Reasoning and Problem Solving
Step 5: Adding – Same Decimal Places

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 (Problem Solving)
Developing Calculate the highest amount, adding 2 numbers with same decimal places involving tenths and hundredths, from a choice of amounts. Minimal exchanges.
Expected Calculate the highest amount, adding 3 numbers with same decimal places involving ones, tenths and hundredths, from a choice of amounts. Some exchanges.
Greater Depth Calculate the highest amount, adding 4 numbers with same decimal places involving tens, ones, tenths and hundredths, from a choice of amounts. Multiple exchanges.

Questions 2, 5, 8 (Problem Solving)
Developing Move across a number grid of 5x5, calculating the compound sum as you go. Numbers include tenths and hundredths and the aim is to create the lowest sum.
Expected Move across a number grid of 7x7, calculating the compound sum as you go. Numbers include ones, tenths and hundredths and the aim is to create the lowest sum.
Greater Depth Move across a number grid of 8x8, calculating the compound sum as you go. Numbers include tens, ones, tenths and hundredths and the aim is to create the lowest sum.

Questions 3, 6, 9 (Reasoning)
Developing Consider 3 additions of numbers including tenths and hundredths. Order the calculations from easiest to hardest giving reasoning for the position of each.
Expected Consider 4 additions of numbers including ones, tenths and hundredths. Order the calculations from easiest to hardest giving reasoning for the position of each.
Greater Depth Consider 4 additions of numbers including tens, ones, tenths and hundredths. Order the calculations from easiest to hardest giving reasoning for the position of each.

More Year 5 Decimals resources.

Did you like this resource? Don't forget to review it on our website.

Adding – Same Decimal Places

1a. Johnny's parents have set up a pocket money list for him.

Wash up	£0.40
Dishwasher	£0.50
Vacuuming	£0.45
Bedroom	£0.30
Gardening	£0.40

He has time to do 2 jobs.
What is the most money he can earn?

PS

1b. Kelly's parents have set up a pocket money list for her.

Wash up	£0.25
Dishwasher	£0.35
Vacuuming	£0.45
Bedroom	£0.35
Gardening	£0.45

She has time to do 2 jobs.
What is the most money she can earn?

PS

2a. Move across the grid from left to right adding each number as you go.
The aim is to end with the smallest number possible.
You are not allowed to move diagonally!

Start →

0.25	0.05	0.38	0.01	0.06
0.12	0.51	0.34	0.45	0.14
0.5	0.05	0.18	0.03	0.03
0.02	0.55	0.92	0.51	0.74
0.62	0.02	0.62	0.03	0.04

PS

2a. Move across the grid from left to right adding each number as you go.
The aim is to end with the smallest number possible.
You are not allowed to move diagonally!

0.04	0.03	0.5	0.02	0.04
0.26	0.11	0.1	0.09	0.07
0.15	0.17	0.01	0.08	0.2
0.4	0.13	0.2	0.18	0.24
0.06	0.13	0.12	0.04	0.01

Start →

PS

3a. Order each addition from the easiest to the trickiest to solve.

$$0.15 + 0.15$$

$$0.49 + 0.29$$

$$0.21 + 0.21$$

Explain your choices.

R

3b. Order each addition from the easiest to the trickiest to solve.

$$0.36 + 0.3$$

$$0.91 + 0.09$$

$$0.06 + 0.23$$

Explain your choices.

R

4a. Bessie's parents have set up a pocket money list for her.

Wash up   £1.23
Dishwasher £0.37
Vacuuming £1.67
Bedroom   £2.55
Gardening £6.72

She has time to do 3 jobs.
What is the most money she can earn?

4b. Geoff's parents have set up a pocket money list for him.

Wash up   £0.95
Dishwasher £0.75
Vacuuming £4.65
Bedroom   £2.93
Gardening £7.25

He has time to do 3 jobs.
What is the most money he can earn?

5a. Move across the grid from left to right adding each number as you go.
The aim is to end with the smallest number possible.
You are not allowed to move diagonally!

1.23	2.03	1.42	3.01	6.95	4.03	9.96
1.41	5.34	3.05	5.87	3.75	5.82	9.03
4.31	3.45	1.99	4.89	7.35	5.35	1.03
4.45	9.97	2.58	0.23	1.02	4.07	2.45
1.01	5.1	0.94	3.89	0.01	3.96	2.31
2.04	2.09	3.65	2.79	2.09	5.92	1.41
8.96	9.01	2.4	3.00	3.02	3.94	1.23

Start (row 2)

5a. Move across the grid from left to right adding each number as you go.
The aim is to end with the smallest number possible.
You are not allowed to move diagonally!

1.21	2.45	5.43	2.04	1.02	0.92	1.02
1.41	3.64	4.32	3.98	4.03	3.09	5.53
4.31	3.97	3.01	2.04	0.93	2.03	2.3
2.42	2.01	2.96	2.15	1.73	1.04	4.08
6.03	1.02	0.91	1.02	4.98	0.08	3.04
2.03	3.02	2.33	1.99	5.32	1.24	1.32
7.93	1.03	3.12	4.29	0.74	4.01	0.91

Start (row 4)

6a. Order each addition from the easiest to the trickiest to solve.

$$9.17 + 0.97$$

$$0.05 + 4.25$$

$$2.65 + 9.65$$

$$4.12 + 1.24$$

Explain your choices.

6b. Order each addition from the easiest to the trickiest to solve.

$$4.44 + 2.22$$

$$0.33 + 0.77$$

$$0.09 + 1.11$$

$$4.32 + 6.78$$

Explain your choices.

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Adding – Same Decimal Places

Adding – Same Decimal Places

7a. Robyn's parents have set up a pocket money list for her.

Wash up	£1.69
Dishwasher	£0.67
Vacuuming	£3.15
Bedroom	£6.53
Gardening	£7.95

She has time to do 4 jobs.
What is the most money she can earn?

GD
PS

7b. Josh's parents have set up a pocket money list for him.

Wash up	£2.35
Dishwasher	£1.75
Vacuuming	£3.15
Bedroom	£7.50
Gardening	£7.25

He has time to do 4 jobs.
What is the most money he can earn?

GD
PS

8a. Move across the grid from left to right adding each number as you go.
The aim is to end with the smallest number possible.
You are not allowed to move diagonally!

10.32	10.34	20.45	12.01	2.13	5.76	5.01	5.14
13.01	10.98	20.62	12.02	3.12	5.67	2.02	5.13
14.36	10.32	20.78	13.03	1.23	4.87	0.04	5.15
13.46	10.45	20.23	10.99	4.32	6.57	2.11	2.17
15.23	10.34	20.87	12.13	2.12	6.75	5.12	5.16
11.45	10.43	20.88	13.12	14.35	6.78	5.33	5.12
15.43	10.34	21.02	12.13	4.21	0.09	6.01	5.14
14.44	10.91	20.11	14.21	4.33	6.79	5.43	5.62

Start (at row 6). GD. PS

8a. Move across the grid from left to right adding each number as you go.
The aim is to end with the smallest number possible.
You are not allowed to move diagonally!

0.13	5.93	16.65	12.31	41.23	1.75	8.04	11.34
0.33	0.05	14.42	12.56	47.12	1.97	2.95	11.43
0.03	0.43	15.81	13.89	43.67	1.87	5.86	21.23
1.04	0.05	14.33	11.19	41.21	1.18	6.57	21.16
0.92	2.94	11.89	11.13	39.12	1.65	7.46	11.17
0.05	0.73	11.19	11.29	37.65	1.18	9.3	21.18
0.50	0.74	11.36	11.32	35.91	4.29	10.24	11.18
0.89	0.81	12.01	11.21	34.83	1.11	9.13	21.63

Start (at row 2). GD. PS

9a. Order each addition from the easiest to the trickiest to solve.

46.75 + 77.86

9.01 + 0.99

58.73 + 50.07

22.33 + 33.22

Explain your choices.

GD
R

9b. Order each addition from the easiest to the trickiest to solve.

20.91 + 99.99

83.21 + 10.46

92.37 + 7.63

9.89 + 0.11

Explain your choices.

GD
R

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Reasoning and Problem Solving – Adding – Same Decimal Places – Year 5 Greater Depth

Developing

1a. £0.50 + £0.45 = £0.95
2a. 0.87

0.25	0.05	0.38	0.01	0.06
0.12	0.51	0.34	0.45	0.14
0.5	0.05	0.18	0.03	0.03
0.02	0.55	0.92	0.51	0.74
0.62	0.02	0.62	0.03	0.04

Start → (row 2)

Children's answers below may vary but should show consideration of exchanges, known facts such as bonds and complements.

3a.

2	0.15 + 0.15
3	0.49 + 0.29
1	0.21 + 0.21

1 because it has no exchanges and easily known sums.
2 as although there is an exchange it is a known fact 0.05 + 0.05 = 0.1.
3 as there is one exchange but also a more difficult sum.

Expected

4a. £1.67 + £2.55 + £6.72 = £10.94
5a. 21.24

1.23	2.03	1.42	3.01	6.95	4.03	9.96
1.41	2.54	3.05	5.87	3.75	5.82	9.03
2.31	2.45	1.99	4.89	7.35	5.35	1.03
4.45	9.97	2.58	0.23	1.02	4.07	2.45
1.01	5.1	0.94	3.89	0.01	3.96	2.31
2.04	2.09	3.65	2.79	2.09	5.92	1.41
8.96	9.01	2.4	3.00	3.02	3.94	1.23

Start → (row 2)

Children's answers below may vary but should show consideration of exchanges, known facts such as bonds and complements.

6a.

4	9.17 + 0.97
1	0.05 + 4.25
3	2.65 + 9.65
2	4.12 + 1.24

1 because there is only one exchange and only one digit to add.
2 as there are no exchanges, but more digits to add.
3 as there are 3 exchanges to complete the calculation.
4 because there are 3 exchanges, one of which crosses the decimal and the tens column is needed.

Developing

1b. £0.45 + £0.45 = £0.90
2b. 0.99

0.04	0.03	0.5	0.02	0.04
0.26	0.11	0.1	0.09	0.07
0.15	0.17	0.01	0.08	0.2
0.4	0.13	0.2	0.18	0.24
0.06	0.13	0.12	0.04	0.01

Start → (row 4)

Children's answers below may vary but should show consideration of exchanges, known facts such as bonds and complements.

3b.

2	0.36 + 0.3
3	0.91 + 0.09
1	0.06 + 0.23

1 because it has no exchanges and easily known sums.
2 as it requires knowledge of 0 as a place holder in the hundredths column.
3 as the exchange will take the number past the decimal point into the ones.

Expected

4b. £2.93 + £4.65 + £7.25 = £14.83
5b. 14.94

1.21	2.45	5.43	2.04	1.02	0.92	1.02
1.41	3.64	4.32	3.98	4.03	3.09	5.53
4.31	3.97	3.01	2.04	0.93	2.03	2.3
2.42	2.01	2.96	2.15	1.73	1.04	4.08
6.03	1.02	0.91	1.02	4.98	0.08	3.04
2.03	3.02	2.33	1.99	5.32	1.24	1.32
7.93	1.03	3.12	4.29	0.74	4.01	0.91

Start → (row 4)

Children's answers below may vary but should show consideration of exchanges, known facts such as bonds and complements.

6b.

1	4.44 + 2.22
3	0.33 + 0.77
2	0.09 + 1.11
4	4.32 + 6.78

1 because there are no exchanges and easy additions.
2 as there is one exchange with an easy addition.
3 as there are 2 exchanges but they are similar calculations for each.
4 is the most complex because although they are all number bonds, they all impact on each other through exchanges.

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Greater Depth
7a. £1.69 + £3.15 + £6.53 + £7.95 = £19.32
8a. 83.08

Greater Depth
7b. £2.35 + £3.15 + £7.50 + £7.25 = £20.25
8b. 90.86

10.32	10.34	20.45	12.01	2.13	5.76	5.01	5.14
13.01	10.98	20.62	12.02	3.12	5.67	2.02	5.13
14.36	10.32	20.78	13.03	1.23	5.87	0.04	5.15
13.46	10.45	20.23	10.99	4.32	6.57	2.11	2.17
15.23	10.34	20.87	12.13	2.12	6.75	5.12	5.16
Start 11.45	10.43	20.88	13.12	4.35	6.78	5.33	5.12
15.43	10.34	21.02	12.13	4.21	0.09	6.01	5.14
14.44	10.91	20.11	14.21	4.33	6.79	5.43	5.62

0.13	5.93	16.65	12.31	31.23	1.75	8.04	11.34
Start 0.33	0.05	14.32	12.56	37.12	1.47	2.95	11.43
0.03	0.43	15.81	13.89	33.67	1.87	5.86	21.23
1.04	0.05	14.33	11.19	31.21	1.18	6.57	21.16
0.92	2.94	11.89	11.13	39.12	1.65	7.46	11.17
0.05	0.73	11.19	11.29	37.65	1.18	9.3	11.18
0.50	0.74	11.36	11.32	33.91	1.29	9.24	11.18
0.89	0.81	12.01	11.21	34.83	1.11	9.13	21.63

Children's answers below may vary but should show consideration of exchanges, known facts such as bonds and complements.

9a.

4	46.75 + 77.86
2	9.01 + 0.99
3	58.73 + 50.07
1	22.33 + 33.22

1 because there are no exchanges and the calculation is the same for each digit.
2 as the decimal places are a complement to 1 making the addition easier.
3 as 50.07 can be partitioned into 50 and 0.07.
4 is the most complex, all the digits require exchanges and the additions are not known facts. The hundreds column will also need to be used.

Children's answers below may vary but should show consideration of exchanges, known facts such as bonds and complements.

9b.

4	20.91 + 99.99
1	83.21 + 10.46
3	92.37 + 7.63
2	9.89 + 0.11

1 because there are no exchanges.
2 as the numbers are a complement to 1 making the addition easier.
3 the decimal places are complements to 1 but a lesser known one.
4 is the most complex, all the digits require exchanges which results in the number going past 100.

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Reasoning and Problem Solving – Adding – Same Decimal Places ANSWERS