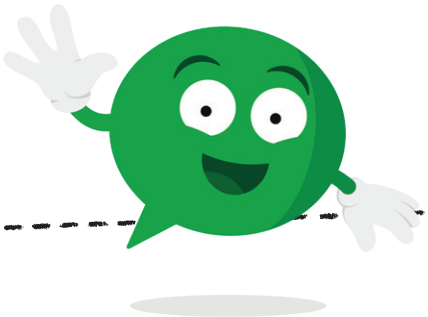
KS3/S1-S3 teacher instructions

BUDDY'S KEY CHALLENGE



What is Buddy's Key Challenge?

Buddy's Key Challenge is a fun escape-room-style game. Pupils must work in groups and solve maths related puzzles to find and build a key to rescue Buddy's bag. Each answer will equal a letter on the codebreaker to reveal the location in the classroom of the missing pieces of the key.

The assembled key, along with the final code that combines elements of each group's answers, will allow the pupils to help Buddy get his bag out of a 'virtual dimension' in time for class. Pupils have one hour to complete this.

The challenge could be timed and played across the year group or school, with times up on a leader board. The winners would be the class that puts the key together in the fastest time.

How to raise money

Pupils can be sponsored by family and friends to take part in Buddy's Key Challenge. Pupils can raise money via JustGiving or by using printed sponsor forms and paying in by ParentPay. If you need support in setting up your school's JustGiving or ParentPay page, please follow the instructions on the Number Day resources page, or you can email us at numberday@nspcc.org.uk

What you need:

- A printout of the key, cut into ten pieces – six of these pieces are to be hidden around the classroom as per the instructions
- Six different clue sheets – one for each group
- A codebreaker sheet for each group
- Pencils and paper (for workings)
- A JustGiving page for the school or a printed sponsor form for each pupil/family, so parents can pay in money using ParentPay
- A timer

How to play:

1. Print out the image of the key and cut it into ten pieces.
2. Hide six pieces around the classroom in the following locations. These locations are important as they are answers to the questions.
    1. Under the waste bin
    2. By a window
    3. Near the clock
    4. By the board
    5. Next to a computer
    6. Stuck under a chair (this needs to be a chair of a pupil in the Yellow group)
3. Split the class into six groups of mixed abilities: Red, Orange, Yellow, Green, Blue, and Purple. Give each group a corresponding colour clue sheet and a codebreaker sheet.
4. Read the story to set the scene.
5. Start the timer.
6. Each group needs to work together and answer their nine questions correctly (and hints can be given if they get stuck). Using the codebreaker, their number answers will reveal the associated letters that spell out the location of the missing piece of key.
7. The pieces of the key need to be found and assembled like a jigsaw to form a whole key. Once this is done, each group must offer their highest number answer from their nine questions and, as a class, rank them in ascending order.
8. Only when this is correctly achieved can the timer be stopped and the portal unlocked for Buddy.
9. Record how long it took the class to complete Buddy's Key Challenge.

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KS3/S1-S3 teacher answers

BUDDY'S KEY CHALLENGE

Number Day

Story

Buddy is on his way to the sports hall when suddenly a vortex opens in the corridor. He peeks inside and sees an array of colours, lights, sounds and 3D images. He'd love to explore it, but he needs to get to class so turns to leave – as he does, the vortex sucks his bag in! Before the vortex closes it spits out what appear to be four pieces of a key. Perhaps with the complete key he could open the vortex again and get his bag back in time for class.

In groups, your mission is to help Buddy by solving the puzzles to break the code and find the missing pieces of key. Combine your codes to unlock the portal and retrieve Buddy's bag. You have one hour.

Answers *(hints in brackets)*

Red

1. 12
2. 25
3. 21 *(1918-1939)*
4. 3 *(some tubes are blocked)*
5. 6 *(sum of two numbers above – 'Fibonacci')*
6. 8
7. 7
8. 13
9. 87 *(look at it from the perspective of a car driving in)*

= WASTE BIN

Yellow

1. 11 *(lives one door up from the Prime Minister)*
2. 10 *(Childline number is 0800 1111)*
3. 14
4. 32
5. 33
6. 84
7. 25
8. 13
9. 32 *(only one has no reflection symmetry)*

= YOURCHAIR

Blue

1. 8
2. 39
3. 1
4. 7
5. 10
6. 25
7. 32 *(only one has no reflection symmetry)*
8. 29
9. 16

= !*BOARD?

Orange

1. 1
2. 39
3. 12
4. 13
5. 87
6. 29
7. 10 *(Childline number is 0800 1111)*
8. 12
9. 15

= *!WINDOW?

Green

1. 12
2. 25
3. 9
4. 9
5. 33
6. 9
7. 10 *(Childline number is 0800 1111)*
8. 33
9. 0 *(recently made into a TV drama, also a grid game)*

= WALLCLOCK

Purple

1. 33
2. 10 *(Childline number is 0800 1111)*
3. 88
4. 82 *(boxes X and Y have 2 four-sided shapes and one circle. They also have only one grey shape)*
5. 14
6. 3 *(some tubes are blocked)*
7. 6 *(sum of two numbers above – 'Fibonacci')*
8. 32
9. 16

= COMPUTER?

Final code sequence (largest number from each group's answers in ascending order):
33, 39, 84, 87, 87, 88

Stop the timer! Well done - you've helped Buddy get his bag back and get to class.

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BUDDY'S KEY CHALLENGE

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KS3/S1-S3 (11-14 year olds)

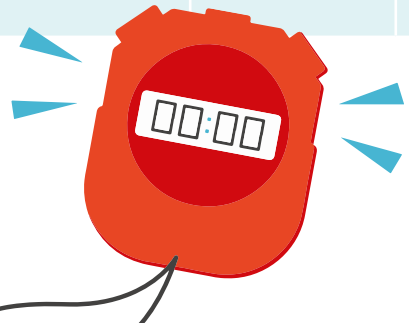
CODE BREAKER

Number Day

A	B	C	D	E	F	G	H	I	J
25	7	33	29	6	4	79	84	13	24

K	L	M	N	O	P	Q	R	S	T
0	9	88	87	10	82	34	32	21	3

U	V	W	X	Y	Z	*	!		?
14	2	12	15	11	50	1	39	8	16



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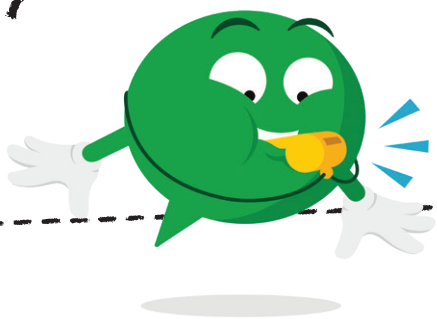
KS3/S1-S3 (11-14 year olds)

BUDDY'S KEY CHALLENGE

Number Day



Blue team - clues

Answer each question as quickly and accurately as possible. Fill in the number answer to each of the nine questions in the table. When you have done this, use the codebreaker to find the corresponding letter which will spell out the location of your piece of the key.

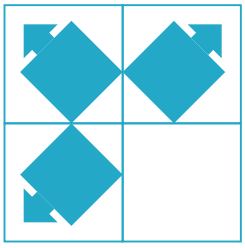
Once the class has assembled all ten pieces of the key, give your teacher the highest number of all your answers. Lastly, put each team's highest number in ascending order to create the final code. If the code is correct, the timer will stop, and you have completed Buddy's Key Challenge!

ANSWER	1	2	3	4	5	6	7	8	9
NUMBER									
LETTER									

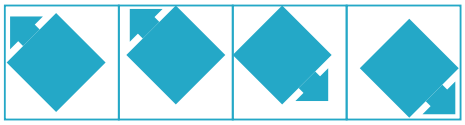
HIGHEST ANSWER: _____

1. If a cube has a volume of 512cm^3, what is the length of a side?

2. The large square contains smaller squares that make a pattern.



Which of the four shapes below complete the pattern?



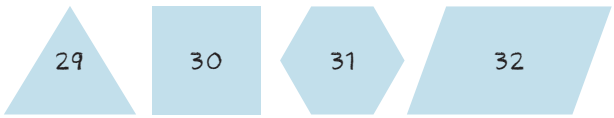
3. What number shirt do both the goalie of a football team and the loosehead prop of a rugby team wear?

4. What number do the Wonders of the World and a certain lemonade drink have in common?

5. What do you get if you add together the second digit, the penultimate digit and the last digit of the Childline telephone number?

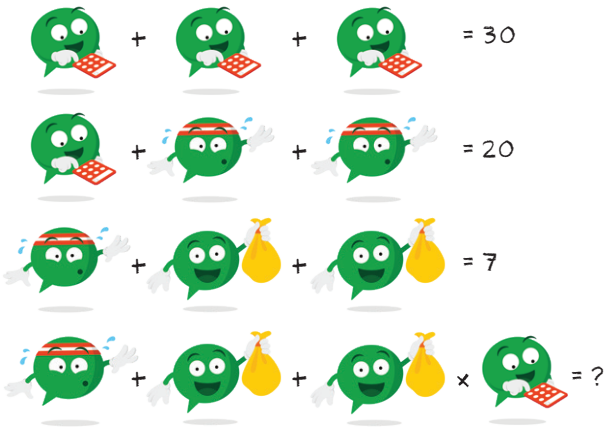
6. The total cost of a pair of trainers and a hoodie is £150. The trainers cost £100 more than the hoodie. How much does the hoodie cost?

7. These four shapes all have something in common except one. Which is the odd one out?



8. What is the 10th Prime Number from 1 to 100?

9. What is the answer to this?



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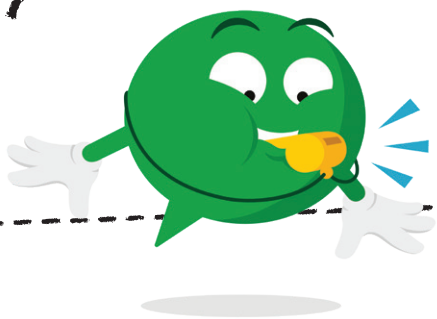
KS3/S1-S3 (11-14 year olds)

BUDDY'S KEY CHALLENGE

Number Day



Green team - clues

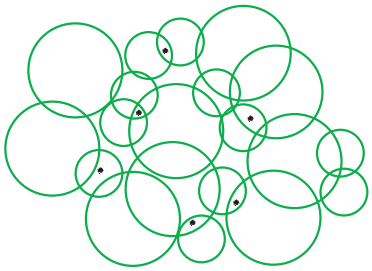
Answer each question as quickly and accurately as possible. Fill in the number answer to each of the nine questions in the table. When you have done this, use the codebreaker to find the corresponding letter which will spell out the location of your piece of the key.

Once the class has assembled all ten pieces of the key, give your teacher the highest number of all your answers. Lastly, put each team's highest number in ascending order to create the final code. If the code is correct, the timer will stop, and you have completed Buddy's Key Challenge!

ANSWER	1	2	3	4	5	6	7	8	9
NUMBER									
LETTER									

HIGHEST ANSWER: _____

1. How many circles contain dots?



2. The total cost of a pair of trainers and a hoodie is £150. The trainers cost £100 more than the hoodie. How much does the hoodie cost?

3. Can you find the missing number?

4. What is 3^2?

5. What is the value of D?

9	+	B	=	19
+		+		+
A	+	8	=	14
=		=		=
15	+	C	=	D

6. What number do these Roman numerals equal?
LVI – XLVII = ?

7. What do you get if you add together the second digit, the penultimate digit and the last digit of the Childline telephone number?

8. FIND  WHEN: 4  - 99 -  = 0

9. In author Malorie Blackman's fiction series, what number represents the underclass that Callum belongs to?

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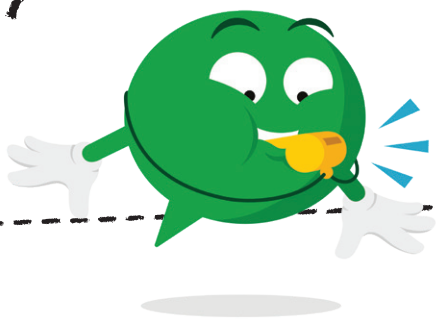
KS3/S1-S3 (11-14 year olds)

BUDDY'S KEY CHALLENGE

Number Day



Orange team - clues

Answer each question as quickly and accurately as possible. Fill in the number answer to each of the nine questions in the table. When you have done this, use the codebreaker to find the corresponding letter which will spell out the location of your piece of the key.

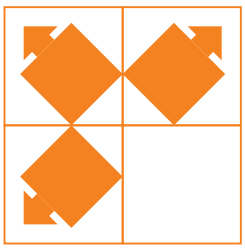
Once the class has assembled all ten pieces of the key, give your teacher the highest number of all your answers. Lastly, put each team's highest number in ascending order to create the final code. If the code is correct, the timer will stop, and you have completed Buddy's Key Challenge!

ANSWER	1	2	3	4	5	6	7	8	9
NUMBER									
LETTER									

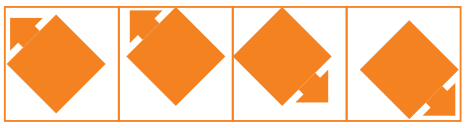
HIGHEST ANSWER: _____

1. What number shirt do both the goalie of a football team and the loosehead prop of a rugby team wear?

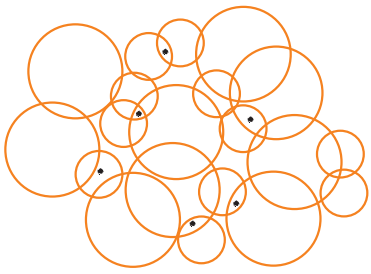
2. The large square contains smaller squares that make a pattern.



Which of the four shapes below complete the pattern?

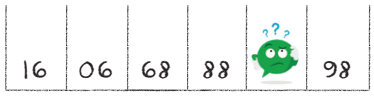


3. How many circles contain dots?



4. How many triangles are there in this shape?

5. What number parking space is Buddy in?

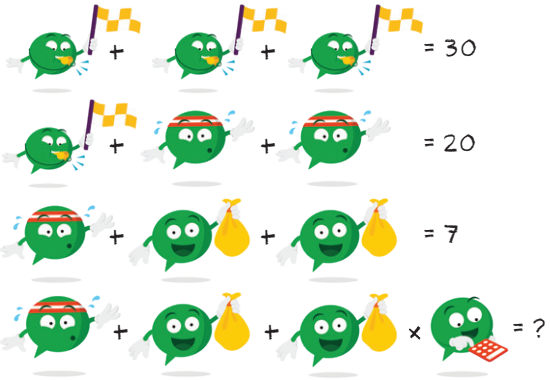


6. What is the 10th Prime Number from 1 to 100?

7. What do you get if you add together the second number, the penultimate number and the last number of the Childline telephone number?

8. According to the traditional song, how many days of Christmas are there?

9. What is the answer to this?



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KS3/S1-S3 (11-14 year olds)

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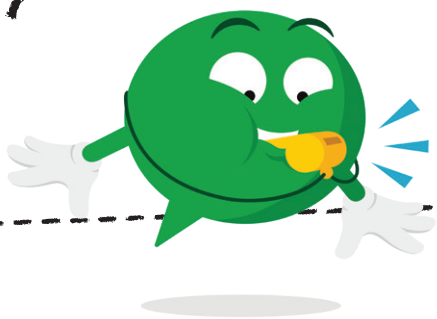


Purple team – clues

Answer each question as quickly and accurately as possible. Fill in the number answer to each of the nine questions in the table. When you have done this, use the codebreaker to find the corresponding letter which will spell out the location of your piece of the key.

Once the class has assembled all ten pieces of the key, give your teacher the highest number of all your answers. Lastly, put each team's highest number in ascending order to create the final code. If the code is correct, the timer will stop, and you have completed Buddy's Key Challenge!

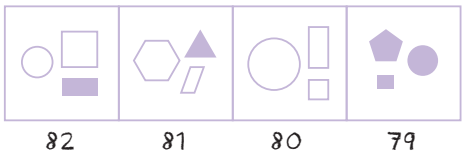
1. What is the value of D?

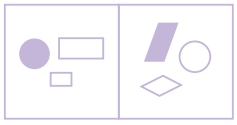
9	+	B	=	19
+		+		+
A	+	8	=	14
=		=		=
15	+	C	=	D

2. What do you get if you add together the second digit, the penultimate digit and the last digit of the Childline telephone number?

3. What number is quatre-vingt-huit in French, achtundachtzig in German, and ochenta y ocho in Spanish?

4. Which of the four boxes below is most similar to the boxes labelled X and Y?

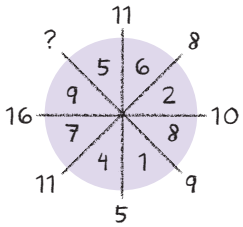




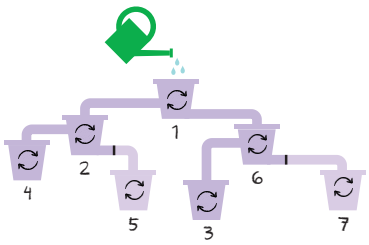
ANSWER	1	2	3	4	5	6	7	8	9
NUMBER									
LETTER									

HIGHEST ANSWER: _____

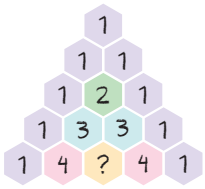
5. Can you find the value of the missing number?



6. Which recycled tub will be filled first?

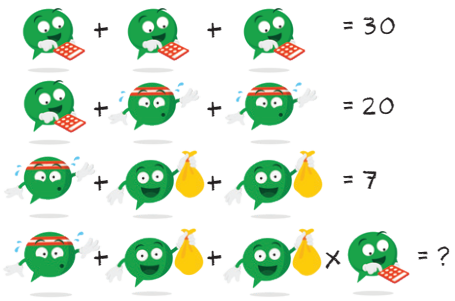


7. What is the value of the missing number in this diagram?



8. What number do these Roman numerals equal? LVI – XLVII = ?

9. What is the answer to this?



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KS3/S1-S3 (11-14 year olds)

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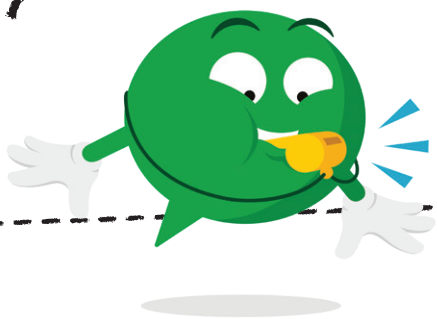


Red team - clues

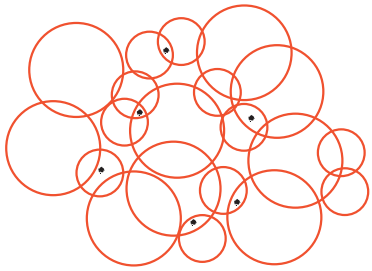
Answer each question as quickly and accurately as possible. Fill in the number answer to each of the nine questions in the table. When you have done this, use the codebreaker to find the corresponding letter which will spell out the location of your piece of the key.

Once the class has assembled all ten pieces of the key, give your teacher the highest number of all your answers. Lastly, put each team's highest number in ascending order to create the final code. If the code is correct, the timer will stop, and you have completed Buddy's Key Challenge!

ANSWER	1	2	3	4	5	6	7	8	9
NUMBER									
LETTER									

HIGHEST ANSWER: _____

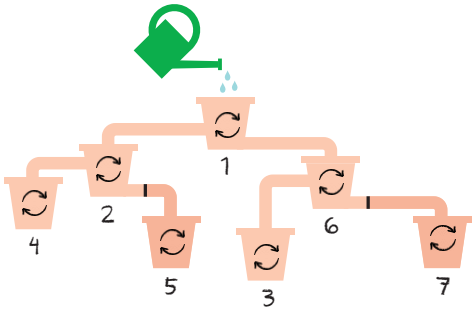
1. How many circles contain dots?



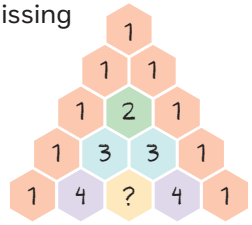
2. The total cost of a pair of trainers and a hoodie is £150. The trainers cost £100 more than the hoodie. How much does the hoodie cost?

3. How many years were there between the end of the First World War and beginning of the Second World War?

4. Which recycled tub will be filled first?



5. What is the value of the missing number in this diagram?



6. If a cube has a volume of 512cm^3, what is the length of a side?

7. What number do the Wonders of the World and a certain lemonade drink have in common?

8. How many triangles are there in this shape?

9. What number parking space is Buddy in?

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KS3/S1-S3 (11-14 year olds)

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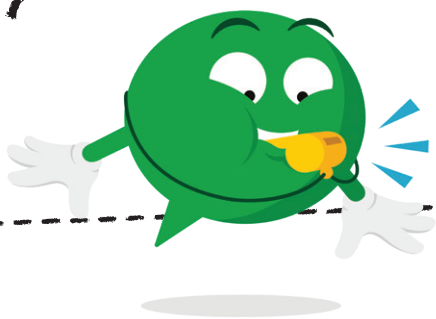


Yellow team - clues

Answer each question as quickly and accurately as possible. Fill in the number answer to each of the nine questions in the table. When you have done this, use the codebreaker to find the corresponding letter which will spell out the location of your piece of the key.

Once the class has assembled all ten pieces of the key, give your teacher the highest number of all your answers. Lastly, put each team's highest number in ascending order to create the final code. If the code is correct, the timer will stop, and you have completed Buddy's Key Challenge!

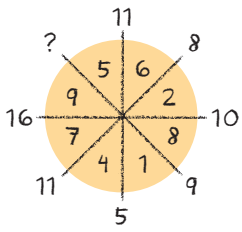
ANSWER	1	2	3	4	5	6	7	8	9
NUMBER									
LETTER									

HIGHEST ANSWER: _____

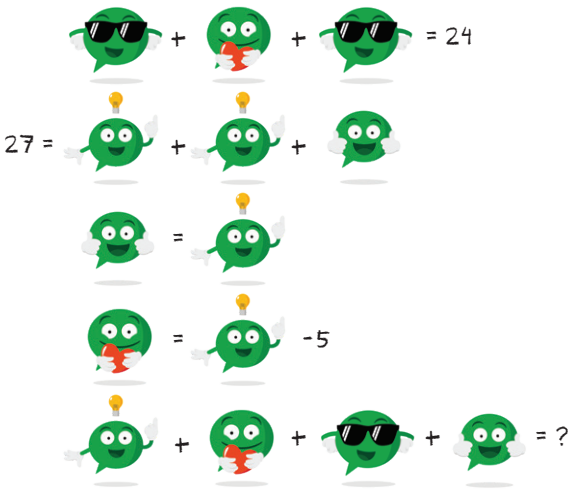
1. At what number does the Chancellor of Exchequer live on Downing Street?

2. What do you get if you add together the second number, the penultimate number and the last number of the Childline telephone number?

3. Can you find the value of the missing number?



4. What is '?'



5. What is the value of D?

9	+	B	=	19
+		+		+
A	+	8	=	14
=		=		=
15	+	C	=	D

6. What is LXXXIV in Roman numerals?

7. The total cost of a pair of trainers and a hoodie is £150. The trainers cost £100 more than the hoodie. How much does the hoodie cost?

8. How many triangles are there in this shape?

9. These four shapes all have something in common except one. Which is the odd one out?

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