

3-2

Adding and Subtracting Decimals

Warm Up

Problem of the Day

Lesson Presentation

3-2 Adding and Subtracting Decimals

Warm Up

Estimate by rounding to the nearest integer.

1. $3.62 + 4.1$

8

2. $7.47 + (-8.23)$

-1

3. $8.52 - 3.16$

6

4. $5.826 + 11.729$

18

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Problem of the Day

Complete the magic square. The sum of each row, column, and diagonal must be the same number.

6.375	0.5	7
5.25	4.625	4
2.25	8.75	2.875

3-2**Adding and Subtracting Decimals**

Learn to add and subtract decimals.

3-2**Adding and Subtracting Decimals**

One of the coolest summers on record in the Midwest was in 1992. The average summertime temperature that year was 66.8°F . Normally, the average temperature is 4°F higher than it was in 1992.

To find the normal average summertime temperature in the Midwest, you can add 66.8°F and 4°F .

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$$\begin{array}{r} 66.8 \\ + 4.0 \\ \hline 70.8 \end{array}$$

Use zero as a placeholder so that both numbers have the same number of digits after their decimal points.

Add each column just as you would add integers.

Line up the decimal points.

The normal average summertime temperature in the Midwest is 70.8°F .

Additional Example 1A: Adding Decimals

Add. Estimate to check whether each answer is reasonable.

$$4.55 + 11.3$$

$$\begin{array}{r} 4.55 \\ + 11.30 \\ \hline 15.85 \end{array}$$

Line up the decimal points.

Use zero as a placeholder.

Add.

Estimate

$$5 + 11 = 16$$

15.85 is a reasonable answer.

Additional Example 1B: Adding Decimals

Add. Estimate to check whether each answer is reasonable.

$$6.44 + 16$$

$$\begin{array}{r} 6.44 \\ + 16.00 \\ \hline 22.44 \end{array}$$

Line up the decimal points.

Use zeros as placeholders.

Add.

Estimate

$$6 + 16 = 22$$

22.44 is a reasonable answer.

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Remember!

When adding numbers with the same sign, find the sum of their absolute values. Then use the sign of the numbers.

Additional Example 1C: Adding Decimals

Add. Estimate to check whether each answer is reasonable.

$$-8.33 + (-10.972)$$

$$-8.33 + (-10.972)$$

$$\begin{array}{r} 8.330 \\ +10.972 \\ \hline 19.302 \end{array}$$

$$\begin{aligned} -8.33 + (-10.972) &= \\ -19.302 & \end{aligned}$$

Estimate

$$-8 + (-11) = -19$$

Think: $8.33 + 10.972$.

*Line up the decimal points.
Use zero as a placeholder.
Add.*

Use the sign of the two numbers.

-19.302 is a reasonable answer.

Check It Out: Example 1A

Add. Estimate to check whether each answer is reasonable.

$$6.78 + 13.2$$

$$\begin{array}{r} 6.78 \\ + 13.20 \\ \hline 19.98 \end{array}$$

Line up the decimal points.

Use zero as a placeholder.

Add.

Estimate

$$7 + 13 = 20$$

19.98 is a reasonable answer.

Check It Out: Example 1B

Add. Estimate to check whether each answer is reasonable.

$$4.21 + 34$$

$$\begin{array}{r} 4.21 \\ + 34.00 \\ \hline 38.21 \end{array}$$

Line up the decimal points.

Use zeros as placeholders.

Add.

Estimate

$$4 + 34 = 38$$

38.21 is a reasonable answer.

Check It Out: Example 1C

Add. Estimate to check whether each answer is reasonable.

$$-7.89 + (-13.852)$$

$$-7.89 + (-13.852)$$

$$\begin{array}{r} 7.890 \\ +13.852 \\ \hline 21.742 \end{array}$$

$$\begin{aligned} -7.89 + (-13.852) &= \\ -21.742 & \end{aligned}$$

Estimate

$$-8 + (-14) = -22$$

Think: $7.89 + 13.852$.

Line up the decimal points.

Use zero as a placeholder.

Add.

Use the sign of the two numbers.

-21.742 is a reasonable answer.

Additional Example 2: Subtracting Decimals

Subtract.

A. $5.34 - 2.08$

$$\begin{array}{r} 5.34 \\ -2.08 \\ \hline 3.26 \end{array}$$

Line up the decimal points.

Subtract.

B. $28 - 15.911$

$$\begin{array}{r} 28.\overset{7}{\cancel{0}}\overset{9}{\cancel{0}}\overset{9}{\cancel{0}}\overset{10}{\cancel{0}} \\ -15.911 \\ \hline 12.089 \end{array}$$

Use zeros as placeholders.

Line up the decimal points.

Subtract.

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Check It Out: Example 2

Subtract.

A. $3.57 - 1.46$

$$\begin{array}{r} 3.57 \\ -1.46 \\ \hline 2.11 \end{array}$$

Line up the decimal points.

Subtract.

B. $34 - 12.462$

$$\begin{array}{r} 34.\overset{3}{\cancel{0}}\overset{9}{\cancel{0}}\overset{9}{\cancel{0}}\overset{10}{\cancel{0}} \\ -12.462 \\ \hline 21.538 \end{array}$$

Use zeros as placeholders.

Line up the decimal points.

Subtract.

Additional Example 3: *Application*

During one month in the United States, 492.23 million commuter trips were taken on buses, and 26.331 million commuter trips were taken on light rail. What was the total number of trips taken on buses and light rail? Estimate to check whether your answer is reasonable.

$$492.230$$

$$+26.331$$

$$518.561$$

Use zero as a place holder.

Line up the decimal points.

Add.

Estimate

$$492 + 26 = 518$$

518.561 is a reasonable answer.

The total number of trips was 518.561 million.

3-2**Adding and Subtracting Decimals****Check It Out: Example 3**

In 1999, 143.66 million bushels of corn were grown in the United States. In 2000, the harvest yielded 169.831 million bushels. What was the total production for those two years? Estimate to check whether your answer is reasonable.

$$\begin{array}{r} 143.660 \\ +169.831 \\ \hline 313.491 \end{array}$$

Use zero as a place holder.

Line up the decimal points.

Add.

Estimate

$$144 + 170 = 314$$

The total number of bushels was 313.491 million.

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Lesson Quiz: Part I

Add. Estimate to check whether your answer is reasonable.

1. $6.98 + 14.27$

21.25;

Estimate: $7 + 14 = 21$

2. $-8.46 + (-19.2)$

-27.66;

Estimate: $-8 + (-19) = -27$

Subtract. Estimate to check whether your answer is reasonable.

3. $6.72 - 4.16$

2.56;

Estimate: $7 - 4 = 3$

4. $24 - 3.8$

20.2;

Estimate: $24 - 4 = 20$

Lesson Quiz: Part II

Subtract. Estimate to check whether your answer is reasonable.

5. Renee finished her first lap in the 200 m freestyle event in 28.76 seconds. She completed the second lap in 30.17 seconds. By how much did her time increase in the second lap? Estimate to check whether your answer is reasonable.

1.41 seconds; *Estimate:* $30 - 29 = 1$