



## Year 6 Maths Distance Teaching and Learning

Week beginning: 4<sup>th</sup> May 2020

Lesson 1		
Learning Intention: WALT reason the efficiency of mental strategies.	Key Vocabulary: Efficient Calculations Regrouping Equal sum and equal difference Digit position	What you will need: A computer, table or phone for the starter Maths book Pencil Video: Year 6 Maths – Week 3 –Lesson 1 Video
Starter		
Log on to Times Tables Rock Stars.		
Play a 'Garage' game.		
Main Teaching		
<p>Watch the video Year 6 Maths – Week 3 – Lesson 1, which will guide you through the main input.</p> <p>Now let's look at each strategy that can be used with addition and subtraction. First let's look at digit position.</p> <p>This is where you just slot your numbers into place. For example <math>0.008 + 1.23</math> I can just slot the numbers into their correct place value column. So the answer would be 1.238.</p> <p>Equal sum and equal difference Look at this question. <math>1,999 + 457 =</math> Now I know 1,999 is very close to 2,000 and actually if the number was 2,000 it would make my calculation much easier for me. So let's make it 2,000, however I don't want to change the value of my calculation, so I am going to take 1 from 457 and give it to 1,999 to make it 2,000, which would make the calculation <math>2,000 + 456 =</math> now that is a much easier calculation to solve. This is called equal sum.</p> <p>If we look at a subtraction calculation such as <math>3,000,001 - 34 =</math> wouldn't this be an easier question if I started with 3,000,000? I think so. However, I need to remember to ensure the value of the calculation is the same. So this time, I am going to take the same amount from each number, because then I wouldn't be changing the difference between the numbers, like this <math>3,000,000 - 33</math></p> <p>Regrouping (Partitioning) This is similar to digit position although we may not always be able to just slot the numbers in to their columns. If we look at <math>14 - 7.01</math> I might want to regroup 7.01 into 7 and 0.01. Then I could do <math>14 - 7 = 7</math> and then <math>7 - 0.01 = 6.99</math>. This method breaks the calculation down into little steps to help me solve it.</p>		
Independent Tasks		
Please complete 1 or 2 challenges. You can only go on to Challenge X if you have completed Challenge 3 first. If you are finding a challenge too tricky or too easy after 3 questions, you should switch challenges.		

After you have completed your challenge, check your answers in the mark scheme. If you got an answer wrong look carefully and identify where you made a mistake.

### Challenge 1

Look at the calculations, can you put the calculations into groups thinking about which mental strategy you would use to solve the calculations.

Remember the strategies you can use are:

- Regrouping
- Digit position
- Known facts
- Equal sum and equal difference

$$0.135 + \square = 1.06$$

$$1.7 + 0.05$$

$$460 = \square - 35$$

$$532,525 - 9,997$$

$$9,999 + 397$$

$$46.8 - 23.566$$

### Challenge 2

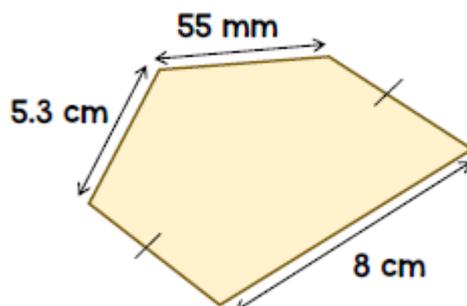
Answer these calculations and think about which mental strategy will be the most efficient. Remember we are looking at mental strategies and not using the formal written methods.

1.  $127,096 - 2,049 =$
2.  $89 - 33 =$
3.  $\underline{\hspace{2cm}} = 3600 + 700$
4.  $1.23 - 0.19 =$
5.  $9,999 + 397 =$
6.  $122,456 + 11,999 =$

### Challenge 3

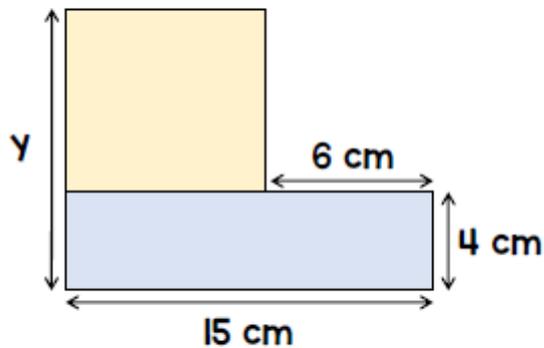
Solve these questions using mental strategies.

- 1) **The perimeter of the pentagon is 25 cm.**



**Find the missing lengths.**

- 2) The shape is made up of a square and a rectangle.



Find the length of the side  $y$

- 3) A school makes 50 sandwiches each day.  
The table shows the number of sandwiches sold each day last week.

Day	Number of sandwiches sold
Monday	20
Tuesday	32
Wednesday	47
Thursday	18
Friday	39

How many sandwiches in total were not sold last week?

4)  $10.86 - 1.909 =$

5)  $0.86 - 1.99 =$

#### Challenge X

Here are some questions from a 10 in 10 we did a little while ago. Can you answer the question but also tell me what mental strategy you used?

1)  $9,385 + 4,789 =$

2)  $679 - 594 =$

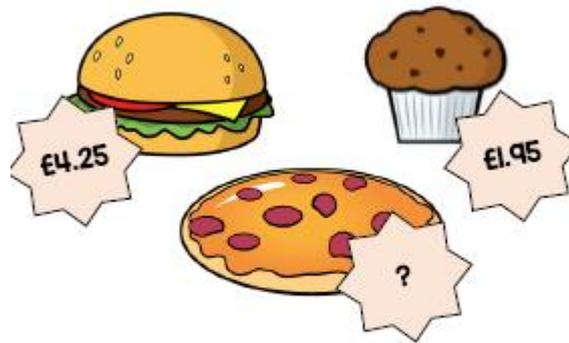
3) Calculate the total of 38,396 and 27, 847

Review

Answer the question below. What mental strategy did you use?

**Leo has £25**

**He buys the following items.**



**He has £12.50 left.**

**How much does the pizza cost?**

## Mark Scheme – Lesson 1

Independent Tasks							
Challenge 1							
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;"><math>0.135 + \square = 1.06</math></td></tr> <tr><td style="text-align: center;"><math>1.7 + 0.05</math></td></tr> <tr><td style="text-align: center;"><math>460 = \square - 35</math></td></tr> <tr><td style="text-align: center;"><math>532,525 - 9,997</math></td></tr> <tr><td style="text-align: center;"><math>9,999 + 397</math></td></tr> <tr><td style="text-align: center;"><math>46.8 - 23.566</math></td></tr> </table>	$0.135 + \square = 1.06$	$1.7 + 0.05$	$460 = \square - 35$	$532,525 - 9,997$	$9,999 + 397$	$46.8 - 23.566$	<ol style="list-style-type: none"> <li>1) <math>0.135 + 0.925 = 1.06</math> (regroup)</li> <li>2) <math>1.7 + 0.05 = 1.75</math> (digit position)</li> <li>3) <math>460 = 495 - 35</math> (regroup)</li> <li>4) <math>532,525 - 9,997 = 522,528</math> (equal difference)</li> <li>5) <math>9,999 + 397 = 10,396</math> (equal sum)</li> <li>6) <math>46.8 - 23.566 = 23.234</math> (regroup)</li> </ol>
$0.135 + \square = 1.06$							
$1.7 + 0.05$							
$460 = \square - 35$							
$532,525 - 9,997$							
$9,999 + 397$							
$46.8 - 23.566$							
Challenge 2							
<ol style="list-style-type: none"> <li>1. <math>127,096 - 2,049 = 125,047</math> (equal difference <math>127,100 - 2,053</math>)</li> <li>2. <math>89 - 33 = 56</math> (equal difference <math>90 - 34</math>)</li> <li>3. <math>4300 = 3600 + 700</math> (regrouping 3000 and 600, <math>600 + 700 = 1,300</math>, <math>1,300 + 3,000</math>)</li> <li>4. <math>1.23 - 0.19 = 1.04</math> (equal difference <math>1.24 - 0.2</math>)</li> <li>5. <math>9,999 + 397 = 10,396</math> (equal sum <math>10,000 + 396</math>)</li> <li>6. <math>122,456 + 11,999 = 134,455</math> (equal sum <math>12,000 + 122,455</math>)</li> </ol>							
Challenge 3							
<ol style="list-style-type: none"> <li>1) Each of the missing lengths are 31mm or 3.1cm</li> <li>2) <math>Y = 13\text{cm}</math></li> <li>3) 94 sandwiches were sold last week.</li> <li>4) 8.951</li> <li>5) -1.13</li> </ol>							
Challenge X							
<p>Here are some questions from a 10 in 10 we did a little while ago. Can you answer the question but also tell me what mental strategy you used?</p> <ol style="list-style-type: none"> <li>1) 14,174 (regroup)</li> <li>2) 85 (equal difference)</li> <li>3) 66,243 (regroup)</li> </ol>							
Review							
<p>The pizza cost £6.30. The mental strategy I used was equal sum, when I found the total of the burger and the cupcake (<math>£4.25 + £1.95 = £4.20 + £2</math>).</p>							

Lesson 2		
Learning Intention: WALT use mental strategies to answer multiplication and division calculations.	Key Vocabulary: Efficient Regroup Known facts Doubling and halving Zero/one effect	What you will need: A computer, table or phone for the starter Maths book Pencil Video: Year 6 Maths – Week 3 –Lesson 2 Video
Starter		
<p>Play this game, which uses your problem solving skills. You need to put the numbers in the circle and ensure the line that connects the circles total the target number. Good luck!</p> <p><a href="https://primarygames.co.uk/pg2/powerlines/powerlines1.html">https://primarygames.co.uk/pg2/powerlines/powerlines1.html</a></p>		
Main Teaching		
<p>Watch the video Year 6 Maths – Week 3 – Lesson 2, which will guide you through the main input.</p> <p>Now let's look at each strategy that can be used with multiplication and division.</p> <p><b>Known facts</b> This is my favourite method. It makes complicated questions much easier. I just need to use my times table knowledge. For example <math>0.7 \times 6</math> that looks hard right? But all I have to do is think of the question as <math>7 \times 6</math> and if I know <math>7 \times 6 = 42</math> then I know <math>0.7 \times 6 = 4.2</math></p> <p><b>Doubling and halving</b> (remember we use this method for multiplication and division) If you're anything like me and find your 4 and 8 times tables difficult then this is a neat little trick! If I have a question like <math>22 \times 4</math> I could work this calculation out by doing <math>22 \times 2 \times 2</math> which would give me the same answer. If the question was <math>88 \div 4</math> I could do <math>88 \div 2 \div 2</math>.</p> <p>However, I could also use doubling and halving to help me simplify a calculation, so I can use my know facts. Like, <math>18 \times 3</math>. I could halve 18 and double 3 to change the calculation to <math>9 \times 6</math> without changing the value of the calculation. Let's check this <math>18 \times 3 = 54</math> and <math>9 \times 6 = 54</math>. It works!</p> <p><b>Regrouping (Partitioning)</b> This is similar to digit position although we may not always be able to just slot the numbers in to their columns. If we look at <math>18 \times 3</math> I might want to regroup 18 into 10 and 8. Then I could do <math>10 \times 3 = 30</math> and then <math>8 \times 3 = 24</math>. This method breaks the calculation down into little steps to help me solve it.</p> <p><b>Last and by no means least! Zero/one effect.</b> This one is easy-peasy! All you need to remember is if a number is multiplied or divided by 1 then the number is itself. For example <math>8,036 \times 1 =</math> (drum roll please) <math>8,036</math> or <math>962 \div 1 = 962</math></p> <p>However, if a number is multiplied or divided by 0 then the answer is...? Well you should know this! It's 0! For example, <math>8,036 \times 0 = 0</math></p>		
Independent Tasks		
<p>Please complete 1 or 2 challenges. You can only go on to Challenge X if you have completed Challenge 3 first. If you are finding a challenge too tricky or too easy after 3 questions, you should switch challenges.</p>		

After you have completed your challenge, check your answers in the mark scheme. If you got an answer wrong look carefully and identify where you made a mistake.

### Challenge 1

Solve and tell me what mental strategies you used to solve these calculations.

- 1)  $160 \times 35$
- 2)  $0.4 \div 10$
- 3)  $475 \div 1$
- 4)  $320 \times 0$
- 5)  $640 \div \underline{\quad} = 8$
- 6)  $22 \times 8$

### Challenge 2

- 1)  $86 \times 2.5 =$
- 2)  $60 \times 20 =$
- 3)  $700 \times 900 =$
- 4)  $\underline{\quad} \times 0.5 = 25$
- 5)  $\underline{\quad} \times 70 = 4,200$
- 6)  $160 \times 35 =$

### Challenge 3

- 1) 1 gallon is 4.546 litres.  
How many litres are needed to fill a 10 gallon tank?

- 2) A shop sells flowers.



**Daffodils**  
99p for a bunch



**Roses**  
40p each

John buys 3 bunches of daffodils.  
How much does he pay altogether?

1 mark

Karpal has £4.00 to spend on roses.  
How many roses can she buy for £4.00?

1 mark





## Mark Scheme – Lesson 2

Independent Tasks
<b>Challenge 1</b>
1) 5,600 (doubling and halving $80 \times 70$ then known facts) 2) 0.04 (known facts) 3) 475 (zero/one effect) 4) 0 (zero/one effect) 5) 80 (known facts) 6) 176 (regroup $20 \times 8, 2 \times 8$ )
<b>Challenge 2</b>
7. $86 \times 2.5 = 215$ (doubling and halving $43 \times 5$ then regrouping and known facts $40 \times 5$ and $3 \times 5$ ) 8. $60 \times 20 = 1,200$ (known facts $6 \times 2$ ) 9. $700 \times 900 = 1,600$ (known facts $7 \times 9$ ) 10. $50 \times 0.5 = 25$ (doubling and halving) 11. $60 \times 70 = 4,200$ (known facts $42 \div 7$ ) 12. $160 \times 35 = 5,600$ (doubling and halving $80 \times 70$ , known facts $8 \times 7$ )
<b>Challenge 3</b>
6) 45.46 7) a) £2.97 b) 10 8) a) £4.10 b) £3 5) What is the most efficient strategy to solve these calculations? a) 101 (regrouping) b) 25 (regrouping $180 + 45, 180 \div 9 = 20, 45 \div 9 = 5, 20 + 5 = 25$ ) c) 196 (regrouping $20 \times 7, 8 \times 7$ )
<b>Challenge X</b>
1) 4,200 (known facts) 2) 0.54 (known facts) 3) 0.024 (known facts) All of these calculations have the same efficient mental strategy – using my known facts.
<b>Review</b>
I would've used known facts ( $6 \times 2 = 12$ meaning $60 \times 2 = 120, 60 \times 20 = 1,200$ ). Craig's method would've worked but when he calculated $30 \times 40$ ( $3 \times 4 = 12, 30 \times 4 = 120, 30 \times 40 = 1,200$ ).

### Lesson 3

Learning Intention: WALT use bar modelling to solve multi-step problems.	Key Vocabulary: bar model multi-step problems	What you will need: A computer, tablet or phone for the starter Maths book Pencil Video: Year 6 Maths – Week 3 – Lesson 3
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### Starter

Log onto Times Tables Rock Stars.

Play a 'Garage' game to practise your times tables.

### Main Teaching

Watch the video Year 6 Maths – Week 3 – Lesson 3, which will guide you through the main input.

In this lesson we will be using bar models! Miss Chilton's favourite! Bar models help me to collect all the important information as well as showing me what I need to also find out.

Example 1:  
Five friends went to a water park. Four bought day entry tickets for £32.75 each. The fifth person purchased a bonus package that cost £39.25. In total, how much did it cost for the five friends to go to the water park?

So let's start with a bar model and add the important information from the question: five friends (so I've split my bar model into 5 parts), four bought their tickets for £32.75 – so let's add this.

£32.75	£32.75	£32.75	£32.75	
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And the last person bought a bonus package that cost £39.25 – so I'll add that also.

£32.75	£32.75	£32.75	£32.75	£39.25
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So let's find out how much it costs for the five friends to go to the water park. First I need to multiply £32.75 by 4 (remember I can use doubling and halving to help  $£32.75 \times 2 \times 2$ ) and then add £39.25.

If you got £170.25 well done!

However, what if five friends go the next week and buy the same types of tickets, their entry would cost £192.85 in total. How much are the day tickets increasing by?

Let's put all that information into a bar model!

£192.85				
				£39.25

How do I find out how much each day ticket has increased by?

First I need to find out how much all four day tickets would cost. So I need to deduct £39.25 from £192.85

£192.85			
			£39.25
£153.60			

Then I need to find out how much each individual day ticket costs. I would need to split  $£153.60 \div 4$  (remember I can use doubling and halving to solve this question  $£153.60 \div 2 \div 2$ )

£192.85				
£38.40	£38.40	£38.40	£38.40	£39.25

After all that work I can now find out how much the day tickets have increased by (don't forget what the original question was!).

Originally the day tickets were £32.75 and they are now £38.40 which is a difference of  $(£38.40 - £32.75)$  £5.65. The tickets have increased by £5.65!

### Independent Tasks

#### Challenge 1

Complete these questions. Remember you need to use a bar model to help sort all the important information you need from the question.

- 1) Usman saves 10p and 50p coins in his money box. He has saved £12.70. 32 of the coins in the money box are 10p coins. How many 50p coins are in the box?
- 2) A bucket holds 5 litres of water. Yasmin uses  $7\frac{1}{4}$  buckets to fill the barrel with water. How much water does the barrel hold? Leah has a piece of ribbon 4.8 metres long. She cuts a 1.2m piece of ribbon off from the end. She cuts the remaining ribbon into 2 pieces of equal length. How long are the pieces of ribbon?
- 3) Max has some bags of apples and some bags of oranges. There are twice as many oranges as apples in a bag. Max has 4 bags of apples and 3 bags of oranges. Max has 70 apples and oranges in total. How many oranges are in one bag?

#### Challenge 2

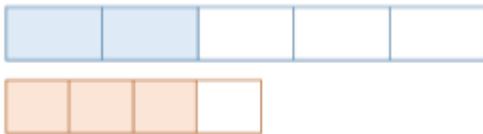
Complete these questions. Remember you need to use a bar model to help sort all the important information you need from the question.

Alan, Bob and Carol each saved £28, £36 and £32 respectively each month for 12 months to buy a DVD player that cost exactly the amount they saved. On the day they went to buy the item, it had been reduced by £108.

- 1) How much did they pay for the DVD player?
- 2) A bag of oranges cost £1.80. A bag of 8 apples costs £2.64.
- 3) How much more does one apple cost than one orange?  
How much more would it cost for 24 apples rather than 24 oranges?

### Challenge 3

- 1) Bob and Kate have £56.20 between them. If Bob has £4.10 more than Kate, how much does Kate have? Draw a bar model to show the calculations needed to solve this problem.
- 2) Trading cards are sold as single cards or in packs of 5 or 10. A single card costs 50p. A pack of cards cost £2. A pack of 10 cards costs £3.50. Max has £10 to spend. What is the maximum number of trading cards he can buy? Draw a bar model to show the calculations needed to solve this problem.
- 3)  $\frac{2}{5}$  of a number is equal to  $\frac{3}{4}$  of a different number.  
The smaller of the two numbers is 80. What is the value of the largest number?  
Here is a bar model to help.



### Challenge X

Solve these questions using a bar model to help you organise the information from the question.

- 1) A theme park sells tickets online.  
Each ticket costs £24  
There is a £3 charge for buying tickets.

Which of these shows how to calculate the total cost, in pounds?

Tick **one**.

number of tickets  $\times$  3 + 24

number of tickets  $\times$  24 + 3

number of tickets + 3  $\times$  24

number of tickets + 24  $\times$  3

2) These two shapes have the **same** perimeter.

regular hexagon



square



**Not actual size**

The length of each side of the **hexagon** is **8** centimetres.

Calculate the **area** of the **square**.

### Review

Let's look at a question from Challenge 2.

Alan, Bob and Carol each saved £28, £36 and £32 respectively each month for 12 months to buy a DVD player that cost exactly the amount they saved. On the day they went to buy the item, it had been reduced by £108.

In challenge 2 you have figured out that the DVD player cost £1,044 with the saving of £108.

However, Alan says they should divide the £108 by 3 so they all get £36. Carol says this wouldn't be fair. How do you think the saving should be divided?



## Mark Scheme – Lesson 3

Independent Tasks		
Challenge 1		
1) There are 19 50p coins in the box. 2) The barrel holds 36 and a quarter litres of water. 3) The pieces of ribbon are 1.8m long.		
Challenge 2		
1) The DVD player cost £1,044. 2) An apple costs 3p more than an orange. 3) 24 oranges would cost £7.20 and 24 apples would cost £7.92. So it would cost 72p more to have 24 apples rather than 24 oranges.		
Challenge 3		
1) Bob has £4.10 more than Kate. ( $£52.20 - £4.10 = £52.10$ ) Kate has £26.05. ( $£52.10 \div 2 = £26.05$ ) Bob has $£26.05 + £4.10$ so he has £30.15. 2) The maximum number of trading cards Max can buy is 27. 3) The largest number is 150.		
Challenge X		
1) The second option – number tickets $\times 24 + 3$ . 2) Hexagon perimeter 48cm ( $8 \times 6$ or $8+8+8+8+8+8$ ). Meaning the square sides would be 12cm ( $48 \div 4 = 12$ ). Therefore the area will be $144\text{cm}^2$ ( $12 \times 12 = 144$ ).		
Review		
If Carol saves £32 out of the £96 a month then she saves a third of the amount.		
£96		
£32	£32	£32
<p>Carol should then get a third of the savings. <math>£108 \div 3 = £36</math></p> <p>Then if I look at the amounts each person saved:            Alan £28            Bob £36            Carol £32</p> <p>I can see That Alan saved £4 less than Carol and Bob saved £4 more than Carol. So if Carol would get £36 out of the £108 savings the Alan should get £4 less and Bob £4 more. Meaning Carol gets £36, Alan £32 and Bob £40.</p> <p>To check my calculations work <math>£36 + £32 + £40 = £108</math></p>		

Lesson 4		
Learning Intention: WALT solve problems by working backwards.	Key Vocabulary: Working backwards inverse	What you will need: A computer, tablet or phone for the starter and review Maths book Pencil Video: Year 6 Maths – Week 3 - Lesson 4
Starter		
<p>Play the game 'drips' on a tablet or a computer. The idea of the game is to be the person who takes the last counter.</p> <p>If you are anything like me and lose every time you can click the 'pairer' which will pair counter to help you beat the computer. Don't forget to also study what the computer does which helps the computer win.</p> <p><a href="https://nrich.maths.org/drips/">https://nrich.maths.org/drips/</a></p>		
Main Teaching		
<p>Watch the video Year 6 Maths – Week 3 - Lesson 4, which will guide you through the main input.</p> <p>The trick to winning 'drips' is by thinking backwards. Deciding your winning move before you make your first move.</p> <p>So let's look at mathematical calculations where you will need to work backwards.</p> <p><math>\_\_ \div 8 \times 2 = 14</math></p> <p>How would I go about solving this problem? I need to work backwards. So let's start with the answer 14, because I am working backwards I need to think about what that means. If I'm working backwards I need to think about the inverse of the mathematical symbols in the calculation. So instead of multiplying 14 by 2, I need to do the inverse, which is dividing.</p> <p>So... step 1  <math>14 \div 2 = 7</math>            Now I need to think about the inverse of <math>\div 8</math>, which is multiplying by 8. So let's try that.  <math>7 \times 8 = 56</math></p> <p>Now as always we need to check that the calculation works with my answer.  <math>56 \div 8 \times 2 = 14</math> It works!</p> <p>Let's try one more before you start you own challenges.</p> <p>Jack is 35 years younger than Karen. Frank is half of Jack's age. Jennifer is 17 years older than Frank. If Jennifer is 35 years old, how old is Karen?</p> <p>Wow! That's a lot of information. I am going to start at the end of the question – working backwards!</p> <p><b>Jennifer is 35 years old</b> – is there any other information about Jennifer? Yes! She is 17 years older than Frank. So <b>Frank would be 18 years old</b>. Do I have any more</p>		



information about Frank? I do! Frank is half Jack's age – so if Frank is 18 that means Jack is double the age of Frank, so **Jack is 36 years old** ( $18 \times 2 = 36$ ).

I've done a lot of working out, but have I answered the question? No I need to find out how old Karen is.

The question says Jack is 35 years younger than Karen, so if Jack is 36 years old and Karen is 35 years older, I'll need to do  $36 + 35 = 71$ . **Karen is 71 years old!**

#### Independent Tasks

Please complete 1 or 2 challenges. You can only go on to Challenge X if you have completed Challenge 3 first. If you are finding a challenge too tricky or too easy after 3 questions, you should switch challenges.

After you have completed your challenge, check your answers in the mark scheme. If you got an answer wrong look carefully and identify where you made a mistake.

#### Challenge 1

- 1) Seb had some cherries. Every day he ate 10 and gave 5 away. After he gave the last 5 cherries away, he had eaten 40 cherries altogether. How many cherries did Seb have at the start?
- 2) Emily chooses two numbers. She adds the two numbers together and divides the result by 2. Her answer is 44. One of Emily's numbers is 12. What is Emily's other number?
- 3) Rita chooses a number less than 50. She adds 4 and then multiplies the results by 5. She then divides the new results by 2. Her final answer is 40. What was the number she started with?

#### Challenge 2

- 1) In a skateboard competition all the competitors started skating together. After three minutes, half the skaters were eliminated. During the next ten minutes, half of the remaining were eliminated. In the last two minutes, three more contestants were eliminated leaving a winner of the competition. How many skaters started the competition?
- 2) Amy gets on a bus where some people are already seated. At the next stop five additional people get on and two people get off. Two stops later seven people climb on board. All 15 people get off the bus at the train station. How many people were on the bus when Amy got on?
- 3) Louise was cooking a chicken, she needed to it cooked ready for 5:00pm. The chicken was 3kg and the cooking instructions said to cook the chicken for 20 minutes per kg plus an additional 20 minutes. At what time does she need to put the chicken in the oven so it is ready in time?
- 4) I am thinking of a number less than 20. I divide it by 2 and then add 6. I then divide this result by 3. My answer is 4.5. What was the number I started with?

#### Challenge 3

- 1) Kerry is 15 kilograms lighter than Amy. Gary is twice as heavy as Kerry and James is seven kilograms heavier than Gary. If James weighs 71 kilograms, what is Amy's weight?
- 2) Carl needed to arrive at the theatre for 3:15pm. His journey involved a 15 minute walk to the station, a 25 minute train journey and walking from the station to the theatre which would take 10 minutes. He wanted to allow a further 20 minutes for the train to arrive. What time should he leave his house?

- 3) I'm thinking of a number less than 10. I multiplied by 3 and then divided it by 2. I then multiplied this result by 7 and added 2. My answer is 33.5. What was the number I started with?
- 4) Miss Allen has been learning to cook roast beef. The beef needs to be cooked for 10 minutes per 500g, but the beef needs to be cooked at a high heat for 30 minutes then the temperature needs to be reduced for the remaining cooking time. The beef joint weighs 3.5kg. How long is the beef cooked at the reduced temperature?

### Challenge X

- 1) Amy thought of a number. She added 0.5 to her number and then doubled the result. Then she subtracted 0.5 and doubled the new result. Her final answer was 61. What number did Amy start with?
- 2) Sarah had a bag of strawberries. She ate 5 strawberries, then gave half of what she had left to Amy. Amy then gave Adam a third of her strawberries. Adam got 3 strawberries. How many strawberries did Sarah have in her bag to start with?

### Review

Visit <https://nrich.maths.org/6282&part=> play the frog game.

How many moves does it take you to swap the blue frogs and red frog position? When you've completed it check to see if you have beaten my score, which is in the mark scheme.

Now try 3 red frogs and 3 blue frogs. Can you beat my score?



## Mark Scheme – Lesson 4

Independent Task
Challenge 1
<ol style="list-style-type: none"><li>1) Seb started with 60 cherries.</li><li>2) Emily's started with the number 10.</li><li>3) Rita started with the number 12.</li></ol>
Challenge 2
<ol style="list-style-type: none"><li>1) 16 skaters started the competition.</li><li>2) 5 people were on the bus when Amy got on. If you don't Amy there would be 4 people on the bus when she got on.</li><li>3) 3:40pm</li><li>4) The number I am thinking of is 15.</li></ol>
Challenge 3
<ol style="list-style-type: none"><li>1) Amy is 47kg.</li><li>2) Carl needs to leave his house at 2:05pm.</li><li>3) The number I started with is 3.</li><li>4) The beef is cooked at the reduced temperature for 40 minutes.</li></ol>
Challenge X
<ol style="list-style-type: none"><li>1) Amy thought of a number. She added 0.5 to her number and then doubled the result. Then she subtracted 0.5 and doubled the new result. Her final answer was 61. What number did Amy start with? Amy's number was 15.</li><li>2) Sarah had 23 strawberries in her bag to start with.</li></ol>
Review
<ol style="list-style-type: none"><li>1) 2 red frogs and 2 blue frogs – 10 moves</li><li>2) 3 red frogs and 3 blue frogs – 19 moves</li></ol>