

# Prime Numbers Activity Booklet



# Prime Numbers

A natural number greater than 1 with no divisors other than 1 and itself.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

**Remember these facts about prime numbers!**

There are no even numbers except 2.

There are no prime numbers ending in 5, except 5.

The digits can't add up to 3 except 3 (digital root).

# Prime Numbers

1) Finish the definitions:

A prime number \_\_\_\_\_

A composite number \_\_\_\_\_

2) Sort the numbers correctly to show whether they are prime or composite numbers.

3, 6, 7, 9, 13, 15, 18, 27, 33, 41, 61, 81

Prime	Composite

3) Find all the prime numbers between 70 and 100 and list them below.

\_\_\_\_\_

1) Michael says,

'All prime numbers are odd.'



Do you agree? Explain your thinking.

\_\_\_\_\_

\_\_\_\_\_

2) What number am I?

Use the clues to find all the possible numbers. You might want to use a hundred square to help you.

I am a prime number less than 100.

I am 1 more than a multiple of 10.

\_\_\_\_\_

3) What number am I?

I am a prime number less than 100.

I am 2 less than a multiple of 5.

\_\_\_\_\_

1) Amira sets a challenge for her friend Marc.

Can you find all the possible numbers she could be thinking of?

I am thinking of a number. It is higher than 20. It is less than 60. It is a prime number. The sum of its digits is an odd number.



Amira

Is Marc correct? Explain your reasoning.



Marc

There are three possibilities.

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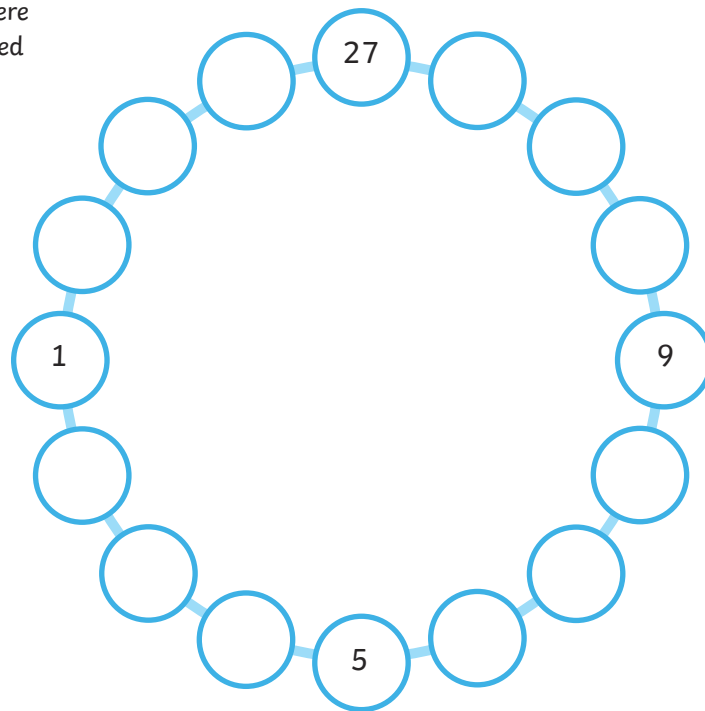


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2) Can you arrange the numbers in the circles so that each adjoining pair adds to make a prime number?

2, 3, 4, 6, 7, 8, 10, 11, 12, 14, 15, 16

**Top Tip:** think about where the odd numbers will need to be placed.



# Prime Crime

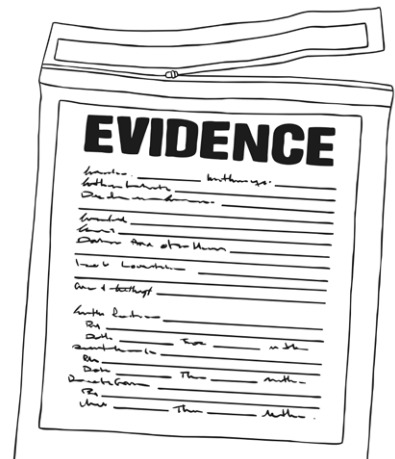
I can identify prime numbers up to 100 and recall prime numbers up to 19.



- 1) The prime numbers to 20 have gone missing!  
Can you write them in the boxes below?

--	--	--	--	--	--	--	--

- 2) The only clue we have about the identity of the thief is that they live in a house with a prime number. Tick the houses below where the thief might live.



# Prime Detectives

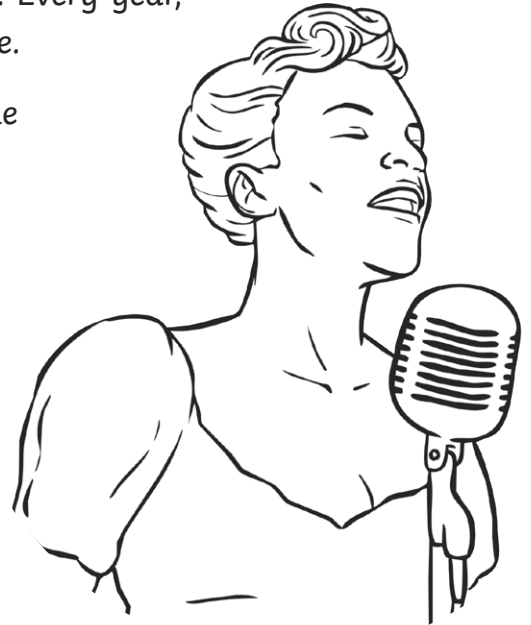
I can identify prime numbers.



Sing-Song Aloud is a very popular competition for singing. Every year, thousands of people enter the competition in search of fame.

This year is no different... but there has been a crime committed! Somebody has sabotaged the equipment and they have broken the microphones, with only pig-like sounds being emitted! The police have been investigating exactly what happened.

As the Detective Chief Inspector, it is your job to work out who the saboteur is. Your officers have taken down the names and descriptions of the people on set that day. Your task is to solve the clues and work out who has sabotaged the equipment!



Name	Gender	Height	Left-handed or right-handed
Amelia Killen-Browne	female	tall	left
Barry Shaw	male	short	right
Fenella Bentley	female	tall	left
Gurdeep Mehmi	male	short	left
Janice Twist	female	short	right
Ken Corder	male	tall	right
Ling Chang	male	tall	left
Mei Chang	female	short	left
Nancy Greene	female	tall	right
Ramesh Iqbal	male	tall	right

## Clue One

Circle all of the prime numbers. If the amount of prime numbers is odd, then the saboteur is female. If the amount of prime numbers is even, then the saboteur is male.

2      52      9      111      19      83      85      31      59      89  
 133      21      22      88      15      90      17      57      131      72

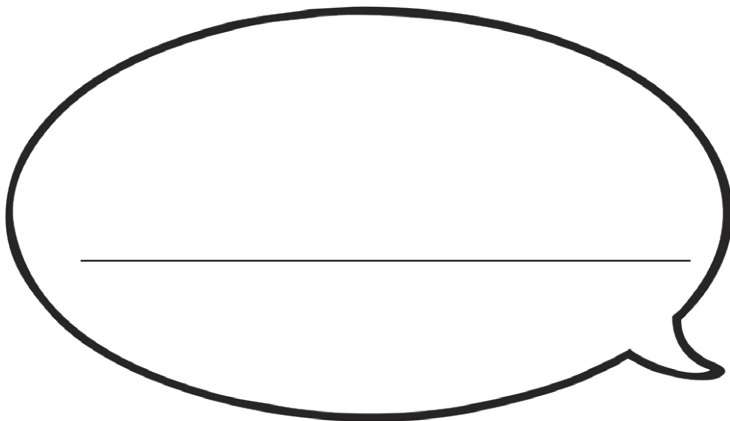
The saboteur is \_\_\_\_\_ .

## Clue Two

Count in prime numbers from the first number in the circle, and then take the last number you reach and find the corresponding word in the table below. Rearrange the words to form a sentence and solve the first clue.

2	○	○	○	○
13	○	○	○	○
47	○	○	○	○
83	○	○	○	○

the 11	microphone 9	ran 2	stole 71
short 101	broken 27	saboteur 29	of 15
was 67	a 69	singer 16	tall 103



## Clue Three

Look at the numbers in the circles. Write the nearest prime number lower than the number in the left-hand boxes and the nearest prime number higher in the right-hand boxes. Then add each column of boxes up. If either column adds to exactly 183, the saboteur is left handed.

	←	45	→	
	←	15	→	
	←	9	→	
	←	68	→	
	←	34	→	

The saboteur is \_\_\_\_\_ handed.

The saboteur is \_\_\_\_\_ .





# Recalling Prime Numbers 0-19

Establish whether a number up to 100 is prime and recall prime numbers up to 19.

Knowing the first few prime numbers can give you a real advantage when answering questions and calculating prime factors. Complete this sheet to deepen your familiarisation.

Allow yourself some time to look at the prime numbers. Look carefully for the odd numbers which are missing and think about why. When you are ready fold the sheet over on the fold line and complete the tasks below...

**2, 3, 5, 7, 11, 13, 17, 19**

A. Write out the prime numbers between 0-19 with your weaker hand!

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B. Write the prime numbers out in descending order (highest to lowest).

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C. Which three prime numbers are missing?

**13, 7, 19, 2, 5,** \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

D. Circle the prime numbers.

six

one

19

nine

fifteen

17

15



thirteen



7

# Prime Numbers

- 1) A prime number *has only 2 factors: 1 and itself.*  
 A composite number *has more than 2 factors.*

2)

Prime	Composite
3	6
7	9
13	15
41	18
61	27
	33
	81

- 3) 71, 73, 79, 83, 89, 97

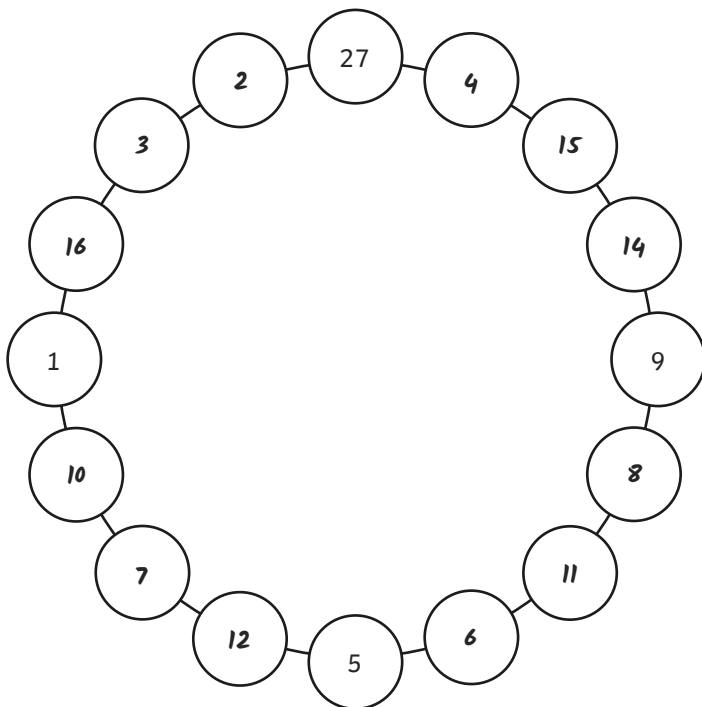
- 1) Michael is incorrect, as 2 is a prime number and it is even. 2 is the only even prime number.

- 2) 11, 31, 41, 61, 71

- 3) 3, 13, 23, 43, 53, 73, 83

- 1) Marc is incorrect. There are 5 numbers that fit all the criteria: 23, 29, 41, 43 and 47. They are all greater than 20, less than 60 and they are all prime. Their digit sums are all odd.

- 2) This is one possible solution:



## Prime Crime

Question	Answer
1.	The prime numbers to 20 have gone missing! Can you write them in the boxes below?
	<b>2, 3, 5, 7, 11, 13, 17, 19</b>
2.	The only clue we have about the identity of the thief is that they live in a house with a prime number. Tick the houses below where the thief might live.
	<b>67, 37, 97, 83, 43, 89</b>

Prime Detectives

Question	Answer
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**1.** Clue One  
Circle all of the prime numbers. If the amount of prime numbers is odd, then the saboteur is female. If the amount of prime numbers is even, then the saboteur is male.

<del>2</del>	52	9	111	<del>19</del>	<del>83</del>	85	<del>31</del>	<del>59</del>	<del>89</del>
133	21	22	88	15	90	<del>17</del>	57	<del>131</del>	72

The saboteur is *male*.

**2.** Clue Two  
Count in prime numbers from the first number in the circle, and then take the last number you reach and find the corresponding word in the table below. Rearrange the words to form a sentence and solve the first clue.

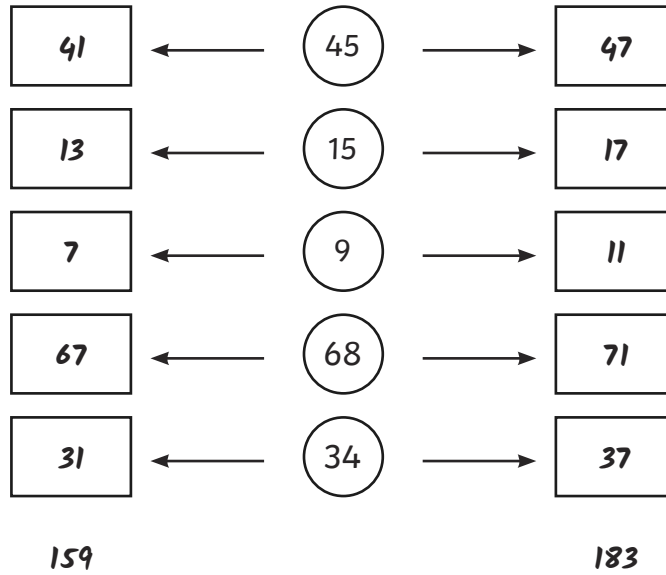
(2)	(3)	(5)	(7)	(11)
(13)	(17)	(19)	(23)	(29)
(47)	(53)	(59)	(61)	(67)
(83)	(89)	(97)	(101)	(103)

the <b>11</b>	microphone 9	ran 2	stole 71
short 101	broken 27	saboteur <b>29</b>	of 15
was <b>67</b>	a 69	singer 16	tall <b>103</b>

The saboteur was tall.

Prime Detectives

3. Clue Three  
 Look at the numbers in the circles. Write the nearest prime number lower than the number in the left-hand boxes and the nearest prime number higher in the right-hand boxes. Then add each column of boxes up. If either column adds to exactly 183, the saboteur is left handed.



The saboteur is *left* handed.

The saboteur is *Ling Chang*.

### Recalling Prime Numbers 0-19

A. Write out the prime numbers between 0-19 with your weaker hand!

**2, 3, 5, 7, 11, 13, 17, 19**

B. Write the prime numbers out in descending order (highest to lowest).

**19, 17, 13, 11, 7, 5, 3, 2**

C. Which three prime numbers are missing?

**13, 7, 19, 2, 5, 3 , 17 , 11**

D. Circle the prime numbers.

six

one

19

nine

thirteen



fifteen

17

15



7