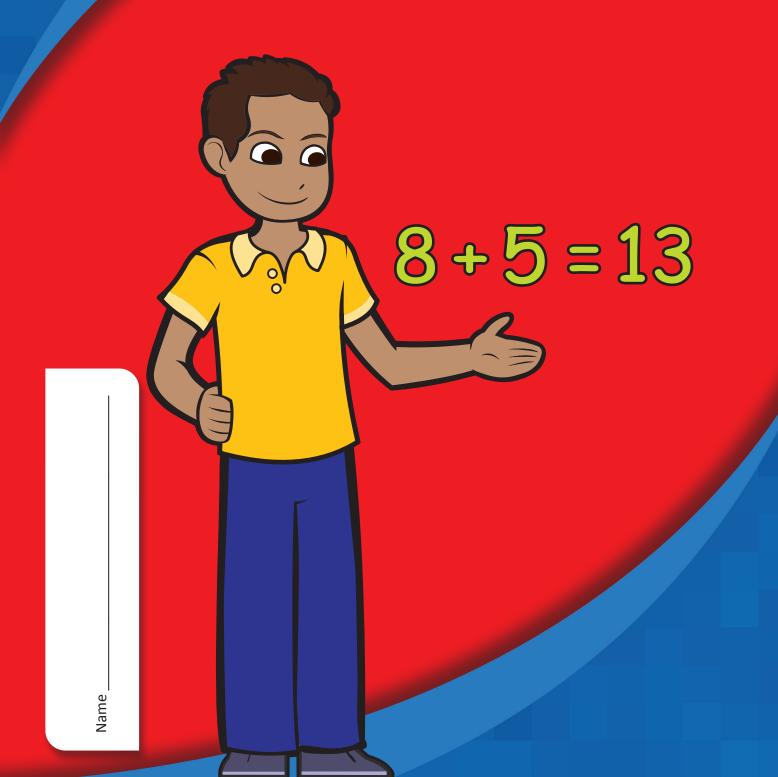




Addition and Subtraction



Series F - Addition and Subtraction

Contents

Top	ic 1 –	Addition	mental	strategies	(p. 1	L - 8)	١
IOP	CI	Madrilon	meme	Juliuce	(P. -	- 0,	

Date completed

- jump strategy / /
- split strategy _____ / /
- compensation strategy _____ / /
- checkerboard race apply ______/ /
- crack the city code apply ______/ /

Topic 2 – Subtraction mental strategies (p. 9 - 16)

- jump strategy ______/ /
- split strategy ______/ /
- compensation strategy _____/ /
- snakes but no ladders apply ______/ /
- darts apply _______/ /

Topic 3 – Written methods (p. 17 - 25)

- addition ______/ /
- subtraction ______ / /
- adding and subtracting decimals ______/ / /
- word problems ______/ / /
- slippery dip race apply ______/ /
- subtraction puzzles solve ______/ /

Series Authors:

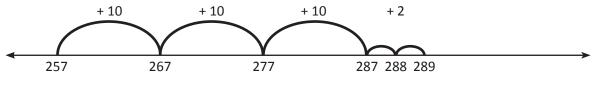
Rachel Flenley Nicola Herringer

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Addition mental strategies – jump strategy

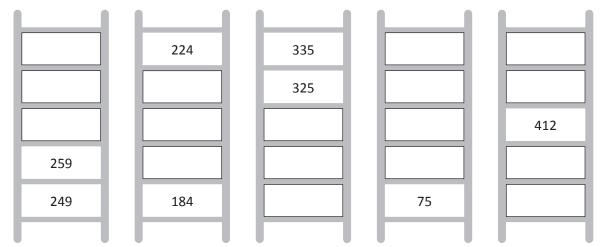
When we add we can use the jump strategy to help us. Look at 257 + 32:

- 1 First we jump up by the tens
- 2 Then we jump up by the units

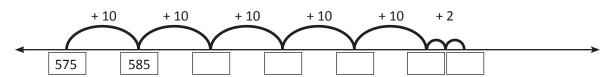


257 + 32 = 289

1 Warm up with jumping by tens up and down these ladders:



- 2 Use the jump strategy to complete these additions:
 - **a** 575 + 52 =

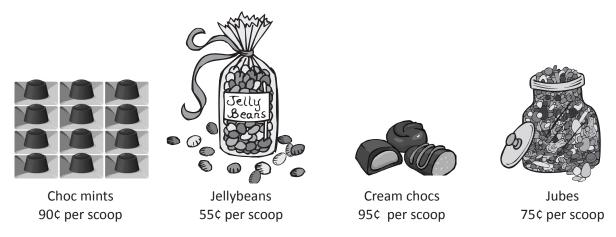


b 759 + 41 =



Addition mental strategies – jump strategy

A group of friends each bought a bag of mixed lollies at a lolly bar. Practise using the jump strategy to solve each problem. Write your answer and any working out in the space below each problem:



a How much did Liam spend if he bought a scoop of jellybeans and a scoop of choc mints?

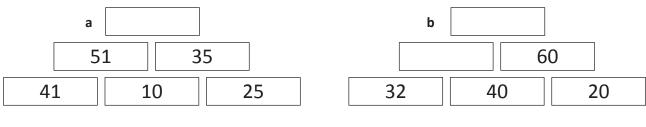
- **b** How much did Ruby spend if she bought a scoop of cream chocs and a scoop of jubes?
- **c** How much did Rea spend if she bought one scoop of each type?
- **d** Rachel spent \$1.85 on 2 scoops of lollies. Use guess, check and improve to work out which 2 scoops she could have bought.

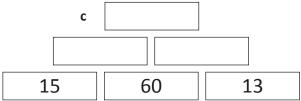
Remember with addition, you can start with either number.



REMEMBER

4 Use the jump strategy to help you finish these addition walls. Can you see how they work?



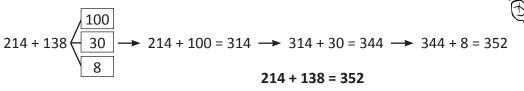




Addition mental strategies – split strategy

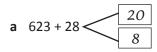
138 can be spilt into 100, 30 and 8.

When adding large numbers in our heads it can be easier to split one of the numbers into parts and add each part separately.





1 Use the split strategy to add the numbers. The first one has been done for you.



$$623 + 20 = 643$$

$$643 + 8 = 651$$

$$623 + 28 = 651$$

These problems have been split and some have been solved already. Lucky, hey? You just have to work out what the second numbers were before they were split and answer any unsolved problems:

was

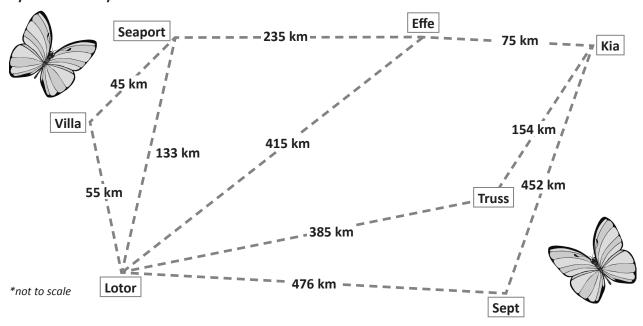
230 +

was

Work out the answers to these questions by using the split strategy. See if you can do the working in your head. If it helps, make notes as you go:

Addition mental strategies – split strategy

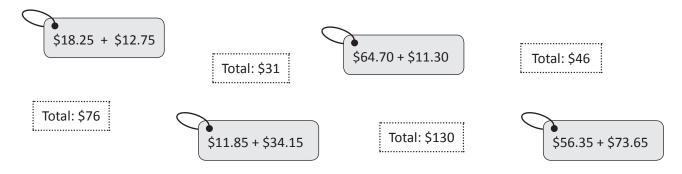
Butterflies can fly great distances. Use the map and the split strategy to calculate the total distance flown by each butterfly in the table below:



Flight Path	Distances to add	Total distance
The Field Crescent flies from Lotor to Villa and then to Seaport	55 + 45	
The Painted Lady flies from Sept to Lotor and then to Villa		
The Fawn flies from Seaport to Effe and then to Kia		
The Monarch flies from Sept to Kia and then to Effe		

We often use the split strategy when adding money. We split the amounts into dollars and cents, work out each part and then add the two answers together:

Match the price tags with the bills:



Addition mental strategies – compensation strategy

Sometimes we round one number in the problem to make it easier to do in our heads. Then we adjust our answer to compensate:

405 + 70(-1) I rounded up by 1

$$475 \left(-1\right) = 474 \text{ so I subtract 1.}$$

I added 1 extra to round to 70 so I have to take 1 off my answer.



Warm up by rounding these numbers to the closest ten:

- a 48 _____ b 67 ____ c 232 ____ d 74 ____

- e 89 _____ f 456 ____ g 955 ____ h 786 ____

Solve these problems using compensation:

45 + 40

c 86 + 49

We can also round down to the closest ten. When we do this we add to compensate.

Round these numbers to the closest ten. Then compensate by adding:



Addition mental strategies – compensation strategy

4 Connect the statements with their answer:

When we round down we compensate by

When we round up we compensate by

subtracting

adding

Solve these addition problems using compensation. Decide if you need to round up or down and compensate accordingly. Make as many notes as you need to:

a 425 + 67

b 673 + 98

c 275 + 91

d 784 + 32

e 316 + 73

f 115 + 79

6 A website tracked the number of visitors over 5 days:

Monday	Tuesday	Wednesday	Thursday	Friday
124	199	213	158	236

Use the compensation method to answer the following questions. Try to do the sum in your head, then show how you did it in the space below:

- a How many people looked at the website on Monday and Tuesday?
- **b** How many people looked at the website on Thursday and Friday?
- c On which 2 days did the total reach 449 visitors?



This is a game for 2 players. You will need a counter each, a die and some paper to keep score.



Choose the best

addition mental

Each of you will choose a starting square on the top row. The object of this game is to get to the finish line first with the largest total.

Roll a die. If you throw:

- a 1 or 2, you can only move one square across the row in either direction;
- a 3 or 4 means you can move one square diagonally;
- a 5 or 6 means you move one downwards.

Add the two numbers using a strategy of your choice. Record your total as you go. Who will arrive at the finish with the largest score? Good luck!



THINK

81	76	93	42	89	50	66	74
62	28	54	37	63	45	95	39
87	70	69	83	75	57	12	49
63	93	52	44	86	67	37	58
38	47	83	17	95	72	49	56
90	73	68	39	54	23	85	43
41	36	51	91	78	66	17	32
63	81	27	11	44	46	50	74
			FIN	ISH			

Can you find the route that would give you the largest possible score?



DISCOVER







Work out the answers to these sums in your head. Each answer matches a letter in the list on the right. Write the letters next to your answers, then unjumble the letters to find the name of a city.



Try competing with a friend to be the fastest to do all of the sums and work out the names of the three cities.

a	701 + 126 =	Letter	-
	501 + 81 =	Letter	-
	810 + 117 =	Letter	-
	304 + 205 =	Letter	-
	810 + 17 =	Letter	-
	230 + 626 =	Letter	_

The city is _____

The city is _____

c 816 + 40 =

Letter _____

The city is _____

В	=	754
С	=	141
D	=	582
Ε	=	927
F	=	735
G	=	222
Н	=	358
I	=	780
J	=	989
K	=	481
L	=	909
M	=	398
N	=	856

O = 975P = 667

Q = 555R = 412

S = 509

T = 538

U = 656V = 1110

W = 1150

X = 716

Y = 827

Z = 1907

Code

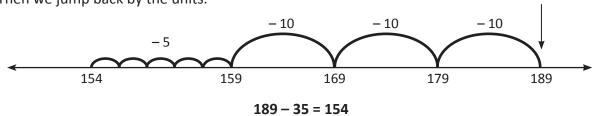
A = 922



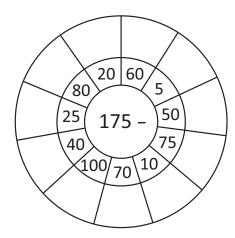
Subtraction mental strategies – jump strategy

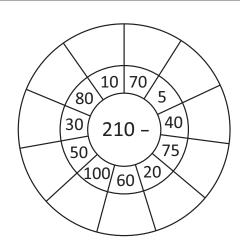
When we subtract we can use the jump strategy to help us. Look at 189 – 35:

- 1 First we jump back by the tens.
- 2 Then we jump back by the units.



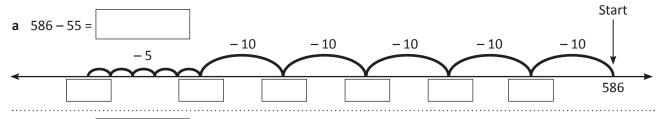
Warm up with these subtraction wheels:



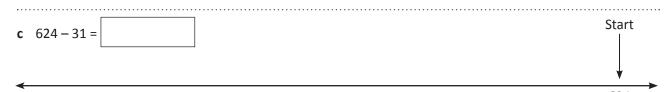


Start

Use the jump strategy to complete these subtraction problems. The first one has been started for you:









Subtraction mental strategies - jump strategy

3 Work out the answers to these by using the jump strategy. See if you can do the working in your head:

a 274 – 30 =

b 872 – 61 =

c 444 – 50 =

d 784 – 61 =

e 189 – 35 =

f 825 – 60 =

An electronics store had a sale on the following video games. Use the jump strategy to work out the savings on each item:

Bionic Bozo

Was \$105

Now \$75

Save

Revenge of the Ponies

Was \$135

Now \$60

Save

Fitness Frenzy

Was \$102

Now \$91

Save

Taekwondo Team

Was \$155

Now \$111

Save

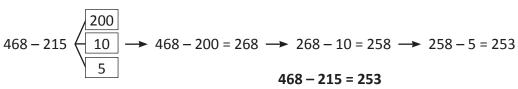


- Use the prices above and the jump strategy to solve these problems. Show your answer and any working out:
 - **a** Tahlia saved her pocket money for weeks to buy Fitness Frenzy. She had \$120 saved and bought Fitness Frenzy in the sale. How much money did she have left after the purchase?
 - **b** Martin saved up especially for the sale and bought 2 items for \$186. He bought Bionic Bozo and which other game?
 - **c** Dana bought Taekwondo Team for her husband before the sale. What change did she receive if she paid with 2 \$100 notes?

Subtraction mental strategies – split strategy

Remember that 215 is 200 + 10 + 5

When subtracting large numbers in our heads it can be easier to split the number to be subtracted into parts and work with each part separately.





Practise splitting these numbers into hundreds, tens and units. The first one is done for you.

a
$$356 = 300 + 50 + 6$$

Use the split strategy to subtract:

.....

Work out the answers to these questions then cross out the letter above each answer in the puzzle. The letters that remain will form the answer to the riddle.

S	Υ	Н	0	U	E	R	Х	E	L	Α
300	195	410	305	150	320	505	370	595	405	200
К	7	R		D	R	1	U	М	V	Α

K	Z	R		D	R	J	U	М	V	Α
390	495	220	395	210	385	480	500	205	645	310

Riddle: What is the most rhythmic part of your body?



11

Subtraction mental strategies – split strategy

These problems have been completed. Are they correct? If not, circle where it all began to go wrong:

a
$$375-164$$
 60 b $429-143$ 40 c $179-158$ 50 8 $375-100 = 275$ $429-100 = 323$ $179-100 = 79$ $275-60 = 215$ $323-4 = 319$ $79-50 = 39$ $215-4 = 211$ $319-3 = 316$ $39-8 = 31$ $375-164 = 211$ $429-143 = 316$ $179-158 = 31$

The following problems require you to add and subtract. Use the split strategy to help you solve them:

Four different families went on a holiday over Easter. Work out the distance that each car has travelled on the missing days:

	Robertsons	Pankhursts	Cailes	Darnleys
Day 1	125 km	225 km		130 km
Day 2	375 km		525 km	
Day 3		110 km	125 km	270 km
Total distance	735 km	836 km	950 km	695 km

Make as many notes as you need to help you:

Assuming that each family started their holiday from the same place, work out where each family was at the end of Day 2. Connect the place with the family by drawing a line:

> **Family Place** Robertsons Damp 'n Crazy Water Park – 726 km Darnleys The Big Baboon - 825 km **Pankhursts** Insect Museum – 425 km Cailes The Giant Toothbrush – 500 km

Subtraction mental strategies – compensation strategy

Sometimes we round one number in the problem to make it easier to do in our heads. Then we adjust our answer to compensate:



486 - 60(+1)

I rounded up by 1, which means I subtracted

= 427 1 extra so we need to add 1 back.



THINK

- Round these numbers to the closest ten. Then compensate by subtracting or adding to get back to the first number. The first one is done for you.

- **a** 93 = <u>90 + 3</u> **b** 48 = ____ **c** 52 = ____ **d** 76 = ____
- e 57 = _____ f 37 = ____ g 27 = ____
- **h** 68 =
- Solve these subtraction problems using compensation. Show all your working out:
 - a 585 78
- **b** 894 71
- c 163 149

- 585 80 (
- 894 70 (
- 163 150 (
- Solve these problems using compensation. Decide if you need to round up or down and compensate accordingly:
 - **a** 555 63

b 775 – 98

c 644 – 139

d 594 – 329

e 432 - 204



You can solve these in your head or make notes as you go. Do whatever works for you.

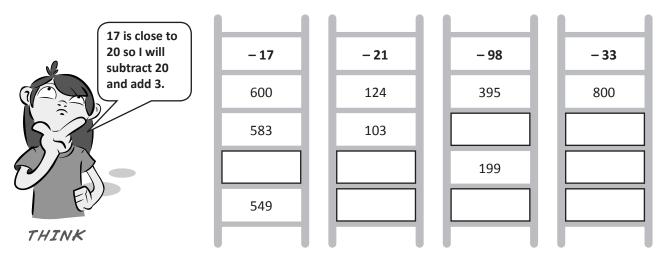
REMEMBER

Subtraction mental strategies - compensation strategy

Wally the work experience boy has solved these. He is very chuffed because he solved them all correctly. Can you use his working out to establish what the original questions were?

$$684 - 60 = 624 + 1 = 625$$

Use the compensation method to count backwards and complete these number patterns.



These subtraction problems have been partially solved using compensation. Colour match the steps that were used and complete the missing parts. The first one has been done for you:





You can play with 1 to 4 players and you will need two dice and a love of snakes!



Start at 200. Throw the dice and add the numbers. The answer is the number of spaces you can move.

Follow the numbers. If you land on a square with a snake you must work out the answer to the subtraction and move back to that square! The winner is the first to finish ... alive!

263 Finish	262 (-25)	261	260	259 (-32)	258	257	256
248	249 (=14)	250	251	252	253 (=50)	254	255 (=17)
247	246	245	244	243	242	241	240
232 (- 20)	233	234	235	236	237	238 (-14)	239
231	230	(-21)	228	227	226 (=11)	225	224
216 (-8)	217	218	219 (-5)	220 (-17)	221	222	223
215	214	213 (=10)	212	211	210	209	208
200 Start	201	202	203	204	205	206	207

Darts apply



A game of darts is usually scored by subtracting the number that you throw from 301. Throwing darts can be dangerous in a classroom so you will be throwing dice instead!



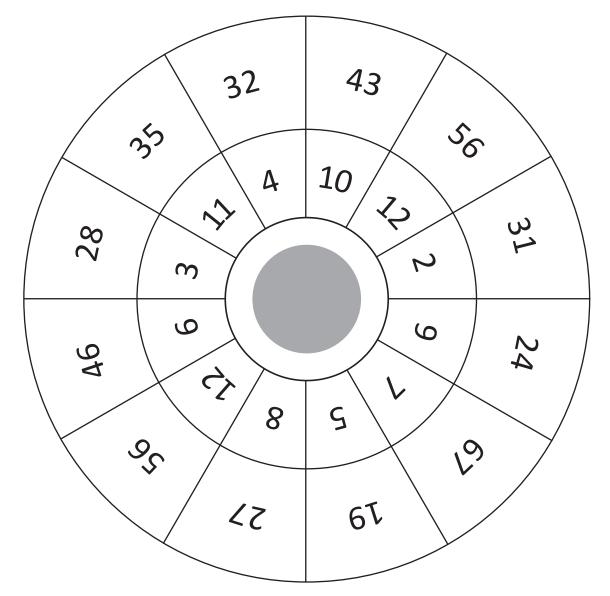
You can play with 1 - 4 people. You will take turns. You will need a copy of this page, two dice, a pencil and paper to keep score.



Throw two dice, find the total and look for the number in the inner ring. The number next to it in the outer ring is the one that you will subtract from. Start subtracting from 301, keeping score as you go.

The winner is the first to get past 0!





Written methods – addition

T U 1₃ 5 8 9 7 2 4

How do we add using a written strategy?

First we estimate: 235 + 500 = 735. Our answer will be around 735.

We start with the units. 5 + 9 is 14 units. We rename this as 1 ten and 4 units.

We put the 4 in the units column and carry the 1 to the tens column.

3 tens plus 8 tens plus the carried ten is 12 tens.

We rename this as 1 hundred and 2 tens

We put the 2 in the tens column and carry the 1 to the hundreds column.

We add the hundreds. We put 7 in the hundreds column.

Finally we check against our estimate – do they match?

Solve these addition problems. First estimate the answers:

H T U + 3 1 3

5 9 2

e:

e:

2 1 3

e:

e:

+ 4 9

e:

e:

Th: H: T + : 3 : 4 : 0 :

e:

Th: H: T: U 5 1 1 3 4

Th: H: T 5 : 3 9 1:2:7:4

Th: H: T: 2 3 1 : 1 : 4 : 2 : 8

Use these cards to make 5 different addition problems using 2 and 3 digit numbers. Show your working out:

2

6

8

9

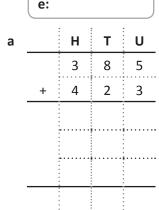
17

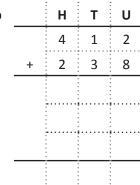
Written methods - addition

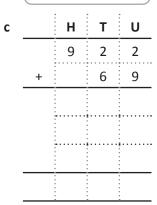
	Н	Т	U
	5	6	2
+	1	4	5
			7
	1	0	0
	6	0	0
	7	0	7

We can also add each place value separately and then add these together:

Solve these addition problems using a written strategy of your choice:







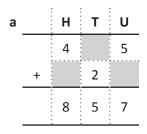
d		н	т	U
		1	8	8
	+	4	1	4
		:	•	

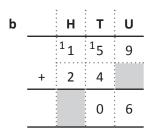
e:

f		Н	Т	U
			3	6
	+	1	4	4
		:	•	•

e:

Can you work out what the missing numbers should be? Remember there may have been some regrouping!

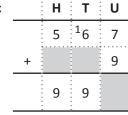




c H T U

will help me here.

Guess, check and improve





DISCOVER



Written methods - subtraction

	Н	Т	U
	9	⁸ ⁄2′	¹ 4
_	2	7	8
	7	1	6

First we estimate: 1000 - 300 = 700

We start with the units. We can't take 8 away from 4 so we must rename one of the tens as units. We now have 14 units.

14 subtract 8 is 6 so we put the 6 in the units column.

8 tens subtract 7 tens is 1 ten so we put a 1 in the tens column.

We subtract the hundreds. 9 hundred subtract 2 hundred is 7 hundred. Put a 7 in the hundreds column.

We check the answer against our estimate.

1 Complete the subtraction problems:

	e:				
a		Th	Н	Т	U
		4	9	8	2
	_	•	1	5	3
				9	

	e:				
b		Th	Н	Т	U
		2	9	5	1
			8	7	8

	e:				
С		Th	Н	T	U
		3	8	7	2
	_		5	8	6

When a problem asks us to find the difference, we subtract. We always start with the larger number.

Showtown 4129 km Tidings 1233 km

Normanville 3262 km Ringer 7869 km

Roper 7419 km Harpville 486 km

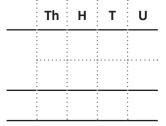
Ace Bay 1226 km Eagle Bay 595 km

2 Solve these to find the difference problems:

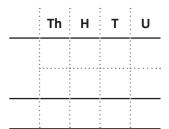
a How far from Showtown to Ringer?

	Th	Н	T	U
		•		

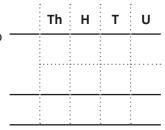
b What is the distance from Normanville to Tidings?



c What is the distance from Roper to Eagle Bay?



d How far from Normanville to Ace Bay?



Written methods - subtraction

Use a calculator to add each group of numbers. Turn your calculator upside down to see a word on the screen. Use the key below to help you identify the letters. Write each word in the correct place in the crossword puzzle.

	1	2		
		4		
6				

3		
5		

CLUES

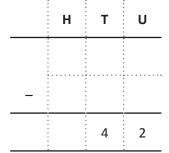
Across

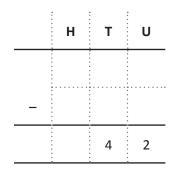
Down

Key

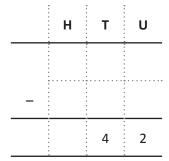
0	1	3	4	5	6	7	8
0	ı	Е	Н	S	G	L	В

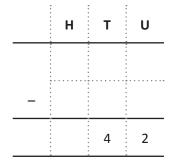
The answer is 42. What could the missing numbers be? Come up with 5 possibilities:





	Н	Т	U
_			
	•	4	2





Written methods – adding and subtracting decimals

When we add and subtract decimals we follow the same rules we use when working with whole numbers. We need to make sure we line up the place values and the decimal points:

	T	U	Т
	³ ⁄4	¹ 3 •	3
_	1	7 •	2
	2	6 •	1

1 Estimate and solve these addition problems. Remember to put the decimal point into your answers:

e:

T U T

5 4 1

+ 3 1 • 3

e:

b T U T

3 2 3

+ 5 8 1

e:

4 8 4

+ 4 1 • 3

e:

d T U T

2 7 8

+ 3 9 • 3

e:

e:

T U T H

5 2 1 7

+ 3 5 9 2

f T U T H
4 5 • 1
+ 1 4 • 0 5

e:

g T U T H
5 3 8 9
+ 1 2 1 4

e:

h T U T H
3 2 • 4 1
+ 1 9 • 3 3

2 Estimate and solve these subtraction problems. Remember to put the decimal point into your answers:

e:

8 • 4 3

- 3 • 2 3

b T U T
9 • 0 8
- 5 • 3 2

c T U T
7 • 6 3
- 2 • 0 4

e:

d T U T

9 • 7

- 3 • 2 3

Bart finished his race in a time of 10.67 secs. Lisa finished in 11.24 secs. How much faster was Bart?

Written methods – adding and subtracting decimals

You bought the following. Find the difference between the discount price and regular price for each item, then calculate your total savings. Show all your working out:



Total savings: _____

Written methods – word problems

Jo	pe scored 346 more points than Zac. Joe	h	Jenny is 32 cm taller than Jaala. Jaala is
	cored 589 points. How many points did		143 cm tall. How tall is Jenny?
	ac score?		
	Ť		+
	-		–
	Answer		Answer
N	Naitland recorded 117 mm of rain. Balaklava	d	Wayne has \$17. How much more money
re	ecorded 58 mm more. How much rain did		does he need to buy a t-shirt that costs
В	alaklava record?		\$39?
	+		+
			-
	Answer		Answer
	Allswei		Allswei
_			
	harlene had \$132. After she paid for a	f	Sanjay spent \$34 and had \$92 left. How
	cket, she had \$84. How much did the		much did he have before the purchase?
ti	cket cost?		
	+		+
	_		_
	Answer		Answer
	and the hills and \$400 Mally to hills and		The uninfall in True Mella uses 72 years
	arred's bike cost \$189. Molly's bike cost 263. What is the price difference between	l n	The rainfall in Two Wells was 73 mm. Gawler recorded 36 mm less. How much
	ne two bikes?		rainfall did Gawler record?
			_
	+		+
	-		-
	Answer		Answer
_			
V	Vrite your own word problem and solve it.		
• '	, said problem and some it.		
	+		
	-		
	Answer		

23



Players 2

Objective To be the first to slide all the way down the slippery dip and land in

the sand.

Materials Game marker for each player, scrap paper, pencils, deck of cards

with tens and picture cards taken out. Ace has a value of 1.



To play

1 Mix up the cards and place them face down in a pile.

2 Players place the game markers at the Start.

3 Each player draws 6 cards arranging them to make two 3 digitnumbers. Arrange the cards as shown: Remember, the first card drawn is in the hundreds place for the first number. The fourth card drawn is in the hundreds place for the second number.



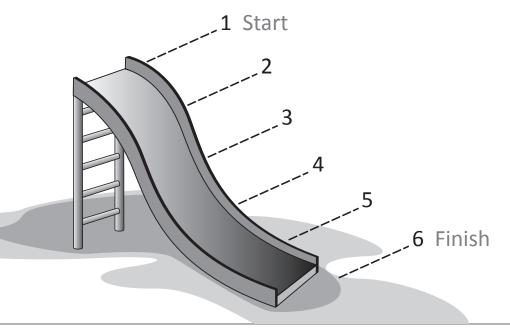




- **4** Add the 2 numbers. The player with the larger total moves the game marker one space down the slippery dip.
- **5** Play until someone lands in the sand.

+

Variations Change the number of cards laid out.



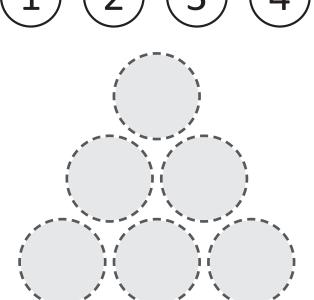


Puzzle 1

Place the numbers 1 to 6 in the grey circles so that each number is the difference between the two numbers just below it.

HINT: Place some stickers over a set of counters and write the digits 1 to 8 on each counter. Now you can move them around.





Puzzle 2

Place eight digits from 1 to 8 in each circle. Numbers with a difference of 1 cannot be placed in circles directly connected by a straight line.

