Working with Decimals

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Information

Common core icons

This icon indicates a slide where the Standards for Mathematical Practice are being developed. Details of these are given in the Notes field.

Slides containing examples of mathematical modeling are marked with this stamp.

This icon indicates an opportunity for discussion or group work.

The **Standards for Mathematical Practice** outlined in the Common Core State Standards for Mathematics describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

These are:

1) Make sense of problems and persevere in solving them.

2) Reason abstractly and quantitatively.

3) Construct viable arguments and critique the reasoning of others.

4) Model with mathematics.

5) Use appropriate tools strategically.

6) Attend to precision.

7) Look for and make use of structure.

8) Look for and express regularity in repeated reasoning.

This icon indicates that the slide contains activities created in Flash. These activities are not editable.

This icon indicates teacher's notes in the Notes field.

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Adding and subtracting decimals

Adding by partitioning | Subtracting by partitioning | Practice

There are many different methods we can use to add and subtract decimals.

Press on the tabs above to learn more about **partitioning**.

How could we check each answer?

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Adding and subtracting decimals

Adding by counting up | Subtracting by counting up | Practice

There are many different methods we can use to add and subtract decimals.

Press on the tabs above to learn more about **counting up**.

How could we check each answer?

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Adding and subtracting decimals

Adding by compensation | Subtracting by compensation | Practice

There are many different methods we can use to add and subtract decimals.

Press on the tabs above to learn more about **compensation**.

How could we check each answer?

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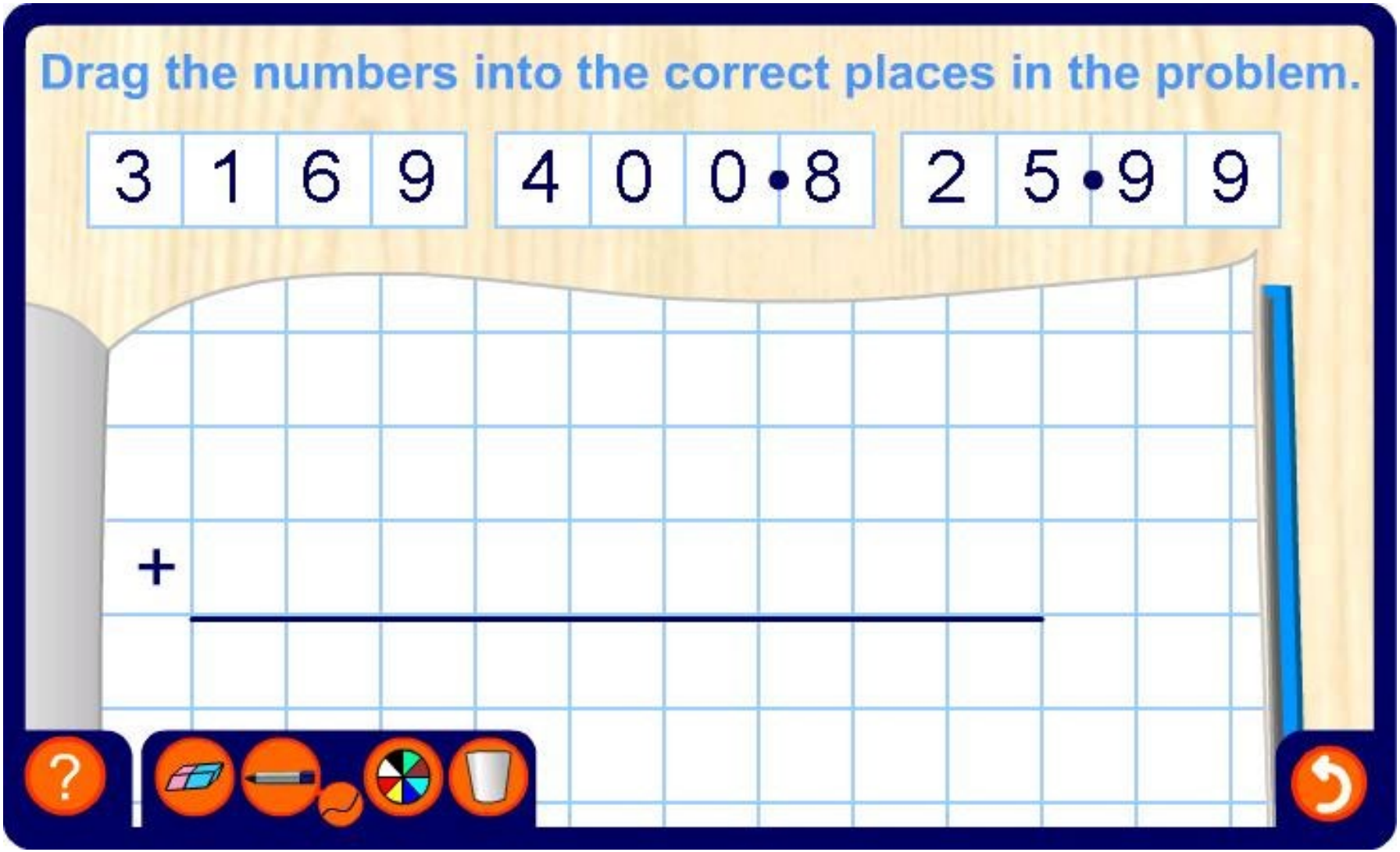
Adding and subtracting decimals



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Adding and subtracting decimals

Jack is doing some woodwork.
He buys a 3 m length of wood.
Jack needs to cut off two pieces of wood – one of length 0.7 m and one of length 1.92 m.

What is the total length of wood that Jack needs to cut off?

$$\begin{array}{r} 0.70 \\ +\ 1.92 \\ \hline 2.62 \\ \hline 1 \end{array}$$

Jack needs to cut off 2.62 m altogether.

What is the length of the piece of wood that is left over?

$$\begin{array}{r} {}^{2}3.{}^{9}\cancel{1}{}^{1}\cancel{0} \\ -\ 2.62 \\ \hline 0.38 \\ \hline \end{array}$$

The leftover wood will measure 0.38 m (or 38 cm).

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Writing an equivalent calculation

It is often easier to work with whole numbers than decimals.
How can we convert decimals into equivalent whole numbers?

We can convert decimals into equivalent whole numbers by multiplying them by 10, 100 or 1000.

What is 36.8 ÷ 0.4?

We can write 36.8 ÷ 0.4 as $\frac{36.8}{0.4} = \frac{368}{4}$

×10 ×10

36.8 ÷ 0.4 is equivalent to 368 ÷ 4 = **92**

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Find the equivalent calculation

Which calculation is equivalent to 81 ÷ 9?

- 8.1 ÷ 9
- 810 ÷ 9
- 81 ÷ 90
- 810 ÷ 90

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Multiplying decimals: column method

We can use equivalent calculations when multiplying decimals to allow us to use the standard column method.

What is 2.28 × 7?

Start by finding an approximate answer: $2.28 \times 7 \approx 2 \times 7 = 14$

2.28 × 7 is equivalent to 228 × 7 ÷ 100

$$\begin{array}{r} 228 \\ \times \quad 7 \\ \hline 1596 \\ \hline 1\ 5 \end{array}$$

Answer

2.28 × 7 = 1596 ÷ 100 = **15.96**

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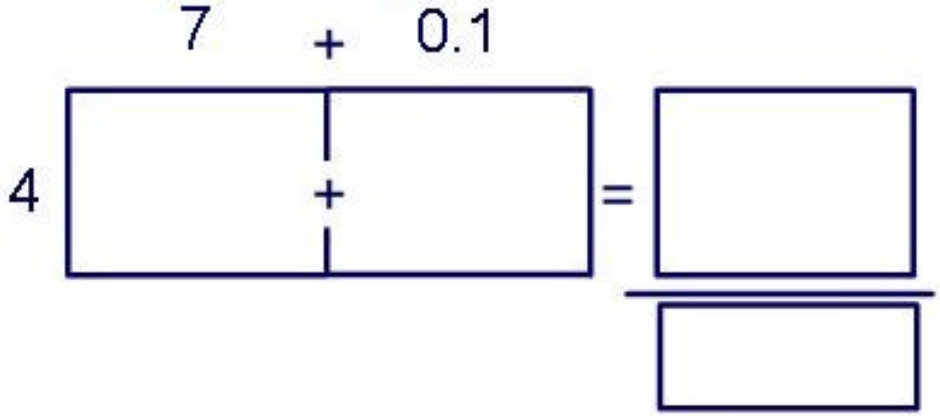
Multiplying decimals: grid method

Calculate: $4 \times 7.1 = 4 \times (7 + 0.1)$



1-digit number × 2-digit number

Press the boxes to reveal the answers using this method.

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Multiplying decimals

Distributive property | Factors | Doubling and halving

Sometimes, it is easier to use other methods to multiply numbers involving decimals.

Press on the tabs above to learn more about the **distributive property**, **factors** and **doubling and halving**.

How could we check each answer?

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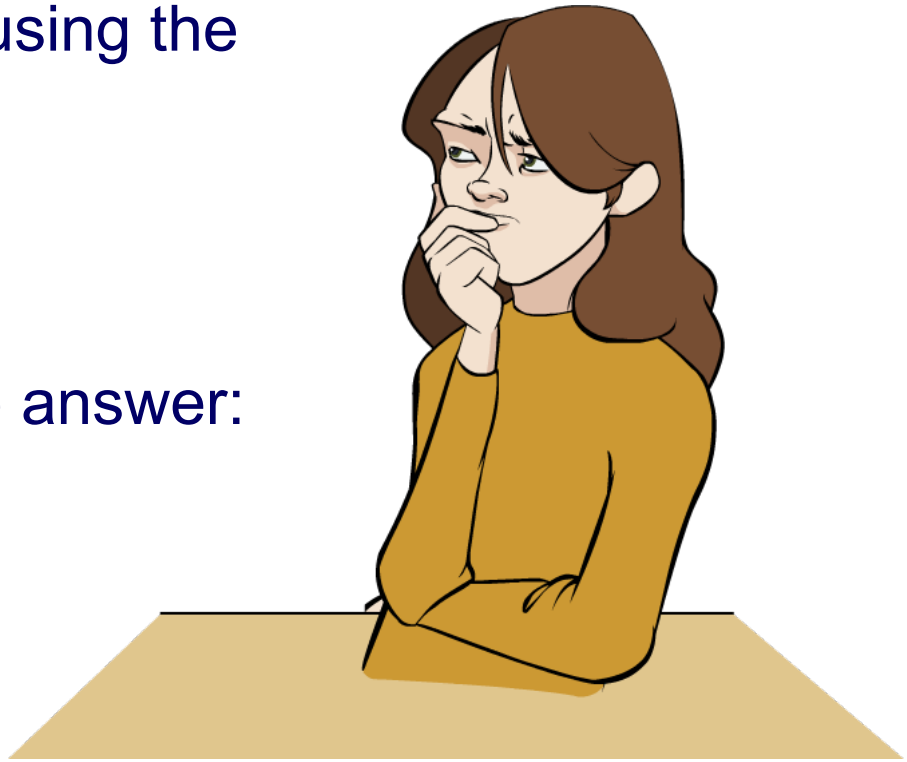
Dividing decimals: short division

One way to divide decimals is using the familiar short division method.

What is 714.06 ÷ 9?



Start by finding an approximate answer:

$714.06 \div 9 \approx 720 \div 9 = 80$

$$
\begin{array}{r}
0\,7\,9\,.\,3\,4 \\
9\overline{)\,7^{7}1^{8}4\,.^{3}0^{3}6}
\end{array}
$$

714.06 ÷ 9 = **79.34**

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Dividing decimals

Fractions | Factors | Repeated subtraction

Sometimes, it is easier to use other methods to divide numbers involving decimals.

Press on the tabs above to learn more about **fractions**, **factors** and **repeated subtraction**.

How could we check each answer?

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Decimals in context

Michael is having a birthday party, and wants to give each of his guests a toy kazoo as a party favor. At the party shop, kazoos cost 46¢ each. Michael has $8.12 in his pocket. How many kazoos can he buy?

First we must decide what the question is asking.

How many times does 0.46 go into 8.12?

Calculate 8.12 ÷ 0.46.

Use one of the methods you have learned to find the answer.

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Decimals in context

Estimate: 8 ÷ 0.5 = 16

Equivalent calculation: 8.12 ÷ 0.46 = 812 ÷ 46

46) 812	
− 460	**10** × 46
352	
− 322	**7** × 46
30.0	
− 27.6	**0.6** × 46
2.40	
− 2.30	**0.05** × 46
0.10	

8.12 ÷ 0.43 = **17.65** R 0.1

Michael can buy 17 kazoos.

How much money does Michael have left over?

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