reasonably close to the estimate of 33.*

- B**
- Subtract 27.8 from 60.

Line up the decimal points and add a zero.

$$\begin{array}{r} 60.0 \\ - 27.8 \\ \hline 32.2 \end{array}$$

*Estimate first.
This is about $60 - 30$ or 30.
This is reasonably close to the estimate of 30.*

Try These Together

1. Subtract
- $3 - 2.09$
- .

HINT: Remember that 3 is the same as 3.00

2. Add
- $4.56 + 23$
- .

*HINT: Rewrite 23 with a decimal point and two zeros as you line up the numbers to add.***PRACTICE****Add or subtract.**

- $5.6 + 4.2$
 - $25.69 - 24.54$
 - $\$10.26 - \8.28
 - $4.05 + 2.68$
 - $1.25 + 1.34$
 - $2.7 - 1.1$
 - $5.68 + 3.45$
 - $16.51 - 13.25$
 - $12.61 + 3.27$
 - $13.32 - 9.12$
 - $9 + 3.43$
 - $0.06 + 0.15$
15. What is the value of $c + d$ if $c = 22.4$ and $d = 36.2$?
16. Evaluate $q - r$ if $q = 3.5$ and $r = 2.1$.
17. **Surveys** Manuel surveyed two of his friends to find out the average number of sodas they drink in one week. Carl drinks 4.5 sodas and Jon drinks 6.75 sodas. How many sodas do Carl and Jon drink together in one week?



18. **Standardized Test Practice** Janette is 1.55 meters tall and Kirsten is 1.47 meters tall. How much taller is Janette than Kirsten?

A 0.08 m**B** 0.06 m**C** 0.07 m**D** 0.09 m

4-1

Multiplying Decimals by Whole Numbers

(pages 135–138)

When you multiply a decimal by a whole number, you can estimate to find where to put the decimal point in the product. You can also place the decimal point by counting the decimal places in the decimal factor.

Estimation	<ul style="list-style-type: none"> Estimate the product of a decimal and a whole number by rounding the decimal to its greatest place value position and then multiplying. Multiply as you do with whole numbers. Use your estimate as a guide for placing the decimal in the product.
Counting Decimal Places	<ul style="list-style-type: none"> Multiply the decimal and whole number as if they were both whole numbers. Count the number of decimal places in the decimal factor. Place the decimal point in the answer so that there are the same number of decimal places as in the decimal factor. Annex (or write) zeros to the left of your answer if more decimal places are needed.

EXAMPLES

Find the value of each expression.

A Find 22.3×5 .

20×5 Round the decimal. Estimate the product; 100.

22.3

$\times 5$ Multiply as with whole numbers.

111.5 Use the estimate, 100, as a guide to placing the decimal. Place the decimal point after 111.

B Find 0.015×3 .

0.015 There are 3 decimal places in this factor.

$\times 3$

0.045 Annex a zero on the left to make three decimal places.

Try These Together**Multiply.**

1. 4.02

$\times 5$

HINT: Estimate the product; then, multiply as with whole numbers.

2. 0.017

$\times 2$

HINT: Count the decimal places in the decimal factor.

PRACTICE**Multiply.**

3. 0.4

$\times 9$

4. 0.62

$\times 7$

5. 1.71

$\times 3$

6. 3.65

$\times 5$

7. 61×0.004

8. 9.7×561

9. $5,618 \times 6.83$

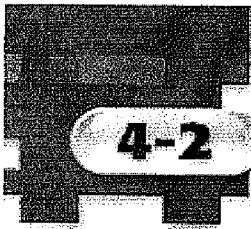
10. **Standardized Test Practice** Evaluate $104h$ if $h = 7.1$.

A 0.7384

B 738.4

C 7,384

D 73,840

**4-2****Multiplying Decimals** (pages 141–143)

When you multiply two decimals, multiply as with whole numbers. 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.

EXAMPLES

Find the value of each expression.

A Find 2.9×4.1 .

3×4 Round the decimals. Estimate the product; 12.

2.9 one decimal place
 $\times 4.1$ one decimal place
 29

116

11.89 two decimal places

The product is 11.89. Compared to the estimate, the product is reasonable.

B Find 3.2×5.7 .

3×6 Round the decimals. Estimate the product; 18.

3.2 one decimal place
 $\times 5.7$ one decimal place

224

160

18.24 two decimal places

The product is 18.24. Compared to the estimate, the product is reasonable.

Try These Together

Multiply.

1. 7.6
 $\times 2.3$

HINT: Estimate the product. Then multiply as with whole numbers.

2. 0.52
 $\times 2.6$

HINT: Count the decimal places in the factors.

PRACTICE

Multiply.

3. 0.52×1.7

4. 6.6×0.054

5. 2.73×5.86

6. 1.5×6.4

7. 0.9×0.036

8. 3.25×7.3

9. 0.85×0.04

10. 4.6×8.2

11. 12.6×2.7

12. Find $2.5a + b$ if $a = 4.65$ and $b = 5.8$



13. **Standardized Test Practice** Multiply 1.6×0.023 .

A 0.0368

B 0.368

C 3.68

D 36.8

