



1)

127	96
$\frac{1}{2}$ book = 223	

$\frac{1}{2}$ book = 223	$\frac{1}{2}$ book = 223
whole book = 446	

223 is halfway through the book. I need to double 223 to find the number of pages the book has altogether.

$$223 \times 2 = 446 \text{ pages}$$

2) Multiple answers possible, including:

$$A = 120/150/180/123$$

$$B = 80/100/120/82$$

$$C = 40/50/60/41$$

3) a) Number of parents at Tuesday's performance is  $168 - 29 = 139$

$$168 + 139 = 307 \text{ parents altogether}$$

b) Yes, there would be 8 seats left over.

$$350 - 35 = 315$$

$$315 - 307 = 8 \text{ seats left}$$

c)  $81 - 52 = \text{Ola's age}$

$$\text{Ola} = 29$$

$$81 - (24 + 29) = \text{Sadie's age}$$

$$\text{Sadie} = 28$$

d) Month 1:  $\pounds 9456 + \pounds 3567 = \pounds 13\ 023$

$$\text{Month 2 food: } \pounds 9456 - \pounds 380 = \pounds 9076$$

$$\text{Month 2 drinks: } \pounds 3567 - \pounds 650 = \pounds 2917$$

$$\text{Month 2 total: } \pounds 9076 + \pounds 2917 = \pounds 11\ 993$$

$$\text{Month 1 and 2 total: } \pounds 13\ 023 + \pounds 11\ 993 = \pounds 25\ 016$$

$$\pounds 26\ 500 - \pounds 25\ 016 = \pounds 1484 \text{ more needed to meet their target.}$$

1) Anna has correctly modelled the problem. Her bar model shows that we could represent the problem by adding together 175 and 128 to give 303. Then we could find the difference between 303 and 419 to give the final answer of 116. Isaac is incorrect as his model has the total number of people on the train on the same bar as the number of people who get on at the first and second stops. If he adds all these numbers together, this will not show him how many people were on the train at the start.

2) Lily is correct. She has started by working out the price of just one bottle of juice. She finds the difference between the prices of a sandwich and one bottle of juice and a sandwich and two bottles of juice. Now she knows a bottle of juice costs 65p. She now only needs to take this price away from the total cost of a sandwich and one bottle of juice. This will give the cost of a sandwich on its own.





1)  $£25 - £1.50 = £23.50$

$$£5.50 + £6.80 = £12.30$$

$$£23.50 - £12.30 = £11.20$$

$$£11.20 \div 2 = £5.60$$

'Twinkl Rocks' and 'Twinkl Moves' cost £5.60 each.

- 2) a) Halim could buy the Winter, Happiness and Love albums for £12.59. This would leave him with £7.41
- b) Ambient, Summer and Calm albums for £19.79, which would leave him with 21p.
- c) Halim could buy four albums (Winter, Love, Happiness and Calm for £18.08. This would leave him with £1.92).
- d) £10  
Answers will vary but might include: Winter album and Love album = £8.24 and £1.76 left over
- £13  
Answers will vary but might include: Winter album, Love album and Happiness album = £12.59 and £0.41 left over or Energy album and Calm album = £12.14 and £0.86 left over.
- £15  
Answers will vary but might include: Ambient album and Summer album = £14.30 and £0.70 left over



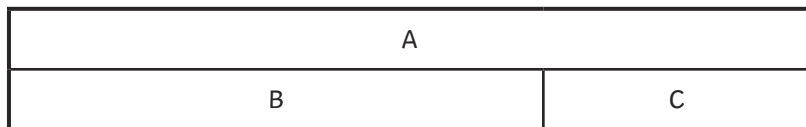
1) Use the bar model to help you find the answers to these questions.

I am up to page 127 in my 'Sweets and Treats' book. I need to read 96 more pages in order to be halfway through my book. How many pages does my book have altogether?

127	96
$\frac{1}{2}$ book = <input type="text"/>	

$\frac{1}{2}$ book = <input type="text"/>	$\frac{1}{2}$ book = <input type="text"/>
whole book = <input type="text"/>	

2) Here is a bar model to represent three unknown numbers.



When B and C are added together, they make A.

B is twice the value of C.

A is a number between 100 and 200.

Give three possible values for each of A, B and C.

A	<input type="text"/>	B	<input type="text"/>	C	<input type="text"/>
	<input type="text"/>		<input type="text"/>		<input type="text"/>
	<input type="text"/>		<input type="text"/>		<input type="text"/>

3) Answer these problems in words by thinking about the key information in the question.

a) 168 parents watched the performance of a class play on Monday evening. On Tuesday evening, there were 29 fewer parents watching the performance. How many parents altogether watched the performances?

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b) The school hall is normally able to seat 350 people. There are 10 rows of seats with 35 seats in each row. Tonight, it can only fit in 9 rows of seats. If all of the above parents came tonight, would there be any seats left over?

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c) Megan, Sadie and Ola have a combined age of 81. The combined age of Megan and Sadie is 52. If Megan is 24, how old must Sadie and Ola be?

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d) The 'Healthy Scrumptious Snacks' cafe has just opened. It is looking at how much money it made in sales of food and drinks in the first two months. It sold £9456 worth of food and £3567 worth of drinks in the first month. In the second month, it made £380 less from food sales and £650 less from drinks sales than in the first month. The cafe's target was to sell £26 500 worth of food and drinks in the first two months. How much more did they need to sell to meet their target?

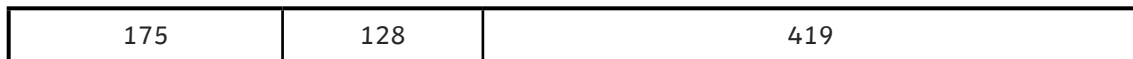
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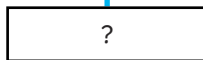


1) Two children are discussing this word problem:

Some people are on a train. 175 people get on the train at one stop. 128 more people get on at the next stop. There are now 419 people on the train. How many people were on the train at the start of the journey?

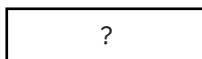


Isaac

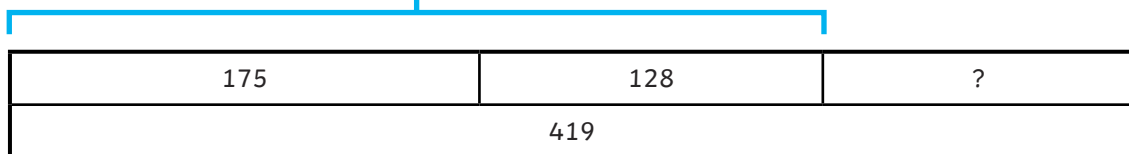


I disagree with Isaac and think my bar model represents the problem correctly.

I think that my bar model represents the problem correctly.



Anna



Which child do you agree with? Explain your reasoning.

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2) Three children record their calculations in order to show how they worked out this problem:

"I decide to buy my lunch from my local shop. One sandwich and a bottle of juice costs £2.26. If I were to buy one sandwich and two bottles of juice, it would cost £2.91. I decide that I will just buy a sandwich on its own. How much will the sandwich cost me?"



Megan

Lily

Kuba

I recorded this calculation to solve the problem:  
 $£2.91 \div 3 = 97p$   
 $£2.26 - 97p = £1.29$   
 The cost of one sandwich is £1.29.

I recorded my calculation like this:  
 $£2.91 - £2.26 = 65p$   
 $£2.26 - 65p = £1.61$   
 The cost of one sandwich is £1.61.

This was my calculation:  
 $£2.26 \div 2 = £1.13$   
 $£2.90 - £1.13 = £1.77$   
 The cost of one sandwich is £1.77.

Look carefully at each child's calculation. Explain which child you think has used the correct calculation and why.

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- 1) Halim has £25 in his Twinkl Tunes account to spend on music. He downloads 'Twinkl Chill' for £5.50 and 'Twinkl Pop' for £6.80. The next two albums, 'Twinkl Rocks' and 'Twinkl Moves' cost the same amount each. When he has finished downloading all four albums, he has £1.50 left in his account. How much did 'Twinkl Rocks' and 'Twinkl Moves' cost Halim each?

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- 2) Halim decided to load £20 onto his 'Twinkl Tunes' account. The prices of some of the albums that Halim is interested in buying are shown below.



- a) What combination of three albums would leave him with the most money in his account? How much would he be left with?

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- b) Which three albums would leave him with the least amount of money? How much would he be left with?

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- c) What is the maximum number of albums he could buy with his £20? How much money would he be left with?

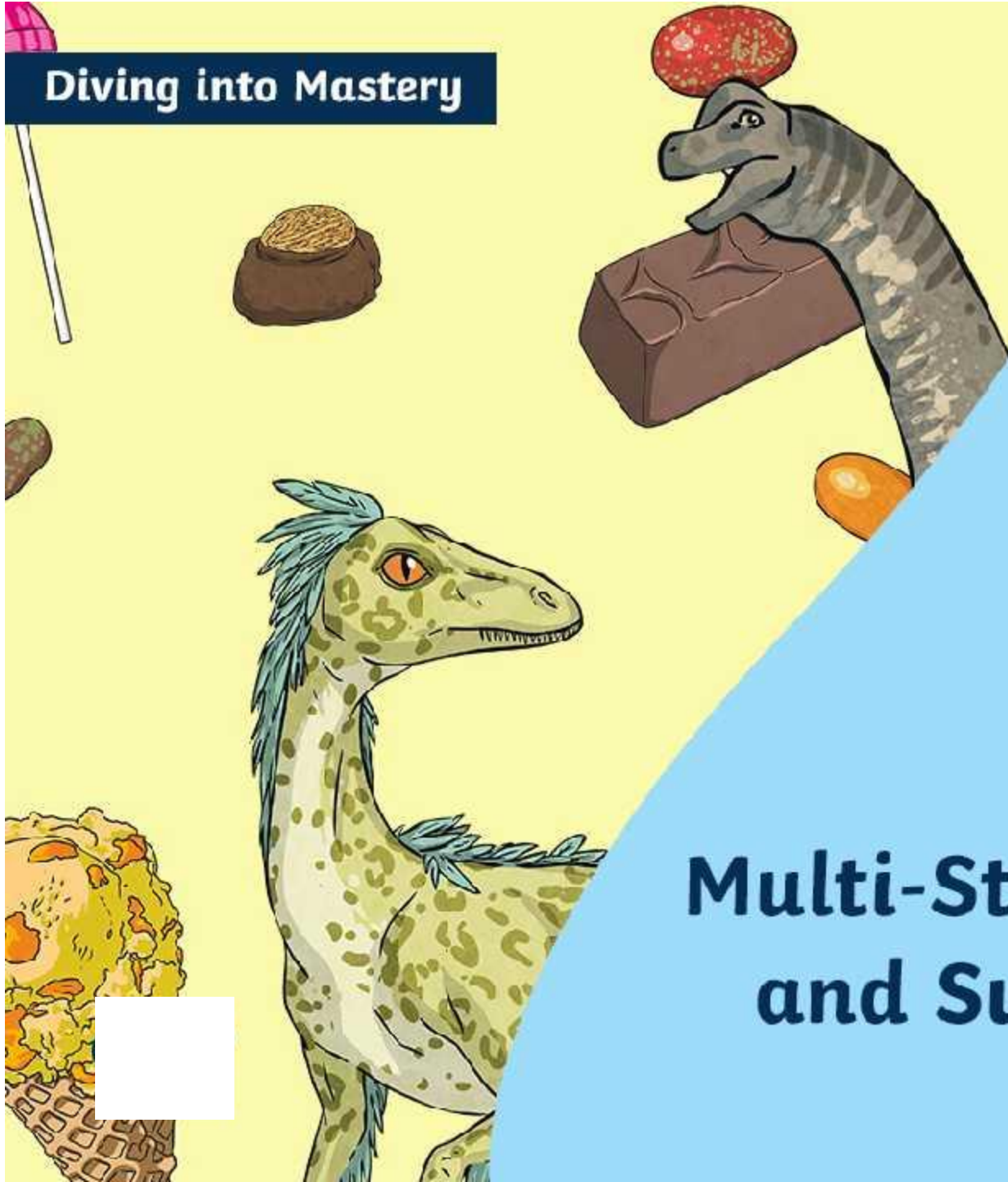
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- d) Give different combinations of albums that Halim could buy with the following amounts of money. Remember to state how much money would be left in his account each time.

£10	£13	£15

Diving into Mastery



# Multi-Step Addition and Subtraction



# Diving into Mastery Guidance for Educators

Each activity sheet is split into three sections, diving, deeper and deepest, which are represented by the following icons:



**Diving**



**Deeper**



**Deepest**

These carefully designed activities take your children through a learning journey, initially ensuring they are fluent with the key concept being taught; then applying this to a range of reasoning and problem-solving activities.

These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.



# Aim

- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.



## Multi-Step Addition and Subtraction Problems

## Diving



A Sweet factory offers guided tours. It has 4588 visitors in June and 7658 visitors in July. The visitor numbers for August were double the visitor numbers for June.

**How many visitors did the sweet factory receive from June to August altogether?**



4588

7658

9176

June

July

August

## Multi-Step Addition and Subtraction Problems

## Diving



A shop is looking at how much money it made in profit in a month. In week 1 the shop made £2678 in sales and spent £896 on their staff wages. In week 2 they made £3459 in sales and spent £456 on their electricity bill. In weeks 3 and 4 they made £5983 in sales but had to pay £1675 for their rent.

**How much profit did the shop make by the end of the month?**



$$\begin{aligned} & \mathbf{£2678 + £3459 + £5983 =} \\ & \mathbf{£12\ 120 \text{ in sales}} \\ & \mathbf{£896 + £456 + £1675 =} \\ & \mathbf{£3027 \text{ in costs}} \\ & \mathbf{£12\ 120 - £3027 =} \\ & \mathbf{£9093 \text{ profit}} \end{aligned}$$

## Multi-Step Addition and Subtraction Problems

Deeper



Keeva is organising a cake sale. She has made 178 cakes and her friend Harry has made 167 cakes. They want to make sure that they have made enough cakes so that everyone has a chance to buy one. They have worked out that there are 350 children in their school. Now they need to work out if they have enough cakes for everyone to buy one.

**Which child's method is correct? Explain your reasoning.**



We need to add my total of cakes to your total of cakes, then subtract from 350 to see if we have enough.

We need to subtract my total of cakes from 350 and then add your total of cakes.



**Harry is correct. He finds the total number of cakes.**

$$178 + 167 = 345$$

$$350 - 345 = 5$$

**They have 5 fewer cakes than they need.**

## Multi-Step Addition and Subtraction Problems

## Deepest



The most popular exhibit in a museum is the dinosaur exhibit. The least popular exhibit is the Iron Age exhibit. The difference in the number of visitors each exhibit had over a year was 9845. Each exhibit had more than 30 000 visitors but fewer than 50 000 visitors.

**What are the possible visitor numbers for each exhibit? Once you have worked out one possible answer, explain how you could calculate all of the possible answers.**

**Answers for each exhibit should be a number over 30 000 but less than 50 000, with a difference of 9845. The dinosaurs exhibit should be greater by 9845.**

**E.g. Iron Age = 31 001**

**dinosaurs = 40 846**

**To calculate subsequent answers, adjust your numbers. Add one to the number for one exhibit, whilst taking one from the number for the other exhibit.**



# Multi-Step Addition and Subtraction Problems

Dive in by completing your own activity!



30. The total cost of a large pizza and a drink was \$12.00. The pizza cost \$9.50. How much did the drink cost?

\$12.00	+		=	

31. The total cost of a large pizza and a drink was \$12.00. The pizza cost \$9.50. How much did the drink cost?

\$12.00	+		=	

32. The total cost of a large pizza and a drink was \$12.00. The pizza cost \$9.50. How much did the drink cost?

\$12.00	+		=	

33. The total cost of a large pizza and a drink was \$12.00. The pizza cost \$9.50. How much did the drink cost?

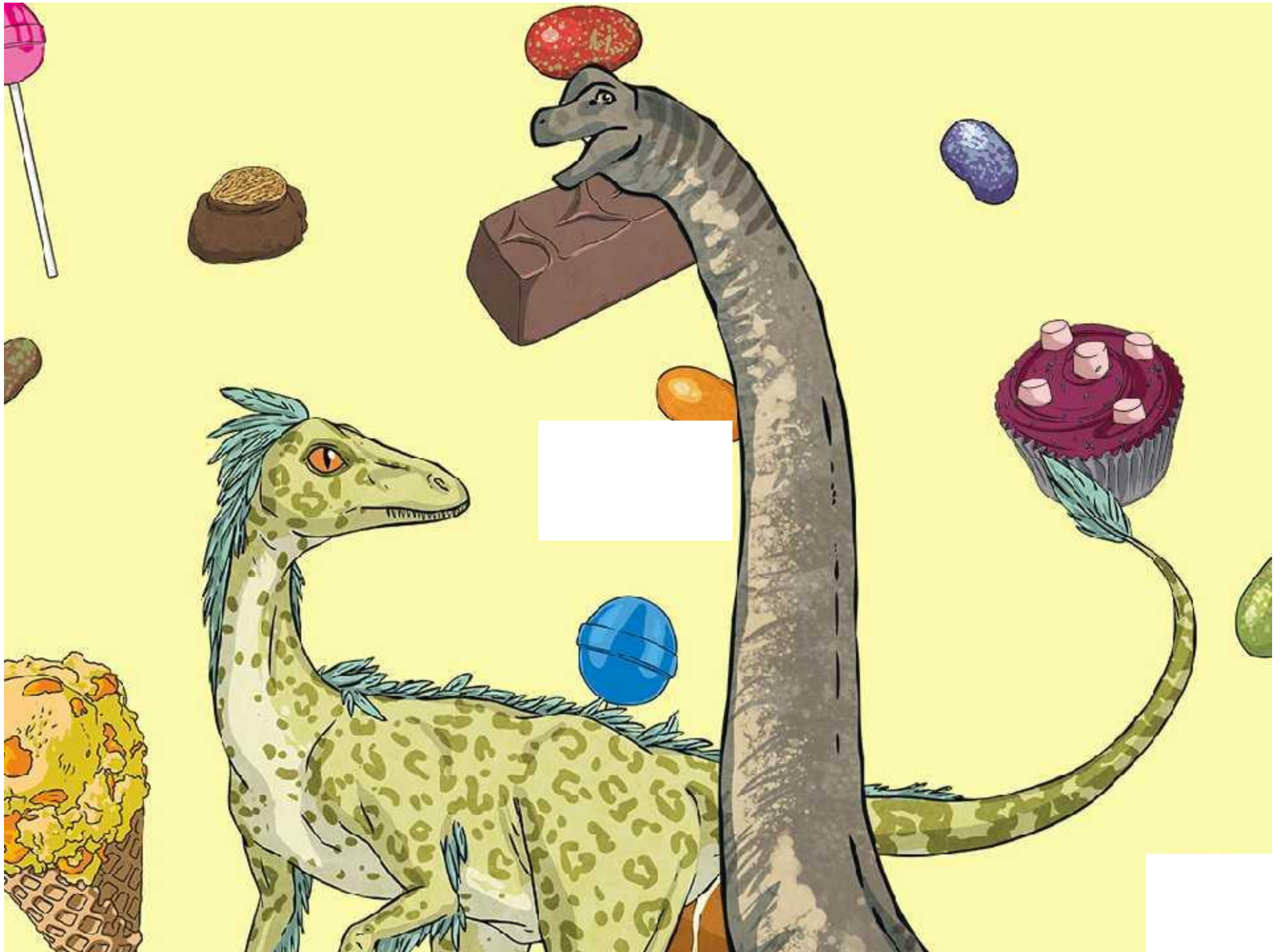
\$12.00	+		=	

34. The total cost of a large pizza and a drink was \$12.00. The pizza cost \$9.50. How much did the drink cost?

\$12.00	+		=	

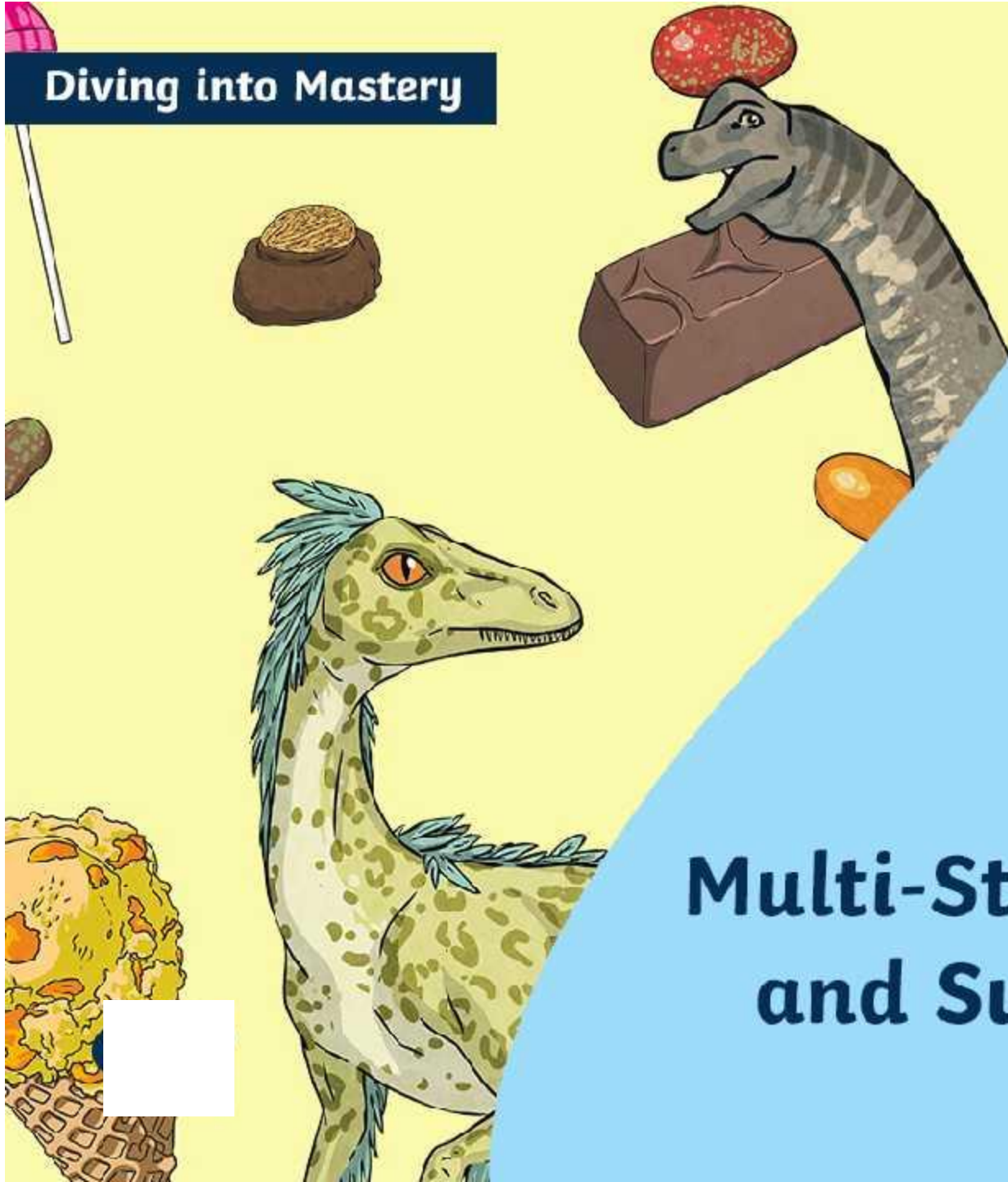
35. The total cost of a large pizza and a drink was \$12.00. The pizza cost \$9.50. How much did the drink cost?

\$12.00	+		=	





Diving into Mastery



# Multi-Step Addition and Subtraction

# Diving into Mastery Guidance for Educators

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## Multi-Step Addition and Subtraction Problems

## Diving



A sweet factory offers guided tours. It has 4588 visitors in June and 7658 visitors in July. The visitor numbers for August were double the visitor numbers for June.

**How many visitors did the sweet factory receive from June to August altogether?**



$$4588 + 7658 + 9176 = 21\,422 \text{ visitors}$$

4588	7658	9176
June	July	August

## Multi-Step Addition and Subtraction Problems

## Diving



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**How much profit did the shop make by the end of the month?**



$$\begin{aligned} \text{£}2678 + \text{£}3459 + \text{£}5983 &= \\ \text{£}12\,120 &\text{ in sales} \end{aligned}$$

$$\begin{aligned} \text{£}896 + \text{£}456 + \text{£}1675 &= \\ \text{£}3027 &\text{ in costs} \end{aligned}$$

$$\begin{aligned} \text{£}12\,120 - \text{£}3027 &= \\ \text{£}9093 &\text{ profit} \end{aligned}$$

## Multi-Step Addition and Subtraction Problems

Deeper



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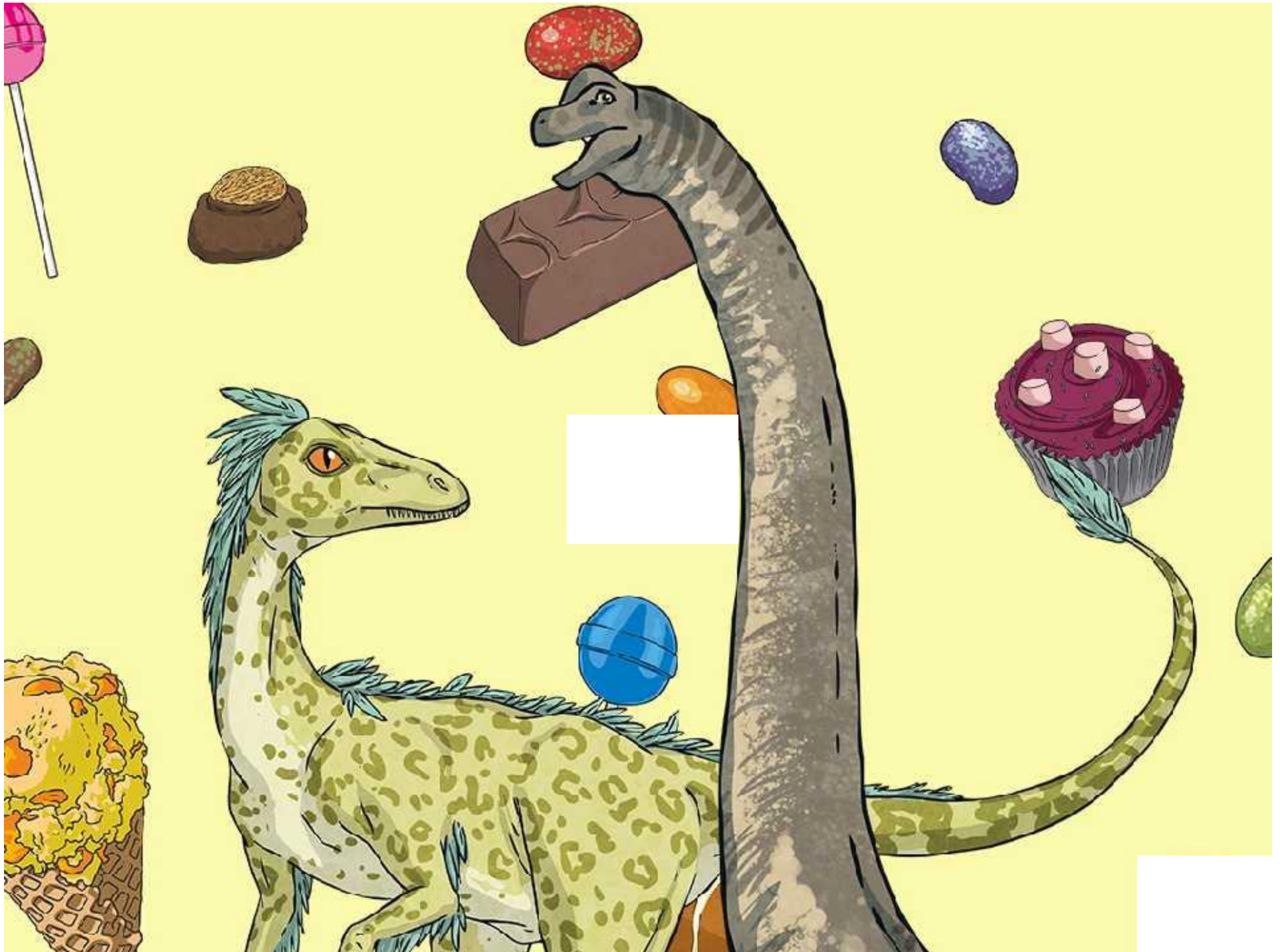
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$\frac{1}{2}$ book =	



$\frac{1}{2}$ book = _____	$\frac{1}{2}$ book = _____
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- 2) Here is a bar model to represent three unknown numbers.

A	
B	C

- When B and C are added together, they make A.
- B is twice the value of C.
- A is a number between 100 and 200.

Give three possible values for each of A, B and C.

- 3) Answer these problems in words by thinking about the key information in the question.

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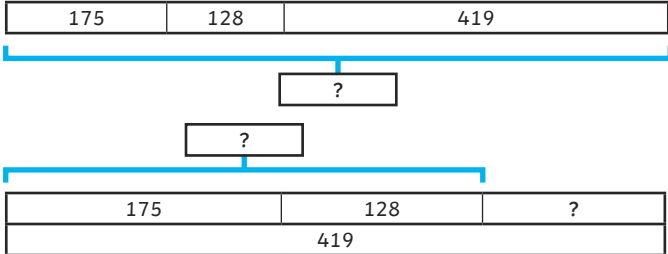
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- 1) Two children are discussing this word problem:



"Some people are on a train. 175 people get on the train at one stop. 128 more people get on at the next stop. There are now 419 people on the train. How many people were on the train at the start of the journey?"

I think that my bar model represents the problem correctly.



I disagree with Isaac and think my bar model represents the problem correctly.

Which child do you agree with? Explain your reasoning.

- 2) Three children record their calculations in order to show how they worked out this problem:

"I decide to buy my lunch from my local shop. One sandwich and a bottle of juice costs £2.26. If I were to buy one sandwich and two bottles of juice, it would cost £2.91. I decide that I will just buy a sandwich on its own. How much will the sandwich cost me?"



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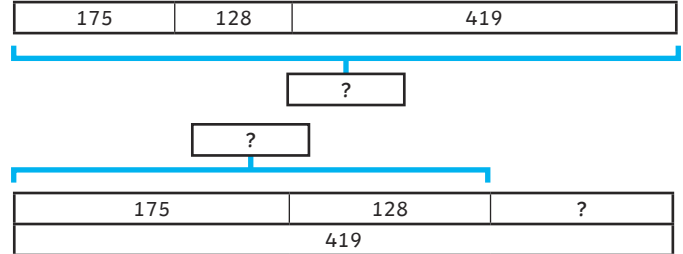
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2) Halim decided to load £20 onto his 'Twinkl Tunes' account. The prices of some of the albums that Halim is interested in buying are shown below.



- What combination of three albums would leave him with the most money in his account? How much would he be left with?
- Which three albums would leave him with the least amount of money? How much would he be left with?
- What is the maximum number of albums he could buy with his £20? How much money would he be left with?
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£10	£13	£15
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