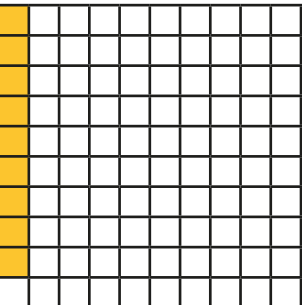
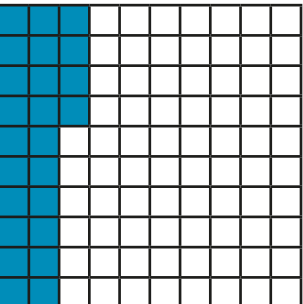


# Understand percentages

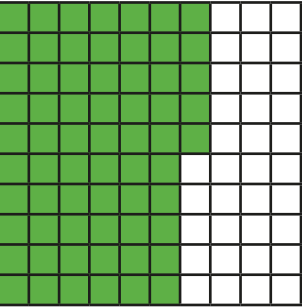
1 Complete the sentence for each diagram.

a)  There are  parts out of a hundred shaded.

This is  %.

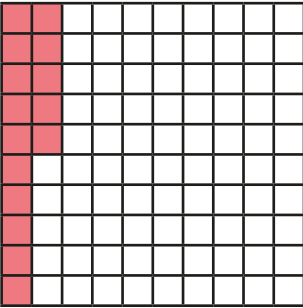
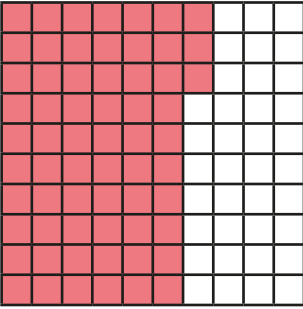
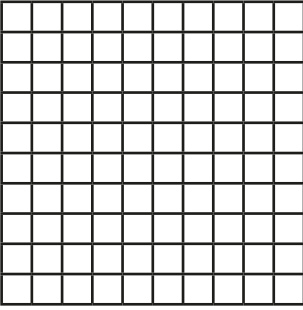
b)  There are  parts out of a hundred shaded.

This is  %.

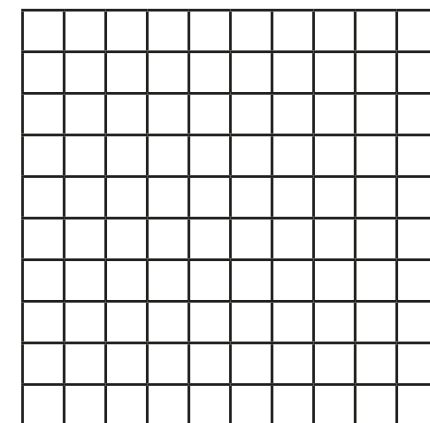
c)  There are  parts out of a hundred shaded.

This is  %.

2 Complete the table.

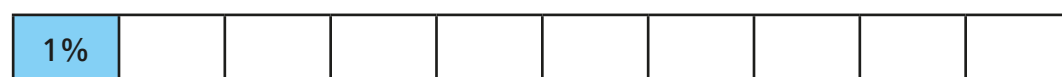
Hundred square	Percentage
	
	
	82%

3 Shade 15% of the hundred square red.  
Shade 32% of the hundred square blue.



What percentage of the hundred square is **not** shaded?  %

- 4 a) Is 1% of this bar model shaded? No



Explain your reasoning.

It's split into 10 parts so each part is 10%

- b) What percentage of each bar model is shaded?



30 %



70 %

- 5 Passengers are boarding a plane.

The plane has 100 seats.

- a) 10% of the seats are already full.

How many passengers are already on the plane?

10

- b) 15% of the seats have not been booked.

How many seats have been booked?

85

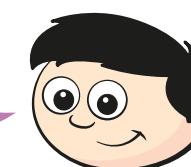
- c) How many passengers still need to board the plane?

75

- 6 Dexter has £1 to spend.  
He buys some stickers.



I got 35p change.



What percentage of his money did Dexter spend?

$$£1 - 35p = 65p \leftarrow \text{spent}$$

65 %

$$\frac{65p}{100p}$$

- 7 Aisha and Brett have been selling tickets for the school play.

There are 100 seats available.

- On Monday they sold 34% of the tickets. (34)
- On Tuesday they sold 42 tickets.
- By the end of Wednesday, 95% of the tickets had been sold. (95)

How many tickets did they sell on Wednesday?

$$34 + 42 = 76$$

$$95 - 76 = 19$$

On Wednesday they sold 19 tickets.

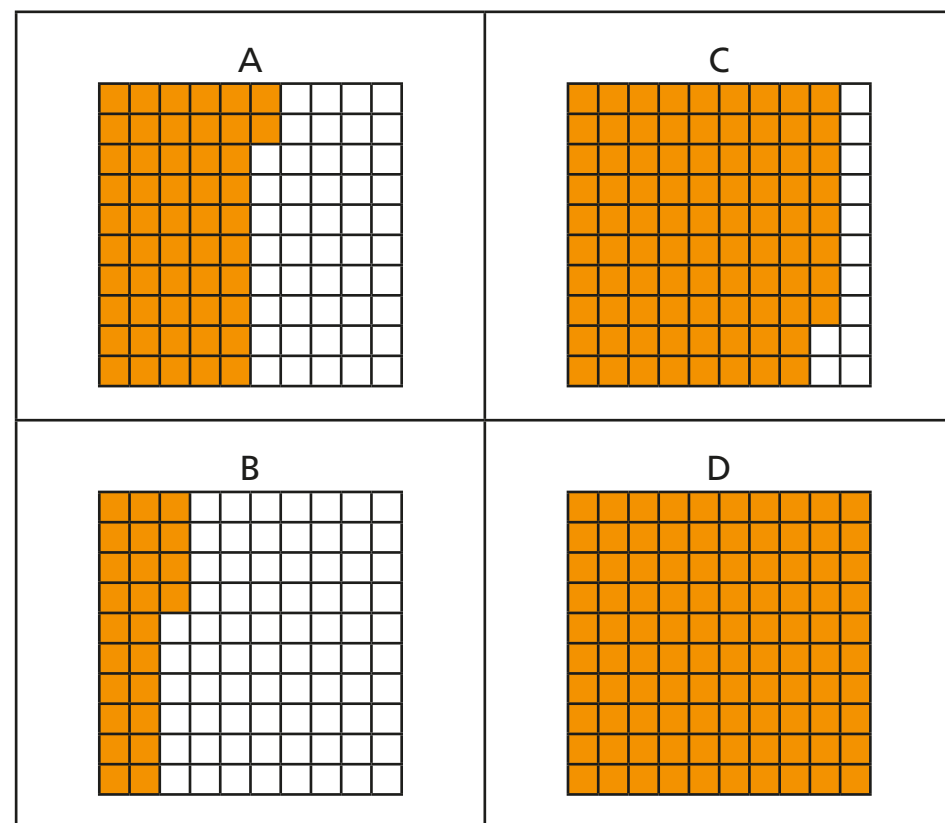
- 8 Shade 85% of this bar model.



Compare answers with a partner.

# Percentages as fractions and decimals

1 Here are four hundred squares.

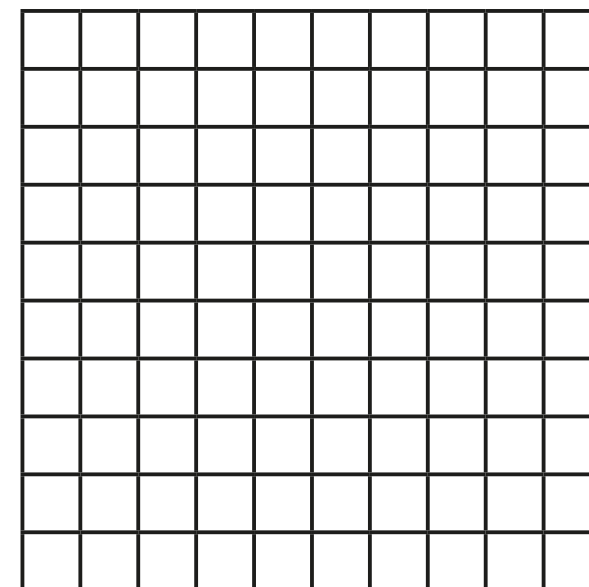


Complete the table.

Hundred square	Percentage	Fraction	Decimal
A		$\frac{52}{100}$	
B			
C			
D			

2 Prove that 0.2 is equal to 20%.

You may use the hundred square to help you.




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Why do you think some people think that 0.2 is equal to 2%?

3 Complete the fraction, decimal and percentage equivalents.

a)  $32\% = \frac{\boxed{\phantom{00}}}{100} = \boxed{\phantom{00}}$

$35\% = \frac{\boxed{\phantom{00}}}{100} = \boxed{\phantom{00}}$

$48\% = \frac{\boxed{\phantom{00}}}{100} = \boxed{\phantom{00}}$

c)  $0.29 = \boxed{\phantom{00}}\% = \frac{\boxed{\phantom{00}}}{100}$

$0.71 = \boxed{\phantom{00}}\% = \frac{\boxed{\phantom{00}}}{100}$

$0.03 = \boxed{\phantom{00}}\% = \frac{\boxed{\phantom{00}}}{100}$

b)  $\frac{17}{100} = \boxed{\phantom{00}}\% = \boxed{\phantom{00}}$

$\frac{9}{100} = \boxed{\phantom{00}}\% = \boxed{\phantom{00}}$

$\frac{90}{100} = \boxed{\phantom{00}}\% = \boxed{\phantom{00}}$

4 Write <, > or = to complete the statements.

- a) 50%  $\bigcirc$   $\frac{5}{100}$       d)  $\frac{40}{100}$   $\bigcirc$  40%
- b) 25%  $\bigcirc$   $\frac{50}{100}$       e)  $\frac{70}{100}$   $\bigcirc$  7%
- c) 14%  $\bigcirc$   $\frac{41}{100}$       f) 82%  $\bigcirc$   $\frac{82}{100}$

5 Write the values in order from smallest to greatest.

- a) 33%     $\frac{30}{100}$     3%     $\frac{13}{100}$   
3%,  $\frac{13}{100}$ ,  $\frac{30}{100}$ , 33%
- b) 299%     $\frac{91}{100}$     9%     $\frac{9}{10}$   
9%,  $\frac{9}{10}$ ,  $\frac{91}{100}$ , 299%
- c) 2.5     $\frac{25}{100}$     250    25% of 100     $\frac{25}{1000}$   
 $\frac{25}{1000}$ ,  $\frac{25}{100}$ , 2.5, 25% of 100, 250

6 Convert the fractions to hundredths.

Complete the decimal and percentage equivalents.

- a)  $\frac{150}{300} = \frac{50}{100} = 0.5 = 50\%$
- b)  $\frac{25}{500} = \frac{5}{100} = 0.05 = 5\%$
- c)  $\frac{48}{300} = \frac{16}{100} = 0.16 = 16\%$

- d)  $\frac{18}{50} = \frac{36}{100} = 0.36 = 36\%$
- e)  $\frac{13}{25} = \frac{52}{100} = 0.52 = 52\%$

7 Circle all the fractions that are greater than or equal to 50%.

$\frac{10}{50}$	$\frac{4}{5}$	$\frac{50}{100}$
$\frac{30}{80}$	$\frac{1}{50}$	$\frac{70}{140}$

8 Jack and Dora go shopping with the same amount of money.

Jack spends  $\frac{1}{3}$  of his money.

Dora spends 30% of her money.

a) Who spends more money? Jack

Use fraction and percentage equivalence to explain your answer.

$$\frac{1}{3} = \frac{10}{30}$$

$$30\% = \frac{3}{10} = \frac{9}{30}$$

b) Jack and Dora each started with £300

How much money do they each have left?

Jack £200      Dora £210

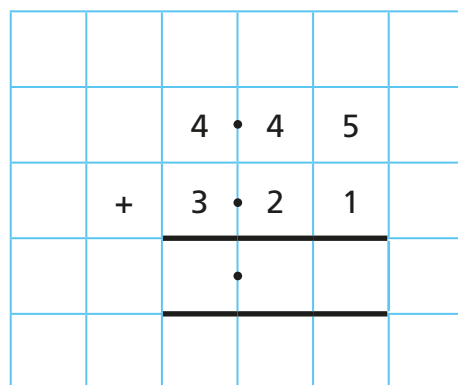
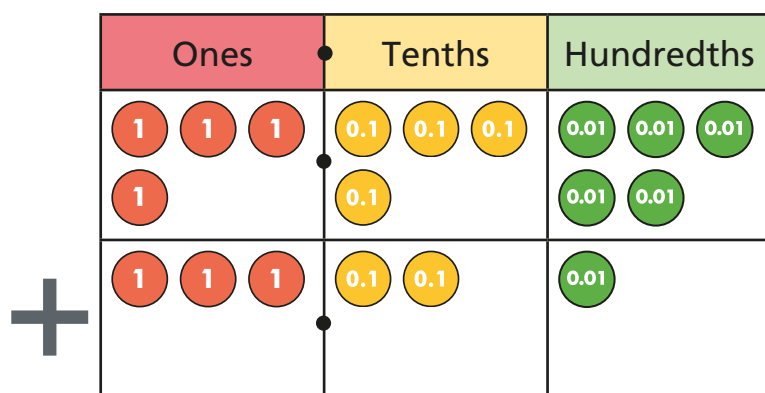
# Adding decimals with the same number of decimal places



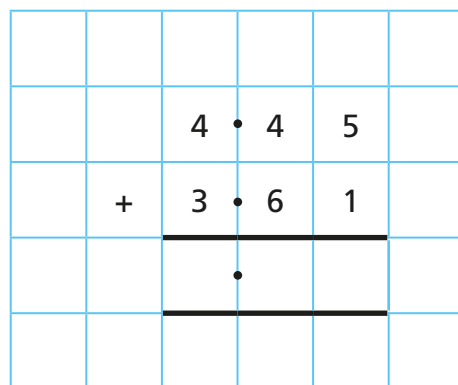
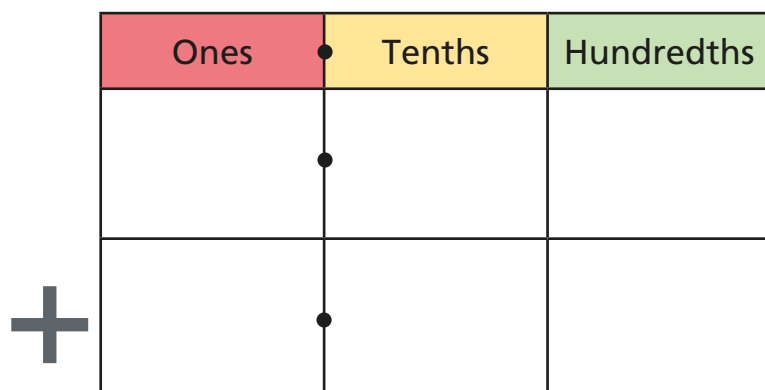
1 Complete the additions.

Use the place value charts to help you.

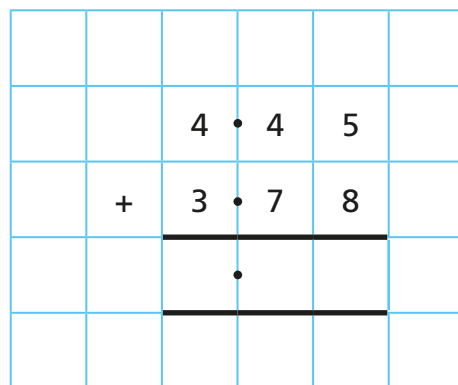
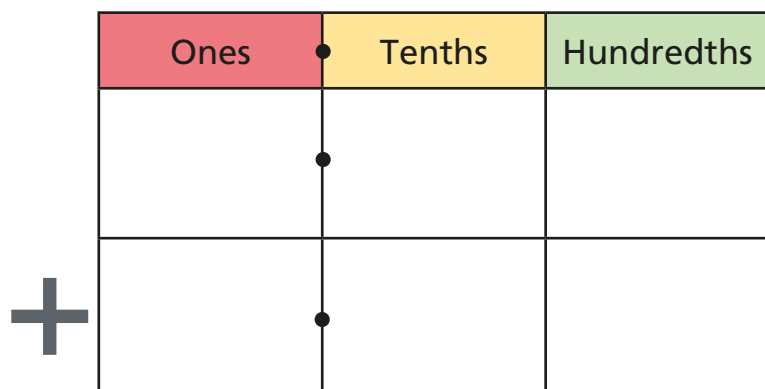
a)  $4.45 + 3.21 =$



b)  $4.45 + 3.61 =$

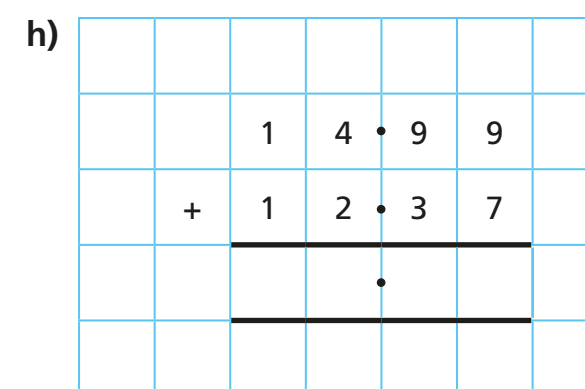
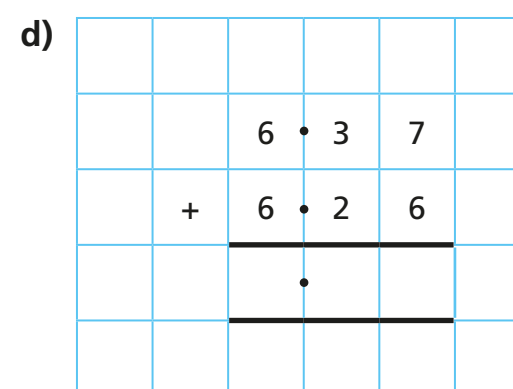
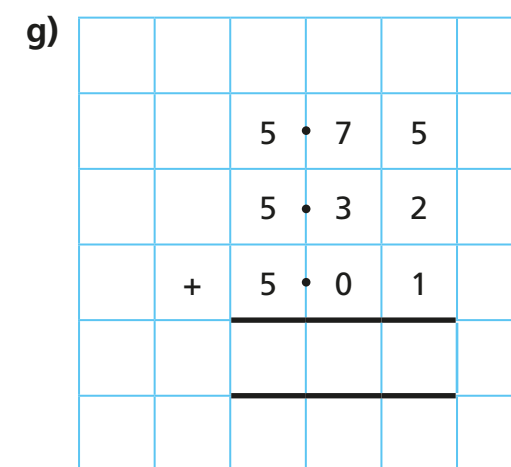
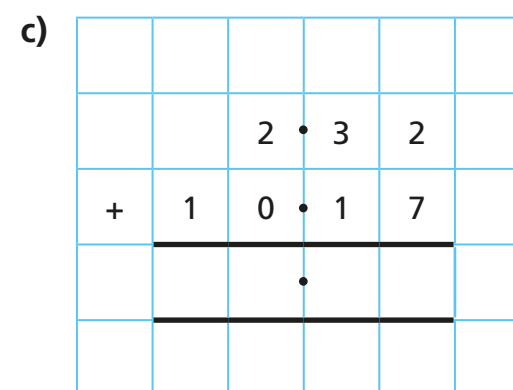
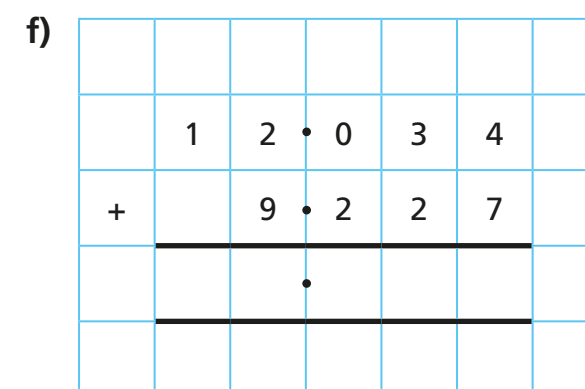
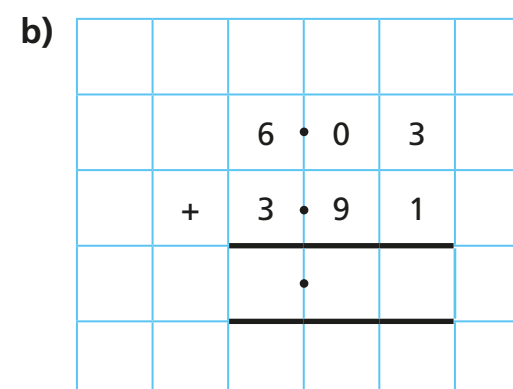
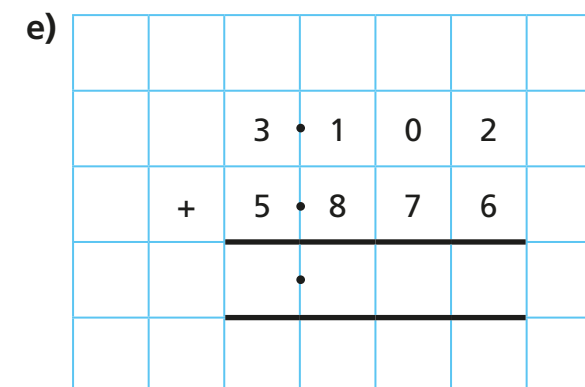
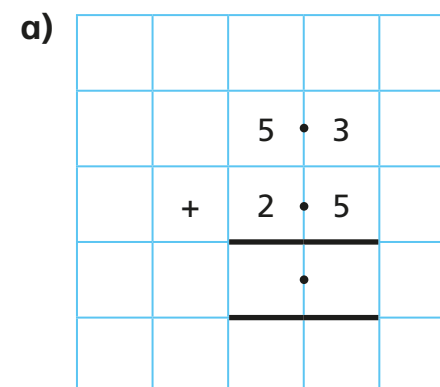


c)  $4.45 + 3.78 =$



Which calculation was easier? Talk about it with a partner.

2 Use the column method to work out the additions.



3 Work out the calculations.

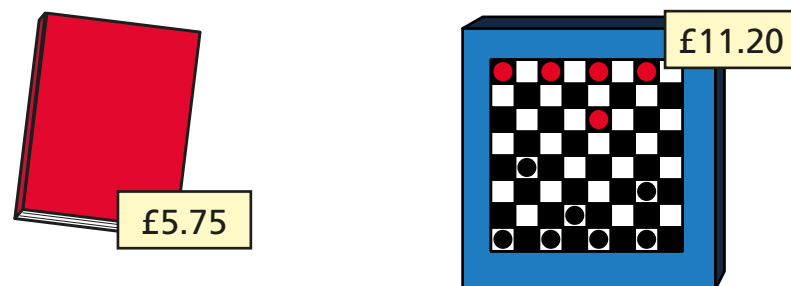
Write  $<$ ,  $>$  or  $=$  to make the statements correct.

a)  $0.64 + 4.79$   $>$   $5.01 + 0.23$

b)  $7.427 + 3.238$   $<$   $5.427 + 5.832$

c)  $3.08 + 4.63$   $=$   $4.84 + 2.87$

4 Teddy is working out the total cost of these items.



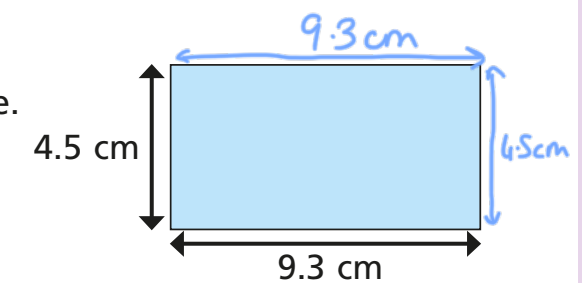
Here are his workings.

$$\begin{array}{r} 5 \cdot 7 \quad 5 \\ + \quad 1 \quad 1 \cdot 2 \quad 0 \\ \hline 6 \quad 8 \cdot 7 \quad 0 \end{array}$$

Talk to a partner about Teddy's mistake.

Work out the correct answer.

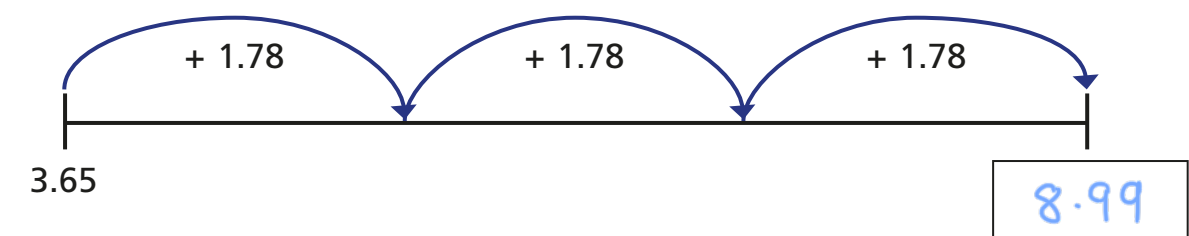
5 Work out the perimeter of the shape.



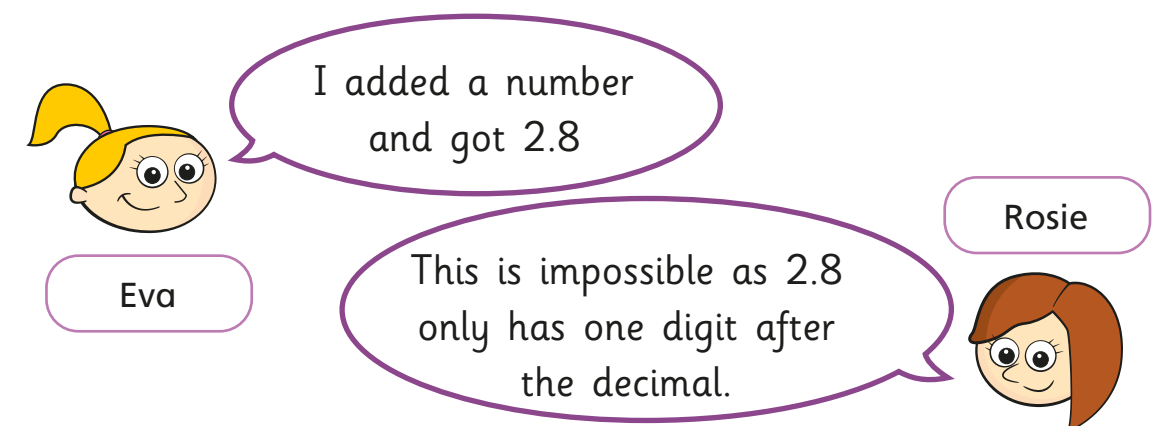
$$\begin{aligned} &4.5 + 9.3 + 4.5 + 9.3 \\ &= 9 + 18.6 \\ &= 27.6 \end{aligned}$$

perimeter =  $27.6$  cm

6 Complete the number line.



7 Eva starts with the number 1.62



Is Rosie correct? No

Talk about it with a partner.

# Adding decimals with a different number of decimal places

1 Ron is adding 1.4 and 2.53

He makes each number with counters.

Ones	Tenths	Hundredths
●	● ● ● ●	
● ●	● ● ● ● ●	● ● ●

a) What is the answer to Ron's calculation?

3.93

b) Explain your method to a partner.

c) Did you have to make an exchange? No

2 Work out the additions.

a)

		3	•	0	2
	+	1	•	6	
		4	•	6	2

c)

		2	•	8	
	+	3	•	4	5
		6	•	2	5

b)

		1	3	•	5
	+		0	•	2 3
		1	3	•	7 3

d)

			6	•	1 5
	+	1	3	•	9
		2	0	•	0 5

3 Filip is adding two numbers together.

He writes it as a column addition.

$$\begin{array}{r} 13.8 \\ + 1.95 \\ \hline 3.33 \\ \hline 11 \end{array}$$

a) What mistake has Filip made?

He hasn't correctly lined up his numbers in the columns.

b) Use the column method to work out the correct answer.

		1	3	•	8
	+		1	•	9 5
		1	5	•	7 5
			1		

4 Use the column method to work out the additions.

a)  $2.36 + 1.9$

b)  $14.82 + 3.7$

		2	•	3 6	
	+		1	•	9
		4	•	2 6	
			1		

		1	4	•	8 2
			3	•	7
		1	8	•	5 2
			1		

5 Use the column method to work out the additions.

a)  $0.59 + 11.9$

		0	5	9	
+	1	1	9		
	1	2	4	9	
		1			

c)  $0.591 + 1.73$

		0	5	9	1
+	1	7	3		
	2	3	2	1	
	1	1			

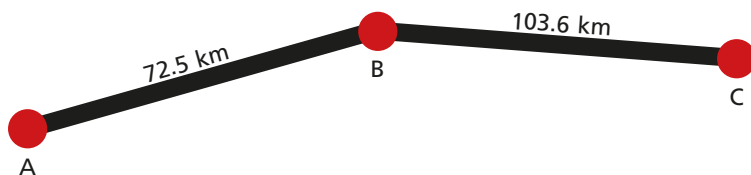
b)  $77.34 + 1.82$

	7	7	3	4	
+		1	8	2	
	7	9	1	6	
		1			

d)  $3.2 + 1.84 + 0.931$

		3	2		
		1	8	4	
+	0	9	3	1	
	5	9	7	1	
	1				

6 Mr Hall drives from point A to point B, then on to point C.



What is the total distance that Mr Hall drives?

176.1 km

7 Here are four number cards.

3.8

4.19

0.72

11.46

a) What is the greatest total you can make by adding two of the numbers?

Complete the calculation.

$11.46 + 4.19 = 15.65$

b) What is the sum of the four numbers?

20.17

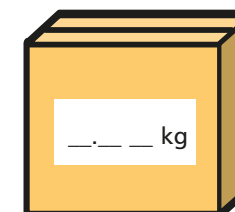
8 Work out the missing digits.

a)  $\underline{2}4.3 + 1\underline{5}.37 = 39.67$

b)  $4.8\underline{5} + \underline{7}.\underline{8} = 12.65$

9 The total mass of the two boxes is 10.85 kg.

What could the mass of each box be? *Various answers.*



How many answers can you find?