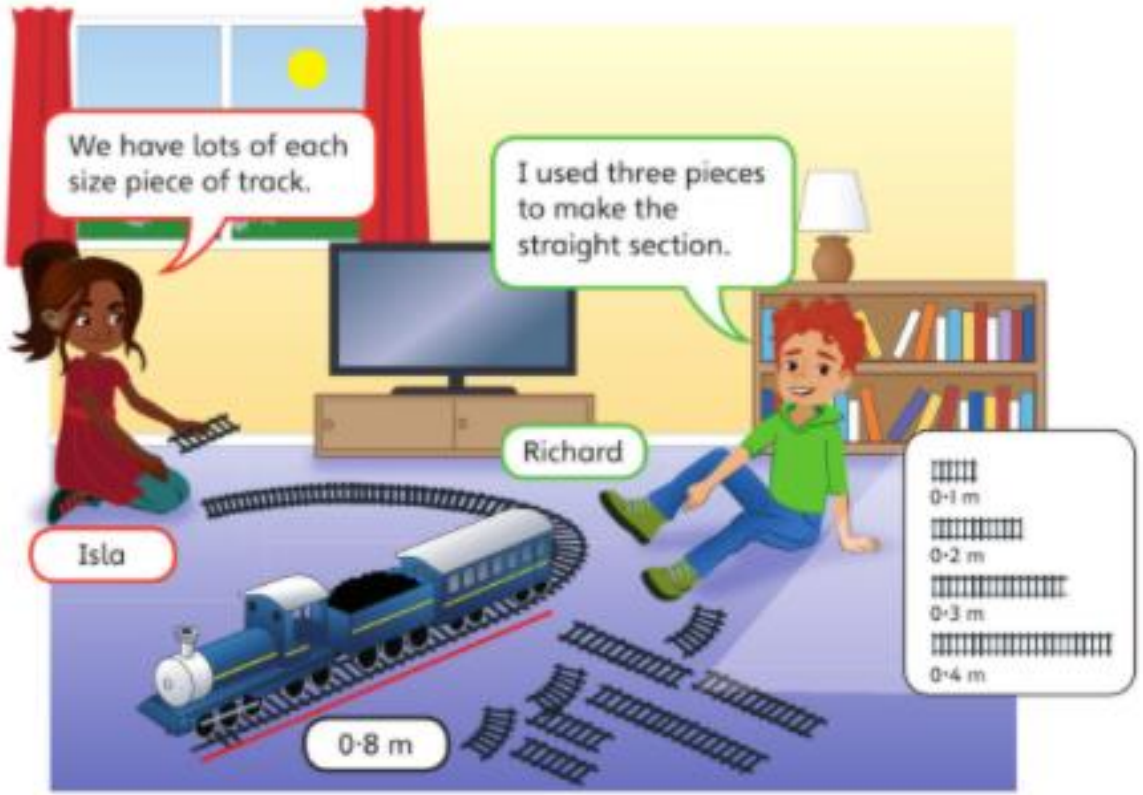
Adding and subtracting decimals 1

Discover



1 a) Which pieces of track could Richard have used to make the straight section?

b) Isla uses different pieces of track.

What other ways could Isla have made a track of 0·8 m?

Good Morning Year 5! Today we are starting a new unit in maths. We are going to be looking at adding and subtracting decimals.

The pieces of track are:
- 0.1 m long
- 0.2 m long
- 0.3 m long
- 0.4 m long

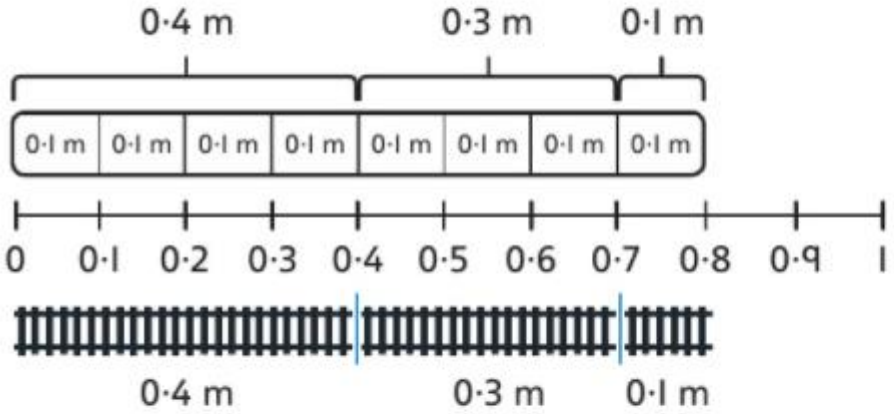
1a) The straight section is 0.8 m long – which pieces of track could Richard have used to build the straight section?

1b) Isla uses different pieces. What pieces could she have used to make a track of 0.8m?

Share

a) There are track pieces 0·1 m, 0·2 m, 0·3 m and 0·4 m long.

We need to find three pieces that add up to 0·8 m.

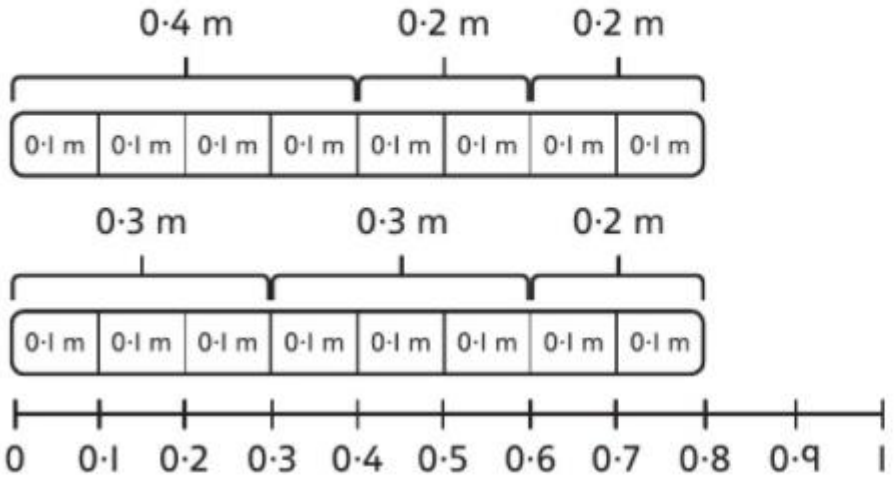


0·4 m + 0·3 m + 0·1 = 0·8 m

Richard could have used 0·4 m, 0·3 m and 0·1 m track pieces to make the straight section.

Looking at the bar model we can see that when all the pieces of track are put together it reaches 0.8 on the number line below. This means that 0.4 m + 0.3 m + 0.1 m = 0.8 m

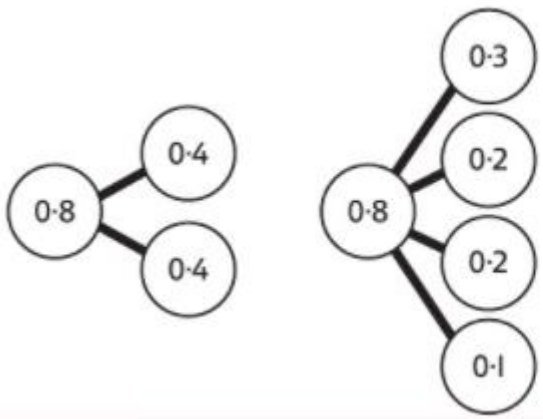
b) There are several possible answers.



$0{\cdot}4 + 0{\cdot}2 + 0{\cdot}2 = 0{\cdot}8$

Isla could have used one 0·4 m and two 0·2 m pieces.

Or she could have used two 0·3 m and one 0·2 m pieces to make a track of 0·8 m.



I have found other answers which add to 8 tenths.

For 1b there are different answers. Isla used the pieces to make a track which was 0.8 m long. Looking at the bar model she could have used a piece that was 0.4 and two pieces that are 0.2m long as $0.4 + 0.2 + 0.2 = 0.8$

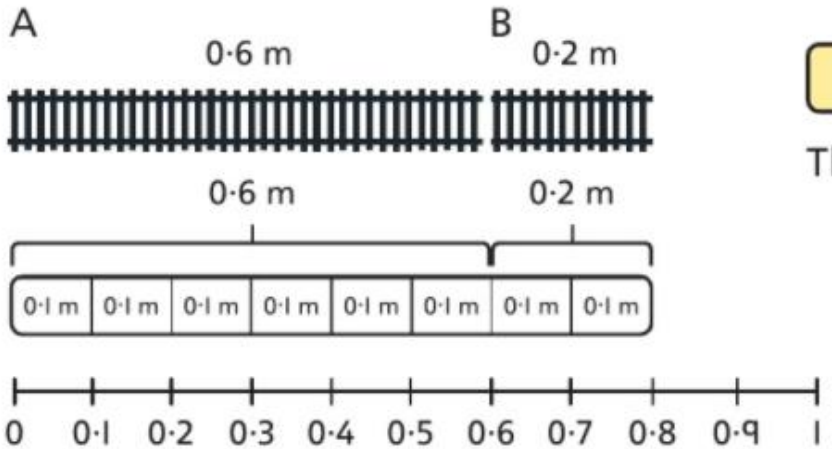
Isla also could have used two pieces of track that are 0.3 m long and one 0.2m piece as $0.3 + 0.3 + 0.2 = 0.8$

There are other possible answers too! When we look at the part whole models above we can see that the whole is 0.8. We know that 0.8 is 8 tenths as there is the number 8 in the tenth column if we think about place value. Therefore, we can have two parts of 0.4 as $0.4 + 0.4 = 0.8$ or we could have one part that is 0.3 another part that is 0.2 another 0.2 part and a 0.1 part as $0.3 + 0.2 + 0.2 + 0.1 = 0.8$

Think together

1 **a)** These pieces of track (A and B) are put together.

How long is the track in total?



☐ m + ☐ m = ☐ m

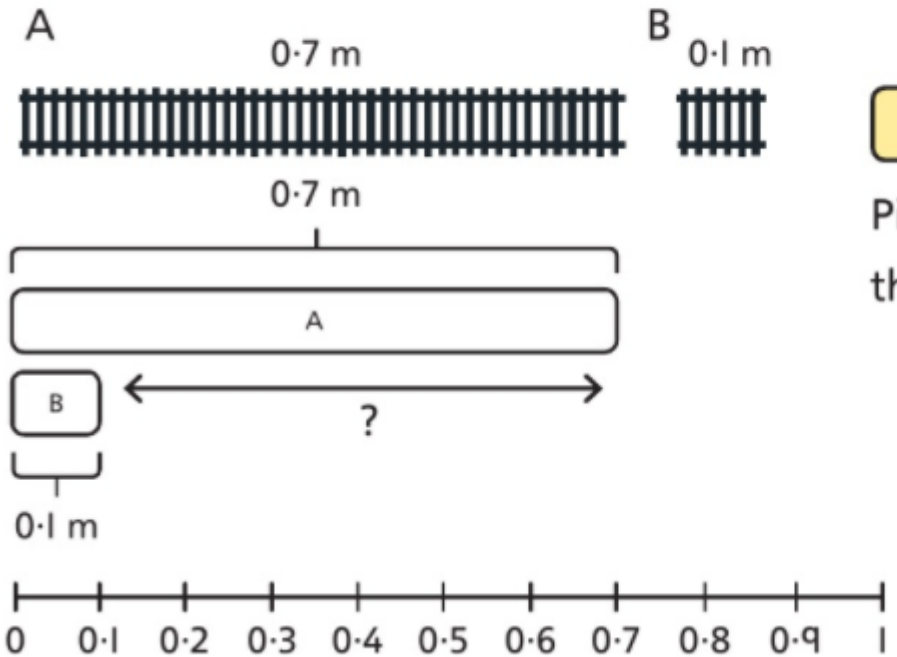
The track is ☐ m in total.

When we want to know the total of something we add. So to work out the total we will do 0.6 + 0.2

If we look at the bar model we can see that when the two pieces are put together they reach 0.8 on the number line below.

This means 0.6 + 0.2 = 0.8m

b) How much longer is track piece A than B?



□ m − □ m = □ m

Piece A is □ m longer than piece B.

To work this out we need to do a subtraction. So we will do 0.7 – 0.1

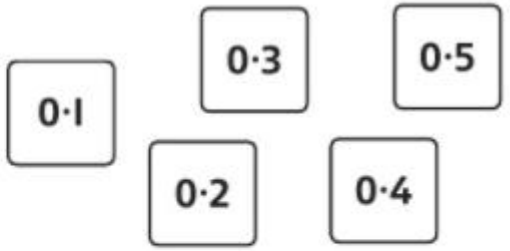
If we use the bar model and number line to help us we can see that the number line is going up in 0.1 or 1 tenth each time. So if we count on from 0.1 – 0.7 we count up another 6 tenths or 0.6.

This means that 0.7 – 0.1 = 0.6

2 a) Which two numbers add up to 0·9?

b) Which cards have a difference of 0·1?

c) Which two cards add up to 0·6 and have a difference of 0·2?



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2a) Looking at the number cards we need two numbers that add up to 0.9. I know that 5 tenths add 4 tenths = 9 tenths so 0.5 + 0.4 = 0.9

2b) When finding the difference I am going to use subtraction. So I need one card subtract another card to equal 0.1. I think there can be different answers to this... I know that 5 tenths subtract 4 tenths = 1 tenth so 0.5 – 0.4 = 0.1 I also know that 3 tenths subtract 2 tenths = 1 tenth so 0.3 – 02 = 0.1

2c) This time I need to think about two different things. My cards need to add to 0.6 but have a difference of 0.2. I know that 5 tenths add 1 tenth = 6 tenths so 0.5 + 0.1 = 0.6 however 0.5 – 0.1 = 0.4 and so gives the difference of 0.4 not 0.2

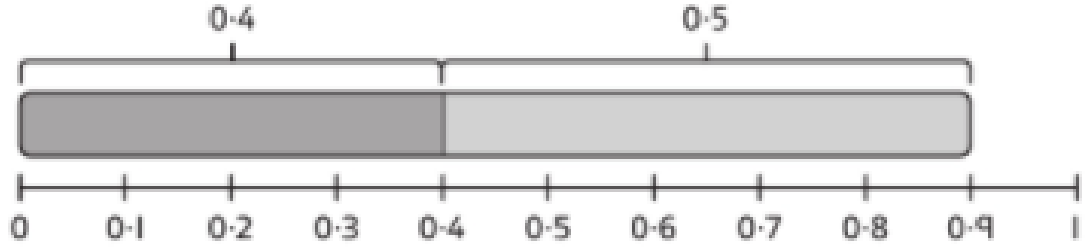
So I am going to look at 0.4 and 0.2. I know that 4 tenths add 2 tenths = 6 tenths so 0.4 + 0.2 = 0.6. I know that 0.4 – 0.2 = 0.2 which is a difference of 0.2. This means the answer for 2C must be 0.4 and 0.2

Now it is your turn to have a go. Use what we know from the first slides to try and answer the following questions. Show your working out on a piece of paper that can be brought into school to show Miss Bosworth.

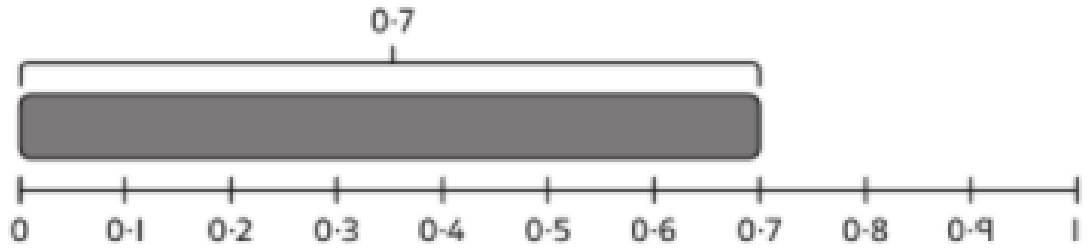
Adding and subtracting decimals 1

1 Find the totals of these decimals.

a) 0·4 + 0·5 = ☐



b) 0·7 + 0·1 + 0·1 = ☐



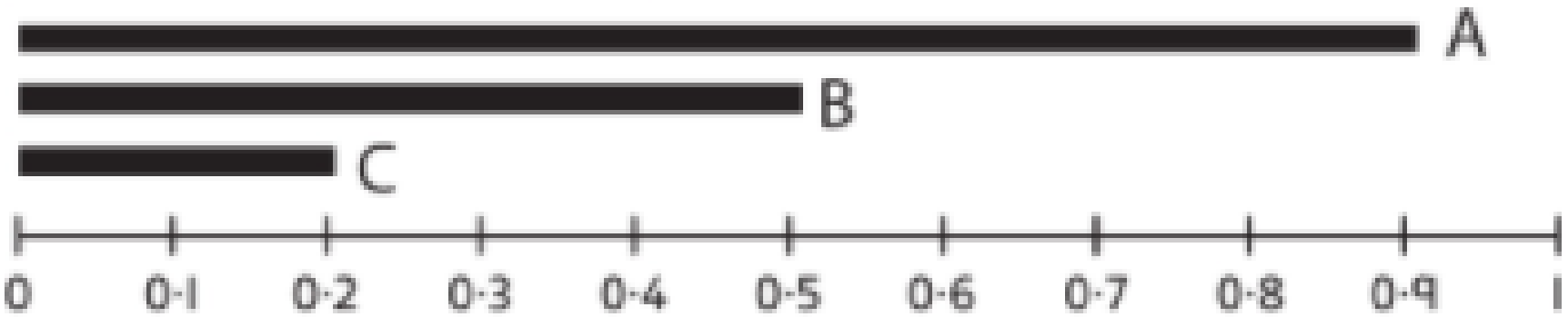
c) 0·3 + 0·1 + 0·3 = ☐

d) 0·5 + 0·5 = ☐

Use the bar model and the number line to help you.

Don't forget to write the question and show your working out on some paper to bring into the classroom to show Miss Bosworth your hard work!

2 Max cuts some pieces of string. He measures the lengths.



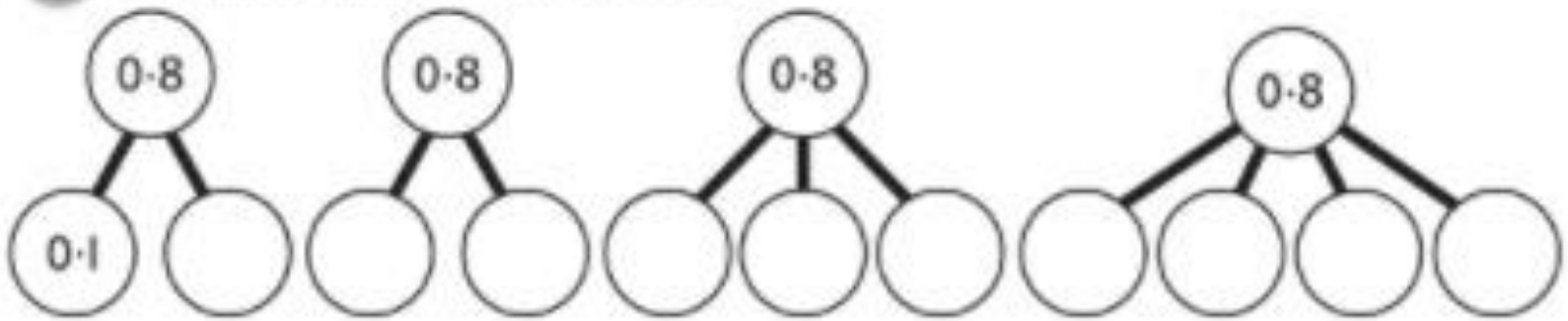
a) How much longer is A than B? ☐ − ☐ = ☐

b) What is the difference between A and C? ☐ − ☐ = ☐

6

Don't forget this is a subtraction so to work out 2a you need to do the length of A – the length of B

3 Complete the part-whole models.



4 Complete the calculations.

a) 0·3 + 0·5 = ☐

b) 0·7 + 0·1 = ☐

c) 0·2 + ☐ = 0·5

d) 0·5 − 0·1 = ☐

e) 0·8 − 0·2 = ☐

f) 0·7 − ☐ = 0·2

g) 0·4 + 0·3 + 0·2 = ☐

h) 0·7 + 0·2 − 0·3 = ☐

i) 0·9 − 0·1 + 0·2 = ☐

j) 0·5 − 0·2 − 0·3 = ☐

3 is a part whole model – The whole is always 0.8 so look at how many parts there are and what numbers could go into the parts to make that whole number!

Don't let 4 trick you!!! Make sure you look closely at the symbols to see if you are adding or subtracting!!

5 Complete the following calculations.

a) 0·3 + 0·7 = ☐

b) 0·6 + ☐ = 1

c) ☐ + 0·1 = 1

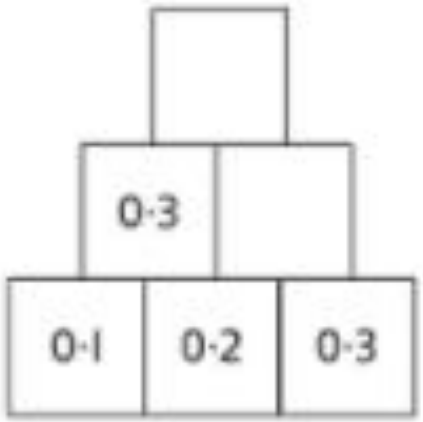
d) 1 – 0·2 = ☐

e) 1 – 0·5 = ☐

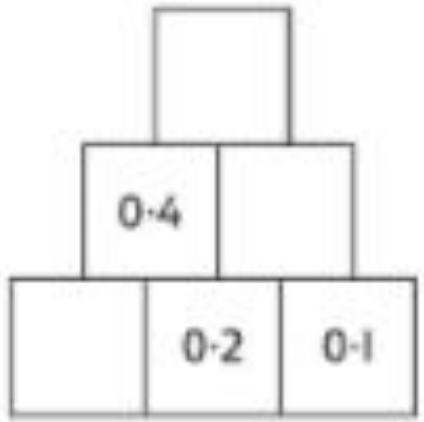
f) 1 – ☐ = 0·2

6 Complete the addition pyramids. Each row of the pyramid must total the same as the other rows.

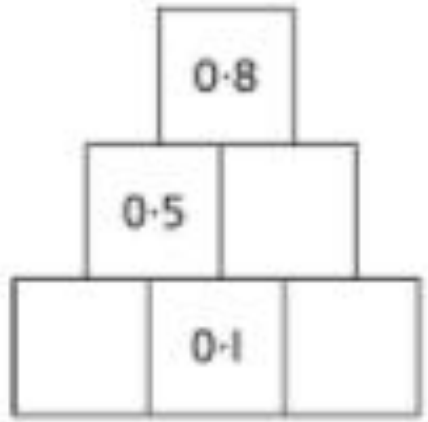
a)



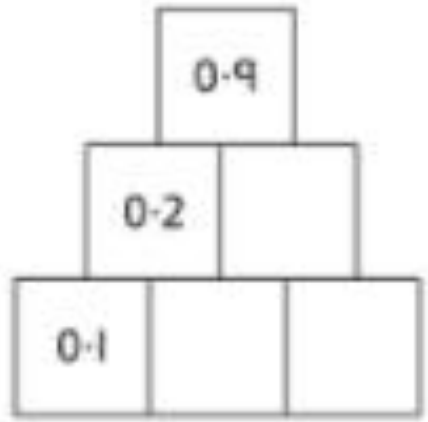
b)



c)



d)

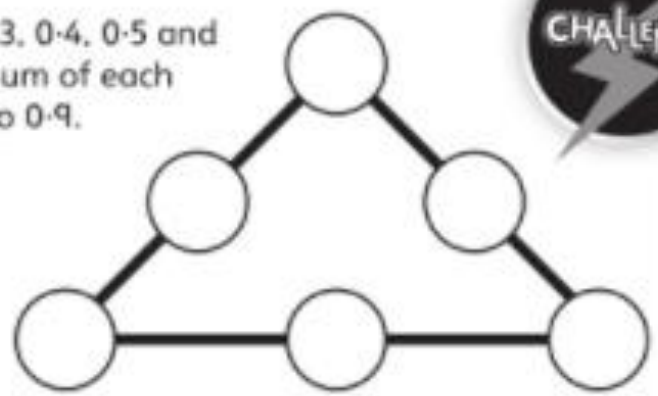


This means that the total of the bottom row for pyramid a must be the total for the second row and the top row. So 0.1 + 0.2 + 0.3 =? This is the total for the second row so 0.3 + ? = the answer for the boom row

7 If ◆ and ▲ are two decimal numbers less than 1 and ▲ − ◆ = 0·3, what could ▲ and ◆ be?

▲ = ☐ ◆ = ☐.

8 Write the numbers 0·1, 0·2, 0·3, 0·4, 0·5 and 0·6 in the circles so that the sum of each side of the triangle is equal to 0·9. Use each number once.



CHALLENGE

This is the challenge page for anyone that wants to try to challenge themselves. So if you found some of the questions easy then give this a go. Just like when we do maths in class if you do not get to this part then that is okay. Or if you found some things tricky then that is also okay and you can just move on to reflect. You do not have to complete this slide!

Reflect

Emma calculates 0·4 + 1 = 0·5. Explain the mistake Emma has made.

Well done Year 5 for completing this maths lesson and for sticking with your learning during this challenging time. Miss Bosworth is really looking forward to seeing all your hard work when we are back in the classroom. Please answer the reflect and think about what we know about place value and why Emma is wrong.