Reasoning and Problem Solving – Make a Whole

National Curriculum Objectives:

Mathematics Year 4: (4F6b) Recognise and write decimal equivalents of any number of tenths or hundredths

Mathematics Year 4: (4F10b) Solve simple measure and money problems involving fractions and decimals to two decimal places

Differentiation:

Questions 1, 4 and 7 (Problem Solving)

Developing Calculate 2 missing digits when adding 3 decimal numbers to make a whole. Tenths only.

Expected Calculate 2 missing digits when adding 2 decimal numbers to make a whole. Find all of the solutions. Tenths and hundredths included.

Greater Depth Calculate 3 missing digits when adding 3 decimal numbers to make a whole. Find all of the solutions. Tenths and hundredths included.

Questions 2, 5 and 8 (Reasoning)

Developing Explain the mistake when adding 3 numbers to make a whole. Tenths only.

Expected Explain the mistake when adding 2 numbers to make a whole. Tenths and hundredths included.

Greater Depth Explain the mistake when adding 3 numbers to make a whole (numbers greater than 1 included). Tenths and hundredths included.

Questions 3, 6 and 9 (Problem Solving)

Developing Add 2 or 3 decimal numbers. Identify how much more is need to make a whole. In the context of measure. Tenths only.

Expected Add 2 decimal numbers. Identify how much more is needed to make a whole. In the context of measure. Tenths and hundredths included.

Greater Depth Add 3 decimal numbers. Identify how much more is needed to make a whole (numbers greater than 1 included). Tenths and hundredths included.

More Year 4 and Year 5 Decimals resources.

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

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Reasoning and Problem Solving – Make a Whole

1a. Complete the calculation below. How many different solutions can you find?

$$0.3 + 0.\square + 0.\square = 1$$

4 PS

1b. Complete the calculation below. How many different solutions can you find?

$$0.\square + 0.4 + 0.\square = 1$$

4 PS

2a. Toby says:

> If I have 0.1 and 0.3, I need to add on 0.7 to make a whole.

Is Toby correct? Explain why.

4 R

2b. Mary says:

> If I have 0.2 and 0.2, I need to add on 0.8 to make a whole.

Is Mary correct? Explain why.

4 R

3a. A toy bridge is 1m long. Each toy car is 0.4m long.

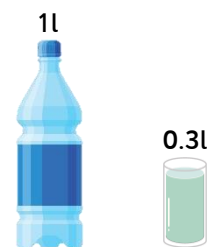Can 2 toy cars fit on the bridge?

How much space is left?

1m   0.4m

4 PS

3b. A bottle of water holds 1l. Each glass holds 0.3l.

Can the bottle of water fill 3 glasses?

How much water is left in the bottle?

1l

0.3l

4 PS

Reasoning and Problem Solving – Make a Whole – Year 4 Developing

Reasoning and Problem Solving – Make a Whole

4a. Complete the calculation below. How many different solutions can you find?

$$0.5\square + 0.4\square = 1$$

4 PS

4b. Complete the calculation below. How many different solutions can you find?

$$0.\square3 + 0.\square7 = 1$$

4 PS

5a. Josh says:

If I have 0.17, I need to add on 0.93 to make a whole.

Is Josh correct? Explain why.

4 R

5b. Gemma says:

If I have 0.15, I need to add on 0.84 to make a whole.
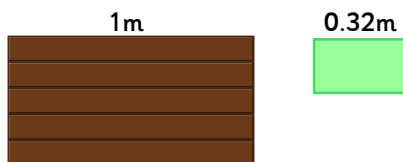
Is Gemma correct? Explain why.

4 R

6a. A table top is 1m long. Each place mat is 0.32m long.

Can 2 place mats fit on the table?

How much space is left?

1m   0.32m

4 PS

6b. Amir has £1 to spend. Each cupcake costs £0.48.

Can Amir buy 2 cupcakes?

How much money will he have left?

£0.48

4 PS

Reasoning and Problem Solving – Make a Whole – Year 4 Expected

Reasoning and Problem Solving – Make a Whole

7a. Complete the calculation below. How many different solutions can you find?

$$0.3\square + 0.4\square + 0.2\square = 1$$

7b. Complete the calculation below. How many different solutions can you find?

$$0.\square 5 + 0.\square 1 + 0.\square 4 = 1$$

8a. Owen says:

> If I have 0.24 and 0.35, I need to add on 0.51 to make a whole.

Is Owen correct? Explain why.

8b. Asha say:

> If I have 1.42 and 0.26, I need to add on 0.31 to make 2.

Is Asha correct? Explain why.

9a. A bag of flour weighs 1kg. Each bowl needs 0.29kg of flour.

Is there enough flour to fill 3 bowls?

How much flour will be left over?

1kg

0.29kg

9b. Rob has £2 to spend. Each pack of sweets costs £0.56

Can Rob buy 3 packs of sweets?

How much money will he have left?

£0.56

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Reasoning and Problem Solving – Make a Whole

Developing

1a. Possible solutions: 0.3 + 0.1 + 0.6 = 1, 0.3 + 0.2 + 0.5 = 1, 0.3 + 0.3 + 0.4 = 1, 0.3 + 0.4 + 0.3 = 1, 0.3 + 0.5 + 0.2 = 1, 0.3 + 0.6 + 0.1 = 1

1b. Possible solutions: 0.1 + 0.4 + 0.5 = 1, 0.2 + 0.4 + 0.4 = 1, 0.3 + 0.4 + 0.3 = 1, 0.4 + 0.4 + 0.2 = 1, 0.5 + 0.4 + 0.1 = 1

2a. Toby is not correct. He has made 1.1 because he has forgotten to include the 0.1. He should have added 0.6 instead.

2b. Mary is incorrect. She has made 1.2 because she has forgotten to include the other 0.2. She should have added on 0.6 instead

3a. Both toy cars total 0.8m long so they will fit on the bridge with 0.2m left over.

3b. 0.9l would be needed to fill 3 glasses, leaving 0.1l left over in the bottle.

Expected

4a. Possible solutions: 0.51 + 0.49 =1, 0.52 + 0.48 = 1, 0.53 + 0.47 = 1, 0.54 + 0.46 =1, 0.55 + 0.45 = 1, 0.56 + 0.44 = 1, 0.57 + 0.43 = 1, 0.58 + 0.42 = 1, 0.59 + 0.41 = 1

4b. Possible solutions: 0.03 + 0.97 = 1, 0.13 + 0.87 = 1, 0.23 + 0.77 = 1, 0.33 + 0.67 = 1, 0.43 + 0.57 = 1, 0.53 + 0.47 = 1, 0.63 + 0.37 = 1, 0.73 + 0.27 = 1, 0.83 + 0.17 = 1, 0.93 + 0.07 = 1

5a. Josh is not correct. He has made 1.1 instead because he has forgotten that his hundredths will make an extra tenth.

5b. Gemma is not correct. She has made 0.99 because her hundredths only add up to 0.9.

6a. They will fit on the table as 2 place mats are 0.64m long altogether. There will be 0.36cm left on the table.

6b. He can buy 2 cupcakes as they would cost £0.96 altogether. He would have £0.04 left.

Greater Depth

7a. Possible solutions: 0.31 + 0.42 + 0.27, 0.32 + 0.43 + 0.25, 0.33 + 0.44 + 0.23, 0.34 + 0.45 + 0.21, 0.31 + 0.41 + 0.28, 0.32 + 0.42 + 0.26, 0.33 + 0.43 + 0.24, accept any solution where the hundredths digits add up to 1 tenth.

7b. Possible solutions: 0.15 + 0.11 + 0.74, 0.15 + 0.21 + 0.64, 0.25 + 0.31 + 0.44, 0.35 + 0.41 + 0.24, 0.45 + 0.51 + 0.04, 0.25 + 0.21 + 0.54, 0.35 + 0.31 + 0.34, accept any solution where the tenths digits add up to 9 tenths.

8a. Owen has made 1.1 because he has forgotten that his hundredths will make an extra tenth.

8b. Asha has made 1.99. Her hundredths needed to add up to 1 tenth.

9a. 0.87kg of flour is needed for the 3 bowls. 0.13kg of flour will be left over.

9b. 3 packs of sweets will cost £1.68. Rob will get £0.32 change from £2.

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