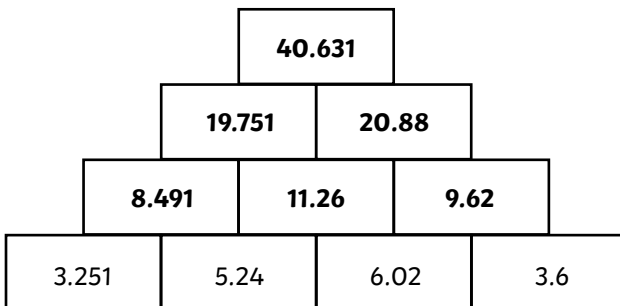




- 1) a) 5.802  
b) 7.025  
c) 7.822  
d) 8.139
- 2) a) and c) are incorrect.  
A sensible estimate for a) would be 9. The correct answer is 8.861  
A sensible estimate for b) would be 5. The correct answer is 5.425
- 3) 6.246km



- 1) Philip is correct. Holly has made the mistake of not lining up the digits according to their value. Lining up the decimal point can help with this, as can be seen with Philip's method.
- 2)



	3	.	2	4	
+	1	.	6	8	3
	4	.	9	2	3

	2	.	5	0	8
+	2	.	6	7	
	5	.	1	7	8



- 1) Possible solutions include:  
 $3.456 + 2.71 = 6.166$   
 $5.267 + 1.34 = 6.607$   
 $2.765 + 4.13 = 6.895$   
 $3.761 + 2.54 = 6.301$
- 2) Possible solutions include:  
 $3.26 + 7.145 = 10.405$   
 $2.35 + 7.614 = 9.964$   
 $2.13 + 7.546 = 9.676$   
 $7.14 + 3.256 = 10.396$
- 3) Possible solutions include:  
 $3.7 + 5.24 + 1.06$   
 $3.2 + 1.76 + 5.04$   
 $3.2 + 1.06 + 5.74$   
 Answers will vary. For example, the tenths, hundredths and thousandths have a total of 1 and therefore as long as they keep that value, the digits can be moved around in the calculation.



1) Complete these calculations.

	Ones	tenths	hundredths	thousandths
a)	2	3	4	
+	3	4	6	2

b)	4	3		
+	2	7	2	5

c)  $3.142 + 4.68 =$  \_\_\_\_\_

d)  $2.03 + 6.109 =$  \_\_\_\_\_

2) Looking at these calculations, use your estimating knowledge to identify which have the wrong answer without doing any written methods. Tick or cross to show which are correct and incorrect. What would you estimate the totals to be?

a)  $6.321 + 2.54 = 6.575$

b)  $4.37 + 1.756 = 6.126$

c)  $2.3 + 3.125 = 314.8$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3) Jody walked 2.406km on Monday and another 3.84km on Tuesday. How far has she walked in total?





1) Philip and Holly are adding 2.356 and 3.47 together. Here are their methods:

<b>Philip</b>					
	2	.	3	5	6
+	3	.	4	7	
	5	.	8	2	6
			1		

<b>Holly</b>					
	2	.	3	5	6
	+	3	.	4	7
	2	.	7	0	3
			1	1	

Who's method is correct? Prove it and explain the mistake the other person has made.

---

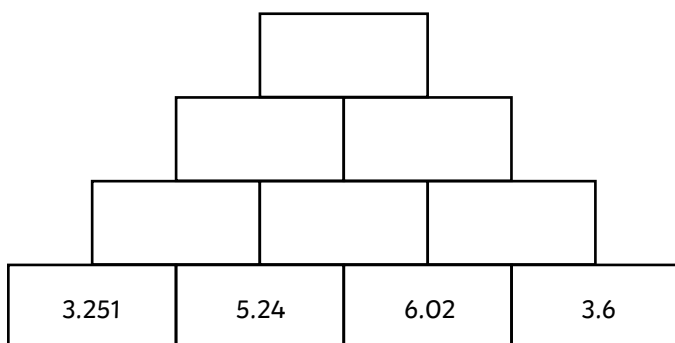


---



---

2) Complete the addition pyramid. The block above each pair of blocks is the total of the numbers below it.



3) Can you work out the missing digits in these calculations?

	<input type="text"/>	.	2	<input type="text"/>	<input type="text"/>
+	1	.	6	8	
	4	.	<input type="text"/>	2	3

	<input type="text"/>	.	5	<input type="text"/>	<input type="text"/>
+	2	.	<input type="text"/>	7	
	5	.	1	7	8



- 1) Use these digit cards to make 2 numbers with a total between 6 and 7. Find 4 possible solutions. You can only use the digits 1-7 once.

1 2 3 4 5 6 7

	?	.	?	?	?
+	?	.	?	?	

+																				

- 2) The calculation has a total that when rounded to the nearest whole number is 10. Again you can only use the digits 1-7 once. Find 4 possible solutions.

	?	.	?	?	
+	?	.	?	?	?

+																				

- 3) Each digit is different. These three numbers have a total of 10. What could they be? Find 3 possible solutions.

	?	.	?	
	?	.	?	?
+	?	.	?	?

+			

+			

+			

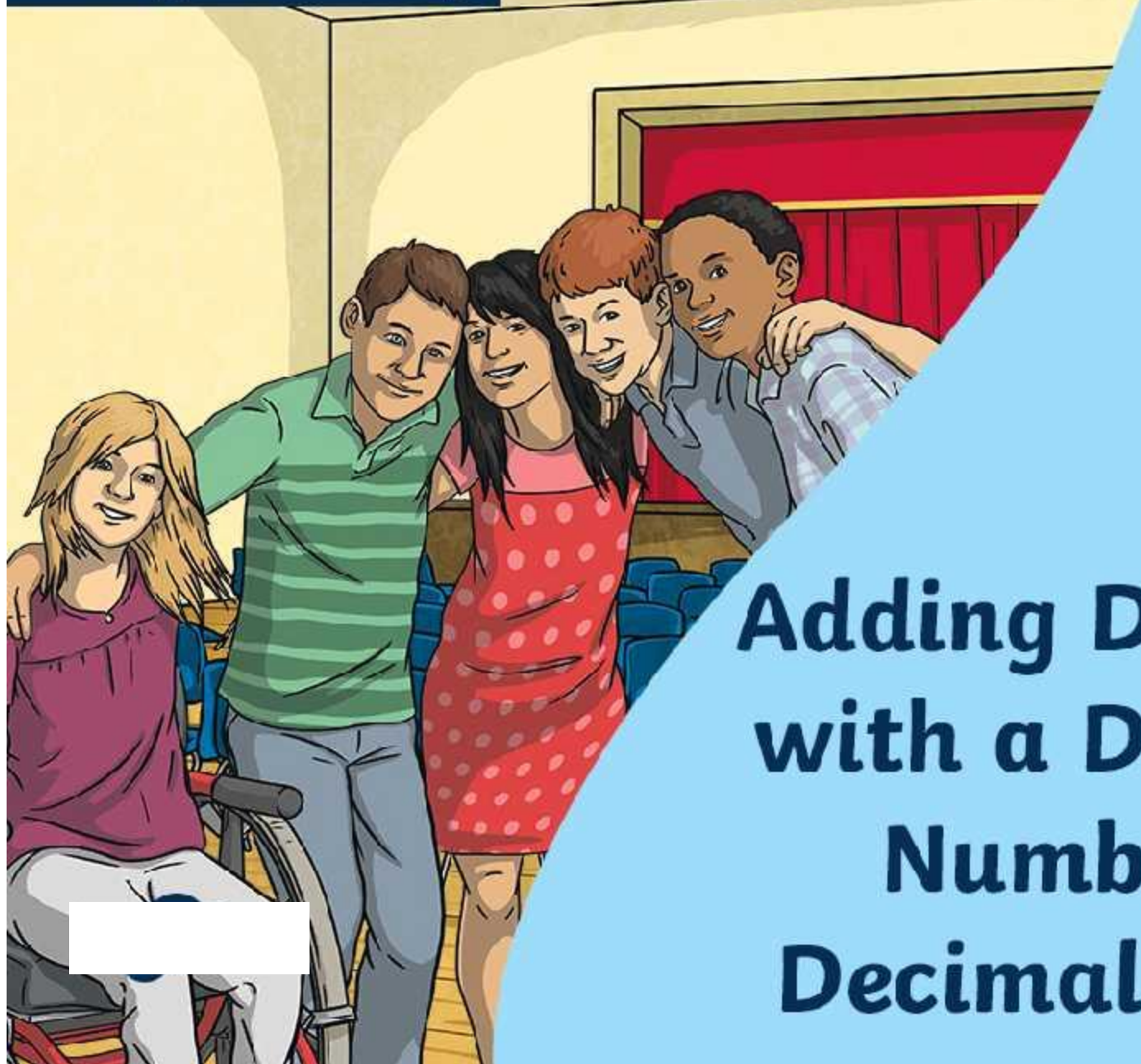
What do you notice about the digits you have used in your different solutions?

---



---

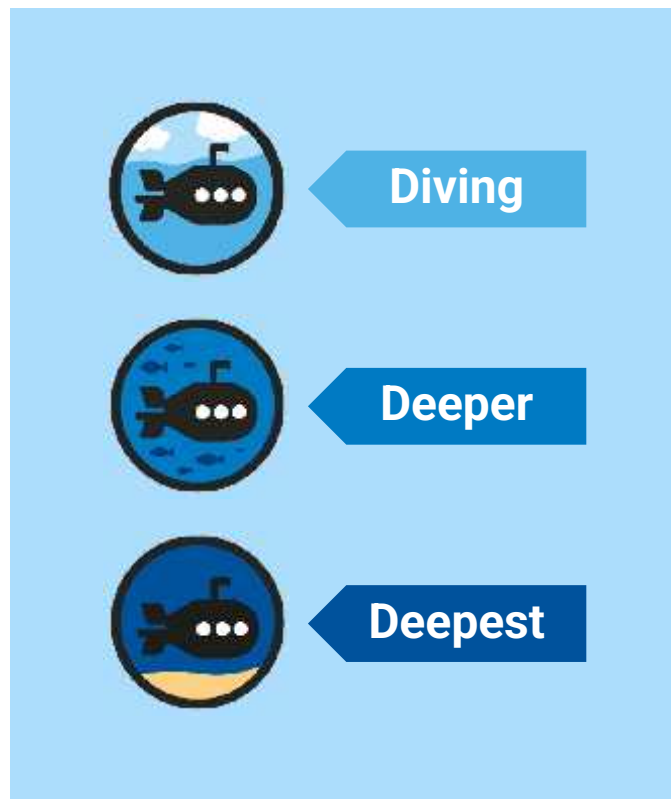
Diving into Mastery



# Adding Decimals with a Different Number of Decimal Places

# Diving into Mastery Guidance for Educators

Each activity sheet is split into three sections, diving, deeper and deepest, which are represented by the following icons:

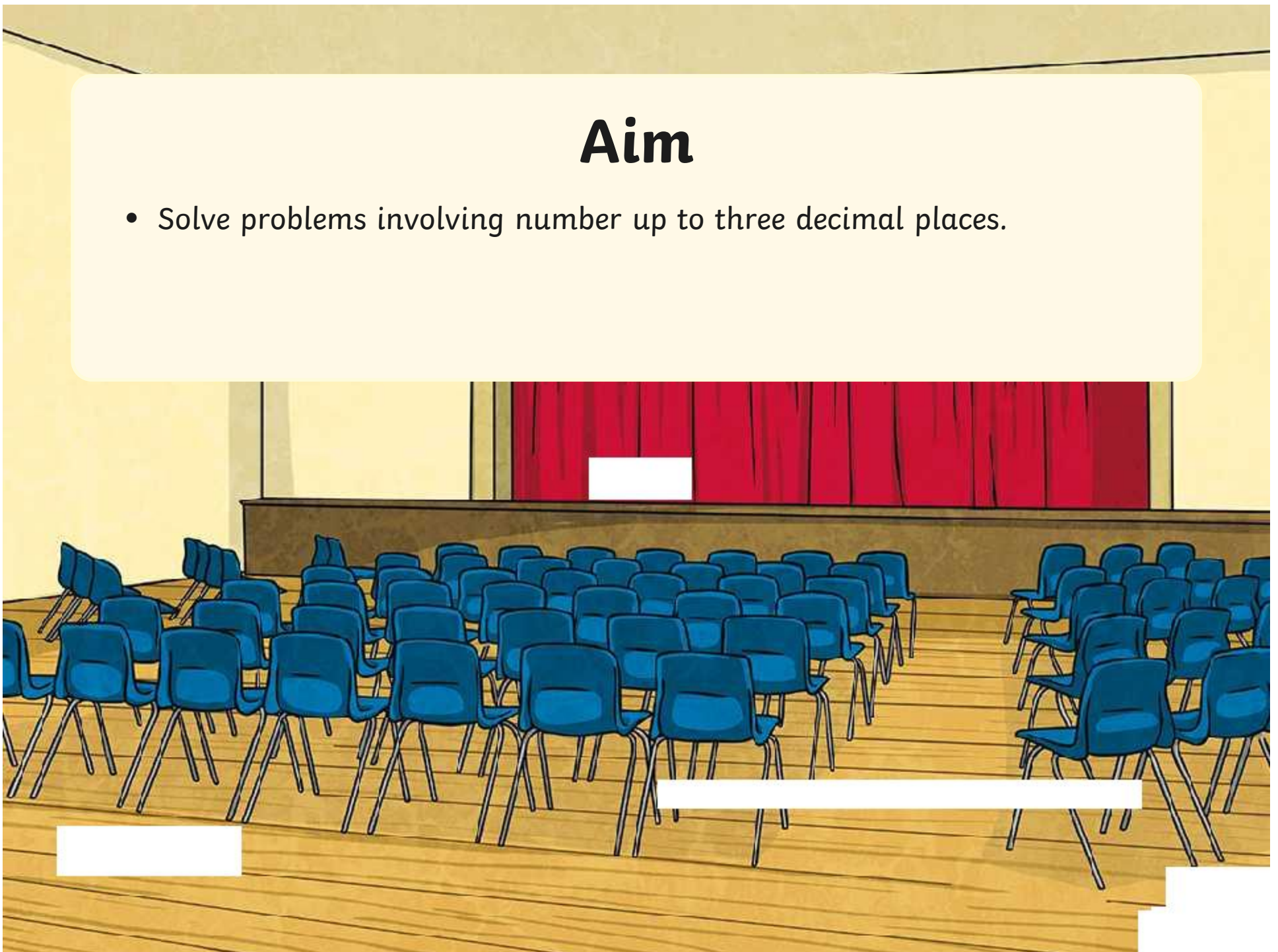


These carefully designed activities take your children through a learning journey, initially ensuring they are fluent with the key concept being taught; then applying this to a range of reasoning and problem-solving activities.

These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.

# Aim

- Solve problems involving number up to three decimal places.



# Adding Decimals with a Different Number of Decimal Places

Diving



Complete these calculations.

A spiral-bound notebook is shown on a wooden desk. The notebook has two pages visible. The top page contains two addition problems using a grid method. The bottom page is partially visible, showing the numbers 9.132 and 11.458. A purple pencil is lying on the desk to the left of the notebook.

	Ones	tenths	hundredths	thousandths
	2	3	6	
+	4	2	8	3
	6	6	4	3
		1		

	3	2	5	4
+	4	9	3	
	8	1	8	4
	1			

9.132

11.458





What would you estimate the answers of these calculations to be?

a)  $3.673 + 4.26$  **Estimate:  $4 + 4 = 8$**

b)  $8.23 + 4.614$  **Estimate:  $8 + 5 = 13$**

c)  $2.23 + 7.408$  **Estimate:  $2 + 7 = 9$**

## Adding Decimals with a Different Number of Decimal Places

Deeper



Fern and John are adding two decimal numbers. They both have different answers. Who is correct? What mistake has the other person made?

Fern					
	3	.	2	5	
+	4	.	4	7	3
	7	.	7	2	3
			1		

John					
	3	.	2	5	
+	4	.	4	7	3
	7	.	6	2	3

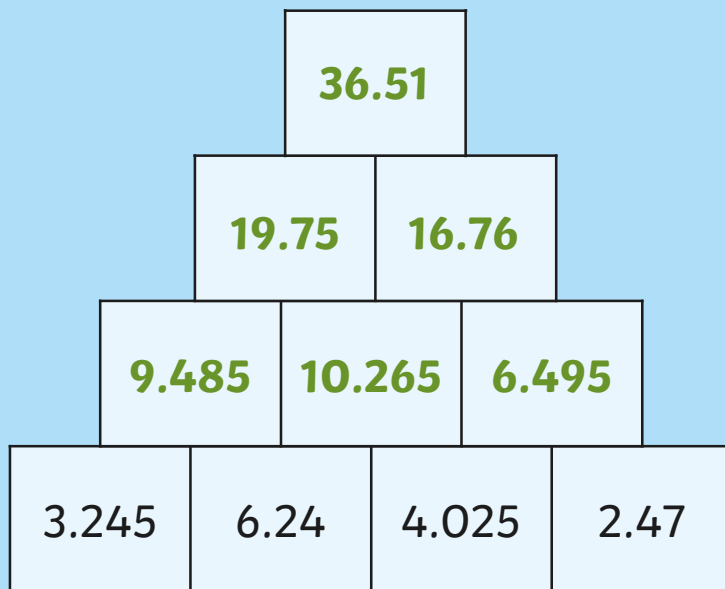
**Fern is correct.** John has made an error. He has not recorded his regroup digit in the tenths column.

## Adding Decimals with a Different Number of Decimal Places

Deeper



Complete this addition pyramid.  
The block above each pair of blocks  
is the total of the numbers below it.



## Adding Decimals with a Different Number of Decimal Places

Deepest



	?	.	?	?	
+	?	.	?	?	?


Many answers are possible, including:

$$3.57 + 4.689 = 8.259$$

$$3.86 + 4.579 = 8.439$$

$$4.68 + 3.579 = 8.259$$

$$4.89 + 3.567 = 8.457$$



Use these digit cards to complete this calculation. The answer is between 8 and 9. You can only use each digit card once. Find 4 possible solutions.

# Adding Decimals with a Different Number of Decimal Places

Deepest

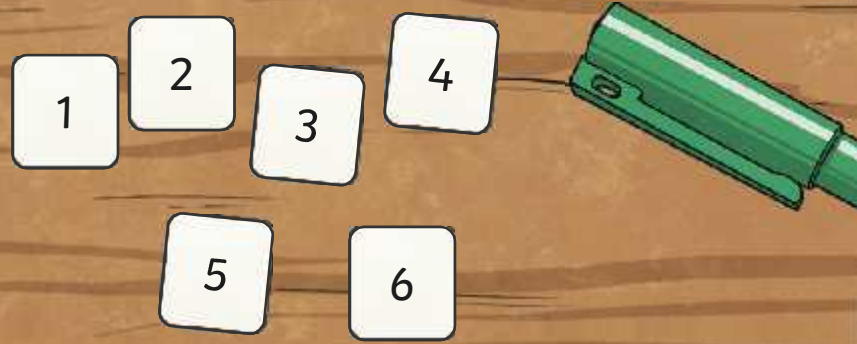


	6		
	5	• 3	
+	4	• 2	1

	5		
	4	• 2	
+	6	• 3	1

There are several solutions for the largest and smallest totals. Here are two examples for the largest total.



The largest total (15.51) can be made with the largest digits (6, 5 and 4) in the ones column; 3 and 2 tenths and 1 hundredth.

# Adding Decimals with a Different Number of Decimal Places

Deepest

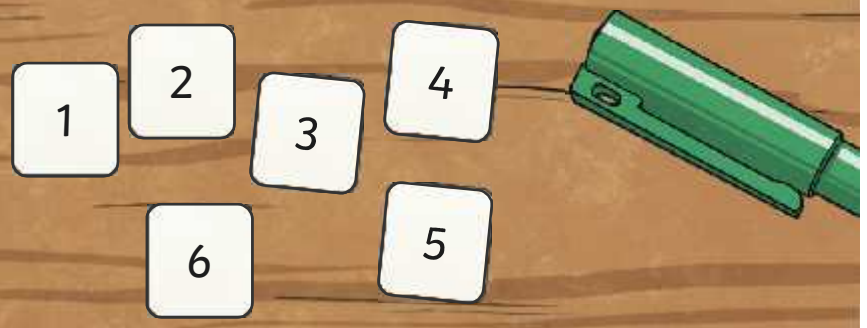


	1		
	2	• 4	
+	3	• 5	6

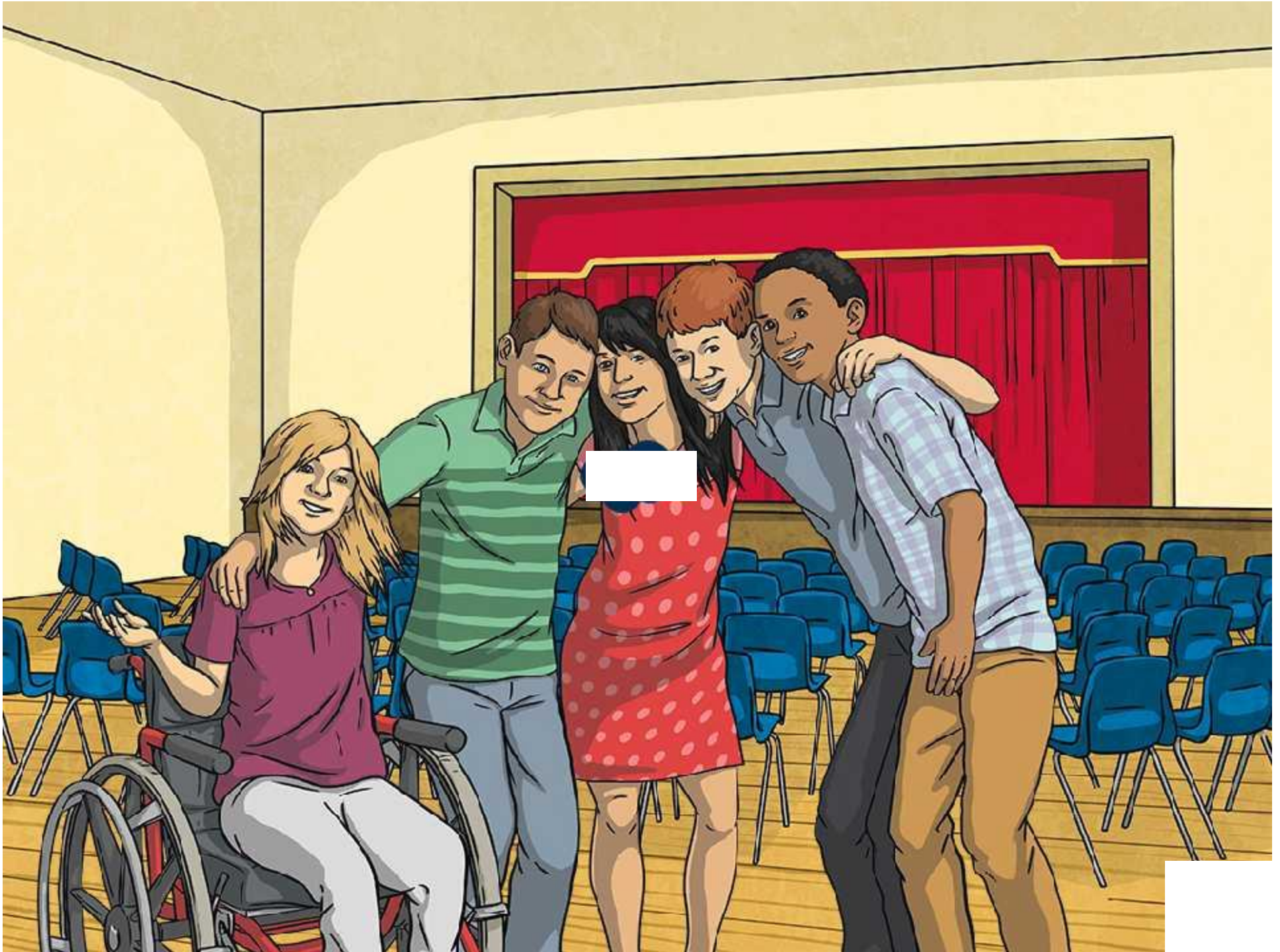
	3		
	1	• 5	
+	2	• 4	6

Here are two examples for the smallest total.



The smallest total (6.96) can be made with the smallest digits in the ones column and the largest digit in the hundredths column.







1) Complete these calculations.



a)

	Ones	tenths	hundredths	thousandths
	2	3	4	
+	3	4	6	2

b)

	4	3		
+	2	7	2	5

c)  $3.142 + 4.68 =$  \_\_\_\_\_

d)  $2.03 + 6.109 =$  \_\_\_\_\_

2) Looking at these calculations, use your estimating knowledge to identify which have the wrong answer without doing any written methods. Tick or cross to show which are correct and incorrect. What would you estimate the totals to be?

a)  $6.321 + 2.54 = 6.575$

b)  $4.37 + 1.756 = 6.126$

c)  $2.3 + 3.125 = 314.8$

3) Jody walked 2.406km on Monday and another 3.84km on Tuesday. How far has she walked in total?



1) Complete these calculations.



a)

	Ones	tenths	hundredths	thousandths
	2	3	4	
+	3	4	6	2

b)

	4	3		
+	2	7	2	5

c)  $3.142 + 4.68 =$  \_\_\_\_\_

d)  $2.03 + 6.109 =$  \_\_\_\_\_

2) Looking at these calculations, use your estimating knowledge to identify which have the wrong answer without doing any written methods. Tick or cross to show which are correct and incorrect. What would you estimate the totals to be?

a)  $6.321 + 2.54 = 6.575$

b)  $4.37 + 1.756 = 6.126$

c)  $2.3 + 3.125 = 314.8$

3) Jody walked 2.406km on Monday and another 3.84km on Tuesday. How far has she walked in total?



- 1) Philip and Holly are adding 2.356 and 3.47 together. Here are their methods:



Philip

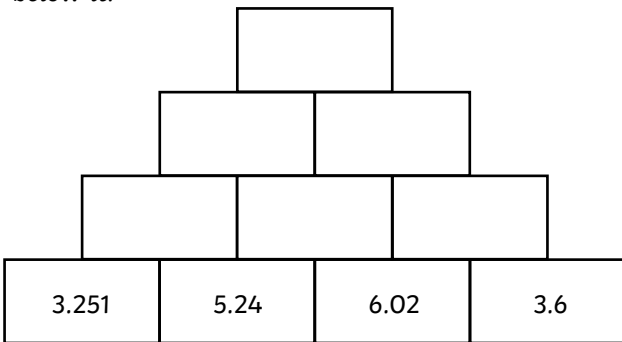
	2	3	5	6
+	3	4	7	
	5	8	2	6
		1		

Who's method is correct? Prove it and explain the mistake the other person has made.

Holly

	2	3	5	6
+	3	4	7	
	2	7	0	3
		1	1	

- 2) Complete the addition pyramid. The block above each pair of blocks is the total of the numbers below it.



- 3) Can you work out the missing digits in these calculations?

	<input type="text"/>	2	<input type="text"/>	<input type="text"/>
+	1	6	8	
	4	<input type="text"/>	2	3

	<input type="text"/>	5	<input type="text"/>	<input type="text"/>
+	2	<input type="text"/>	7	
	5	1	7	8

- 1) Philip and Holly are adding 2.356 and 3.47 together. Here are their methods:



Philip

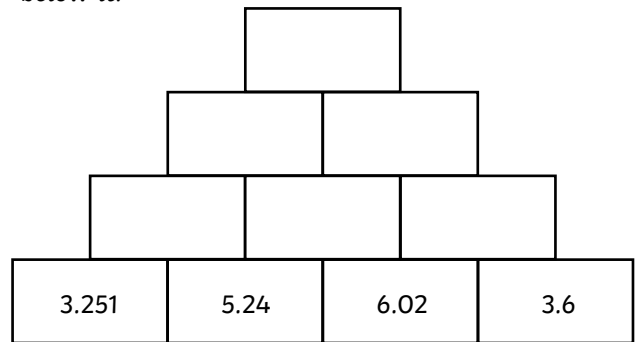
	2	3	5	6
+	3	4	7	
	5	8	2	6
		1		

Who's method is correct? Prove it and explain the mistake the other person has made.

Holly

	2	3	5	6
+	3	4	7	
	2	7	0	3
		1	1	

- 2) Complete the addition pyramid. The block above each pair of blocks is the total of the numbers below it.



- 3) Can you work out the missing digits in these calculations?

	<input type="text"/>	2	<input type="text"/>	<input type="text"/>
+	1	6	8	
	4	<input type="text"/>	2	3

	<input type="text"/>	5	<input type="text"/>	<input type="text"/>
+	2	<input type="text"/>	7	
	5	1	7	8

- 1) Use these digit cards to make 2 numbers with a total between 6 and 7. Find 4 possible solutions. You can only use the digits 1-7 once.



1	2	3	4	5	6	7
---	---	---	---	---	---	---

	?	?	?	?
+	?	?	?	

- 2) The calculation has a total that when rounded to the nearest whole number is 10. Again you can only use the digits 1-7 once. Find 4 possible solutions.

	?	?	?	
+	?	?	?	?

- 3) Each digit is different. These three numbers have a total of 10. What could they be? Find 3 possible solutions.

	?	?	
	?	?	?
+	?	?	?

What do you notice about the digits you have used in your different solutions?

- 1) Use these digit cards to make 2 numbers with a total between 6 and 7. Find 4 possible solutions. You can only use the digits 1-7 once.



1	2	3	4	5	6	7
---	---	---	---	---	---	---

	?	?	?	?
+	?	?	?	

- 2) The calculation has a total that when rounded to the nearest whole number is 10. Again you can only use the digits 1-7 once. Find 4 possible solutions.

	?	?	?	
+	?	?	?	?

- 3) Each digit is different. These three numbers have a total of 10. What could they be? Find 3 possible solutions.

	?	?	
	?	?	?
+	?	?	?

What do you notice about the digits you have used in your different solutions?