Reasoning and Problem Solving
Step 1: Adding Decimals Within 1

National Curriculum Objectives:

Mathematics Year 5: (5F10) Solve problems involving number up to 3dp.
Mathematics Year 5: (5M9a) Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.

Differentiation:

Questions 1, 4, 7 (Reasoning)
Developing Explain whether a simple statement linked to adding decimals is correct.
Expected Explain whether a technical and hypothetical statement, linked to adding decimals, is correct.
Greater Depth Explain whether a statement, including maths vocabulary and linked to adding decimals is correct.

Questions 2, 5, 8 (Problem Solving)
Developing Find, correct and explain the mistake when adding 2 numbers of 2dp, within 1. No exchanges.
Expected Find, correct and explain the mistake when adding 2 numbers of 3dp, within 1. One exchange.
Greater Depth Find, correct and explain mistakes when adding 2 numbers to 3dp, within 1. Multiple exchanges and mistakes.

Questions 3, 6, 9 (Problem Solving)
Developing Calculate 2 missing digits (from a given range) when adding decimal numbers within 1. Tenths and hundredths only.
Expected Calculate 2 missing digits when adding decimal numbers within 1. Find all of the solutions. Tenths, hundredths and thousandths included.
Greater Depth Calculate 2 missing digits to balance a statement involving adding decimal numbers within 1. Find all of the solutions. Tenths, hundredths and thousandths included.

More Year 5 Decimals resources.

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Adding Decimals Within 1

1a. Check what Joanne has said. Is she correct? Explain your answer.

When I add 0.1 to 0.09, my answer is 0.91.



D R

2a. Geoff has taken a test. Mark his answers and write any corrections.

	corrections
0.8 3 + 0.0 1 = 0.0 9	
0.6 2 + 0.2 6 = 8.8	
0.3 4 + 0.6 2 = 0.9 6	
0.5 3 + 0.0 4 = 0.9 3	
0.8 4 + 0.0 5 = 0.0 9	

D PS

3a. Which digits from 5 to 9 could you put in the empty spaces to make this statement correct?

$0.63 + 0.2\square = 0.8\square$

D PS

Adding Decimals Within 1

1b. Check what Rowan has said. Is he correct? Explain your answer.

When I add 0.1 to 0.05, my answer will be 0.6.



D R

2b. Martha has taken a test. Mark her answers and write any corrections.

	corrections
0.0 3 + 0.4 6 = 0.5 3	
0.1 5 + 0.4 = 0.2	
0.0 4 + 0.0 7 = 0.7 4	
0.3 7 + 0.4 2 = 0.7 9	
0.8 5 + 0.0 1 = 0.9 5	

D PS

3b. Which digits from 0 to 5 could you put in the empty spaces to make this statement correct?

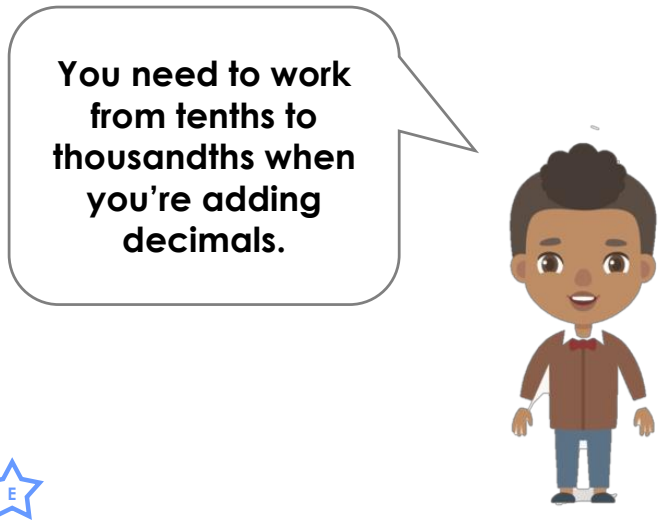
$0.23 + 0.\square 4 = 0.\square 7$

D PS

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Adding Decimals Within 1

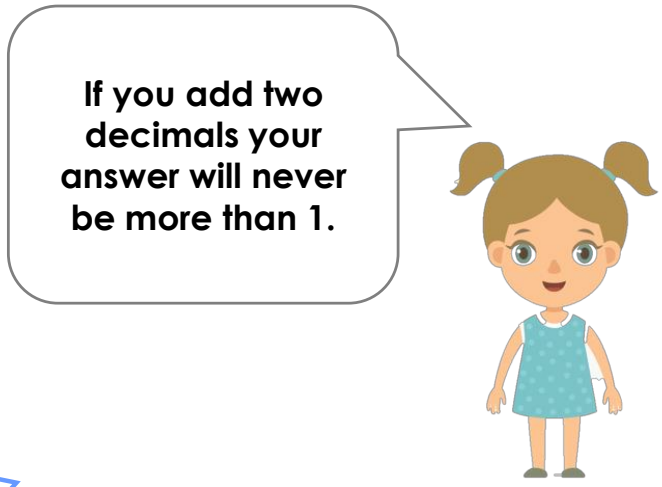
4a. Check what Henri has said. Is he correct? Explain your answer.



E R

Adding Decimals Within 1

4b. Check what Grace has said. Is she correct? Explain your answer.



E R

5a. Evie has taken a test. Mark her answers and write any corrections.

	corrections
0.132 + 0.828 = 0.951	
0.703 + 0.07 = 0.71	
0.824 + 0.011 = 0.835	
0.351 + 0.039 = 0.381	
0.646 + 0.341 = 0.987	

E PS

5b. Martha has taken a test. Mark her answers and write any corrections.

	corrections
0.971 + 0.009 = 0.98	
0.76 + 0.073 = 1.49	
0.748 + 0.143 = 0.881	
0.628 + 0.304 = 0.912	
0.205 + 0.198 = 0.303	

E PS

6a. Which digits could you put in the empty spaces to make these statements correct?

$0.454 + 0.2\square = 0.7\square 4$

$0.19\square + 0.2\square = 0.451$

E PS

6b. Which digits could you put in the empty spaces to make these statements correct?

$0.133 + 0.2\square = 0.4\square 3$

$0.7\square + 0.28\square = 0.999$

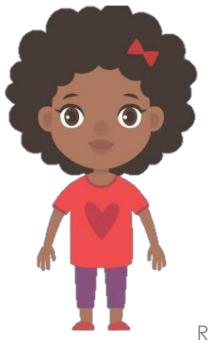
E PS

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Adding Decimals Within 1

7a. Check what Amanya has said. Is she correct? If not, why not?

The sum of two numbers with 3 decimal places will always have 3 decimal places too.



GD R

8a. Martin has taken a test. Mark his answers and write any corrections.

	corrections
0.548 + 0.354 = 0.902	
0.003 + 0.879 = 0.909	
0.172 + 0.336 = 0.409	
0.626 + 0.275 = 0.901	
0.743 + 0.198 = 0.931	

GD PS

9a. Which digits could you put in the empty spaces to make this statement balance?

0.4 ☐ 4 + 0.2 ☐ 8 = 0.126 + 0.616

GD PS

Adding Decimals Within 1

7b. Check what Danny has said. Is she correct? If not, why not?

The sum of two decimals larger than 0.5 will always be more than one.



GD R

8b. Leah has taken a test. Mark her answers and write any corrections.

	corrections
0.484 + 0.159 = 0.534	
0.263 + 0.009 = 0.272	
0.152 + 0.709 = 0.811	
0.621 + 0.178 = 0.899	
0.15 + 0.029 = 0.044	

GD PS

9b. Which digits could you put in the empty spaces to make this statement balance?

0.79 ☐ + 0.1 ☐ 3 = 0.528 + 0.417

GD PS

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Reasoning and Problem Solving
Adding Decimals Within 1

Developing

1a. Joanne is incorrect. She has added the two digits but not realised the 9 is 9 hundredths and the 1 is 1 tenth so the answer should be 0.19.

2a.

	corrections
0.83 + 0.01 = 0.09	0.84
0.62 + 0.26 = 8.8	0.88
0.34 + 0.62 = 0.96	✓
0.53 + 0.04 = 0.93	0.57
0.84 + 0.05 = 0.09	0.89

3a. 5,8; 6,9

Expected

4a. Henri is incorrect. You work from the right to left, adding thousandths first, then hundredths and then tenths.

5a.

	corrections
0.132 + 0.828 = 0.951	0.96
0.703 + 0.07 = 0.71	0.773
0.824 + 0.011 = 0.835	✓
0.351 + 0.039 = 0.381	0.39
0.646 + 0.341 = 0.987	✓

6a. 5,0; 6,1; 7,2; 8,3; 9,4 and 1,6

Greater Depth

7a. Amaya is incorrect. If the sum of the thousandths digits is equal to 10 thousandths, then this would be exchanged for 1 hundredth and there would be no need for the 0 (place holder) in the thousandths column if both numbers were 3 decimal places. Therefore the answer would have two decimal places.

8a.

	corrections
0.548 + 0.354 = 0.902	✓
0.003 + 0.879 = 0.909	0.882
0.172 + 0.336 = 0.409	0.508
0.626 + 0.275 = 0.901	✓
0.743 + 0.198 = 0.931	0.941

9a. 4,9; 5,8; 6,7; 7,6; 8,5; 9,4

Reasoning and Problem Solving
Adding Decimals Within 1

Developing

1b. Rowan is incorrect. He has added the two digits but not realised that the 5 is 5 hundredths and the 1 is 1 tenth so the answer should be 0.15.

2b.

	corrections
0.03 + 0.46 = 0.53	0.49
0.15 + 0.4 = 0.2	0.55
0.04 + 0.07 = 0.74	0.11
0.37 + 0.42 = 0.79	✓
0.85 + 0.01 = 0.95	0.86

3b. 0,2; 1,3; 2,4; 3,5; 4,6; 5,7

Expected

4b. Grace is incorrect. If the value in the tenths column is greater than 9, then you need to exchange and carry over into the ones column, so your answer would be 1 or more.

5b.

	corrections
0.971 + 0.009 = 0.98	✓
0.76 + 0.073 = 1.49	0.833
0.748 + 0.143 = 0.881	0.891
0.628 + 0.304 = 0.912	0.932
0.205 + 0.198 = 0.303	0.403

6b. 7,0; 8,1; 9,2 and 1,9

Greater Depth

7b. Danny is correct. This is because the sum of 0.5 + 0.5 = 1 so if we increase either of the numbers, even by one thousandth, the number will always be larger than 1. For example: 0.5 + 0.5001 = 1.001

8b.

	corrections
0.484 + 0.159 = 0.534	0.643
0.263 + 0.009 = 0.272	✓
0.152 + 0.709 = 0.811	0.861
0.621 + 0.178 = 0.899	0.799
0.15 + 0.029 = 0.044	0.179

9b. 2,5

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