

Multiplication and Division: Find the Primes

Aim: Establish whether a number up to 100 is prime and recall prime numbers up to 19. I can name all of the prime numbers to 20.	Success Criteria: I can explain what a prime number is. I know that 2, 3, 5, 7, 11, 13, 17 and 19 are prime numbers.	Resources: Lesson Pack Dice Whiteboards and pens
	Key/New Words: Prime number, composite number, factor, multiple, odd, even, consecutive.	Preparation: Differentiated Find the Primes Activity Sheets – one per child Bingo Sheet – one per child

Prior Learning: It will be helpful if the children know the multiplication facts up to 12×12 , and understand the words multiple, factor and prime number.

Learning Sequence

	Star Number: The Lesson Presentation shows a star with a number inside it. On each point of the star, there is a quick task to do to the star number, e.g. double it, partition it, find its factors, halve it, multiply its digits. A slide with a more challenging number is also included for you to use if you wish.							
	What Is a Prime Number? What is a prime number? Children look at the ideas suggested on the Lesson Presentation and decide which definition is correct. Children discuss with a talk partner before feeding back to the class.							
	Prime Numbers to 20: Children work in pairs to name all of the prime numbers to 20. Share the answers on the Lesson Presentation , encouraging children to check that they have identified every prime number.							
	Prime Number Bingo: Distribute the Bingo Sheets. Children follow the instructions on the Lesson Presentation to play the game in pairs. The first person to cross off all of their prime numbers is the winner.							
	Find the Primes: Children complete the differentiated Find the Primes Activity Sheets , naming all of the prime numbers to 20. <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"></td> <td>Children name the prime numbers to 20 then use the numbers 5, 6, 7, 8, and 9 and the operations + and - to calculate them.</td> <td style="text-align: center;"></td> <td>Children name the prime numbers to 20 then use the numbers 0, 1, 2, 3 and 9 and all four operations to calculate them.</td> <td style="text-align: center;"></td> <td>Children name the prime numbers to 20 then investigate whether they can use various sets of consecutive numbers and all four operations to calculate them.</td> </tr> </table>		Children name the prime numbers to 20 then use the numbers 5, 6, 7, 8, and 9 and the operations + and - to calculate them.		Children name the prime numbers to 20 then use the numbers 0, 1, 2, 3 and 9 and all four operations to calculate them.		Children name the prime numbers to 20 then investigate whether they can use various sets of consecutive numbers and all four operations to calculate them.	
	Children name the prime numbers to 20 then use the numbers 5, 6, 7, 8, and 9 and the operations + and - to calculate them.		Children name the prime numbers to 20 then use the numbers 0, 1, 2, 3 and 9 and all four operations to calculate them.		Children name the prime numbers to 20 then investigate whether they can use various sets of consecutive numbers and all four operations to calculate them.			
	Diving into Mastery: Schools using a mastery approach may prefer to use the following as an alternative activity. 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. <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"></td> <td>Children identify prime and composite numbers.</td> </tr> <tr> <td style="text-align: center;"></td> <td>Children prove whether a statement is correct. They identify possible numbers from given criteria.</td> </tr> <tr> <td style="text-align: center;"></td> <td>Children solve prime number problems.</td> </tr> </table>		Children identify prime and composite numbers.		Children prove whether a statement is correct. They identify possible numbers from given criteria.		Children solve prime number problems.	
	Children identify prime and composite numbers.							
	Children prove whether a statement is correct. They identify possible numbers from given criteria.							
	Children solve prime number problems.							
	Prime Rhyme: Children learn the rhyme for remembering the prime numbers to 20.							

Exploreit

Rhymeit: Children write their own rhyme to remember the prime numbers less than 20.

Composeit: Children use tuned or untuned musical instruments to turn the 'Prime Rhyme' into a song by composing a melody to go with the words.

Learnit: Children learn the prime numbers up to 50 and test each other in pairs.

Aim: I can name all of the prime numbers to 20.				Date:					
				Delivered By:			Support:		
Success Criteria	Me	Friend	Teacher	T	PPA	S	I	AL	GP
I can explain what a prime number is.				Notes/Evidence					
I know that 2, 3, 5, 7, 11, 13, 17 and 19 are prime numbers.									
Next Steps									
) _____									
) _____									

T	Teacher	I	Independent
PPA	Planning, Preparation and Assessment	AL	Adult Led
S	Supply	GP	Guided Practice

Aim: I can name all of the prime numbers to 20.				Date:					
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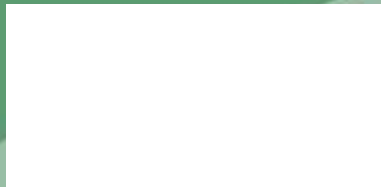


Maths

Multiplication and Division

Maths | Year 5 | Multiplication and Division | Identify and Recall Prime Numbers | Lesson 2 of 2: Find the Primes

Find the Primes



Aim

- I can name all of the prime numbers to 20.

Success Criteria

- I can explain what a prime number is.
- I know that 2, 3, 5, 7, 11, 13, 17 and 19 are prime numbers.

Star Number



Work out the number that belongs on each point of the star.

double it

find its factors

partition it

124

halve it

multiply its digits
($1 \times 2 \times 4$)

Star Number



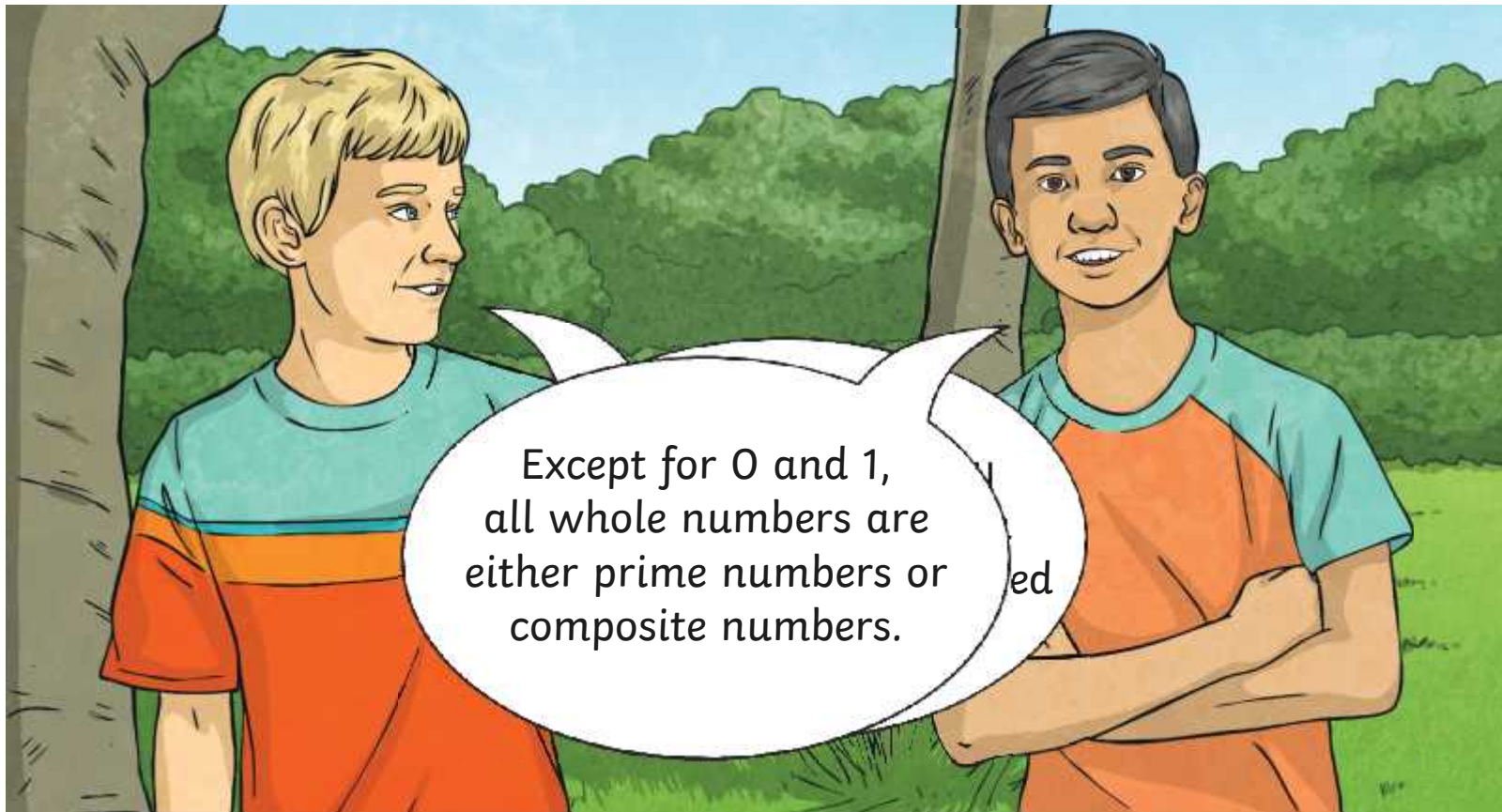
Work out the number that belongs on each point of the star.



What Is a Prime Number?



Can you remember what a prime number is?



Except for 0 and 1,
all whole numbers are
either prime numbers or
composite numbers.

Prime Numbers to 20



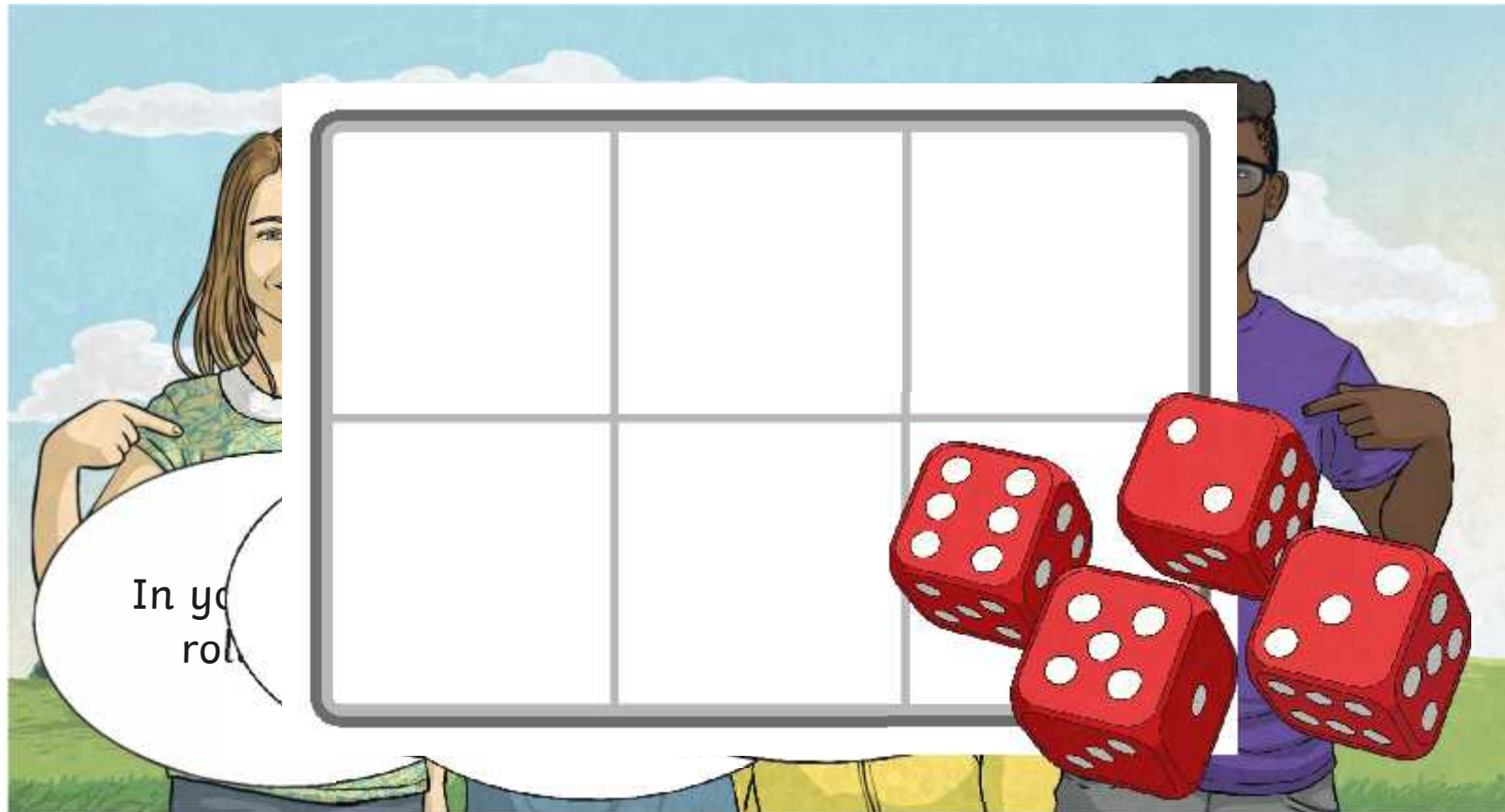
With your partner, see how quickly you can list all of the prime numbers up to 20.



Prime Number Bingo



Write six prime numbers less than 20 on your card.



Find the Primes



Use your marvellous maths skills to complete these activity sheets:

The image shows four activity sheets for finding primes, arranged in a row. Each sheet has a title, instructions, a table, and a reflection question.

Sheet 1 (Leftmost): Title: Find the Primes. Instructions: Write down all the prime numbers to 20. The table has 4 rows and 2 columns. Reflection question: Did you get them all? Can you find ones you missed?

Sheet 2: Title: Find the Primes. Instructions: Write down all the prime numbers to 20. The table has 4 rows and 2 columns. Reflection question: Did you get them all? Can you find ones you missed?

Sheet 3: Title: Find the Primes. Instructions: Write down all the prime numbers to 20. The table has 4 rows and 2 columns. Reflection question: Did you get them all? Can you find ones you missed?

Sheet 4 (Rightmost): Title: Find the Primes. Instructions: Write down all the prime numbers to 20. The table has 4 rows and 2 columns. Reflection question: Did you get them all? Can you find ones you missed? Includes an illustration of a girl thinking.

Prime Rhyme



Learn this rhyme for remembering the prime numbers up to 20 and practise it with your partner.



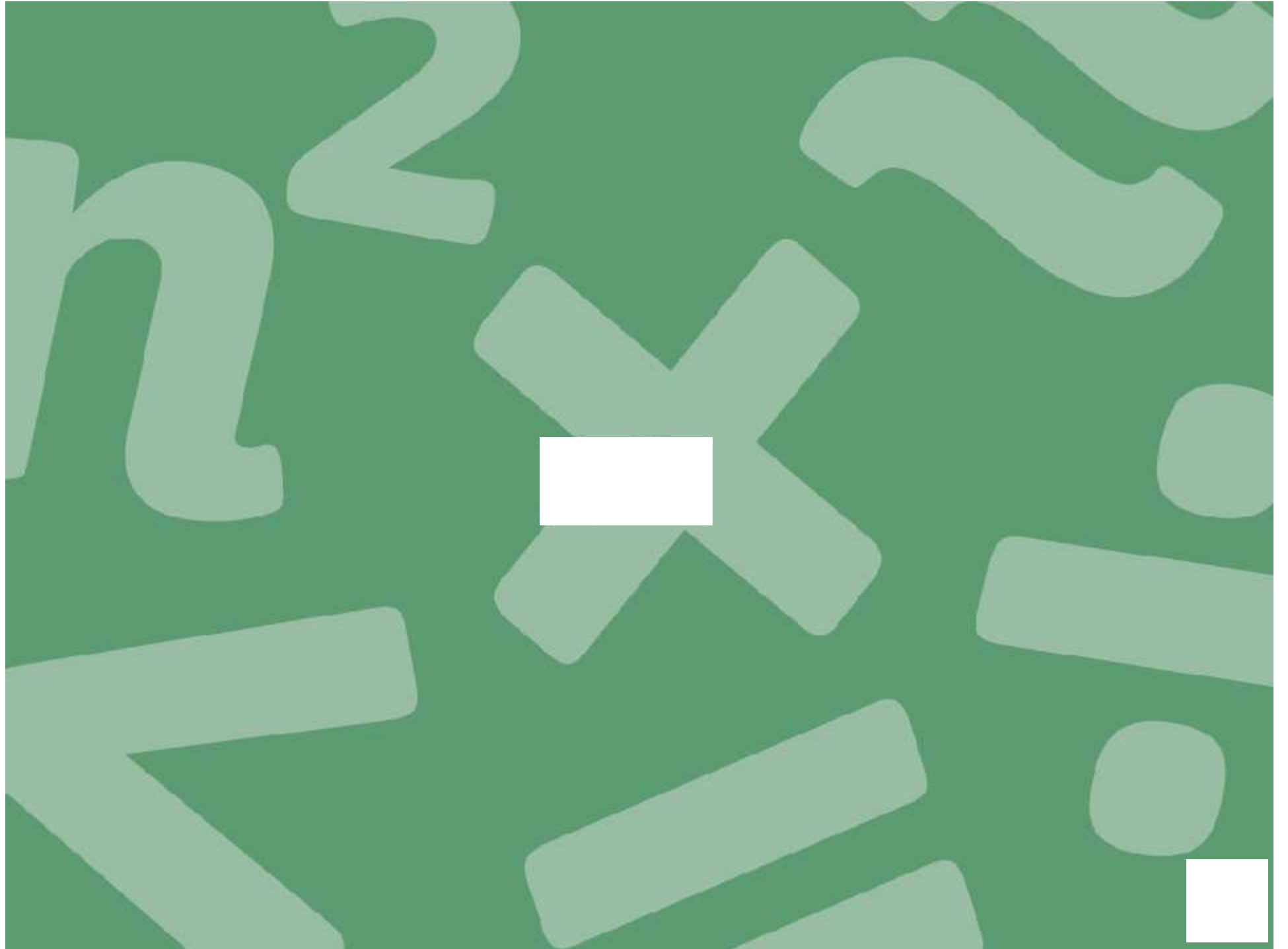
Aim



- I can name all of the prime numbers to 20.

Success Criteria

- I can explain what a prime number is.
- I know that 2, 3, 5, 7, 11, 13, 17 and 19 are prime numbers.





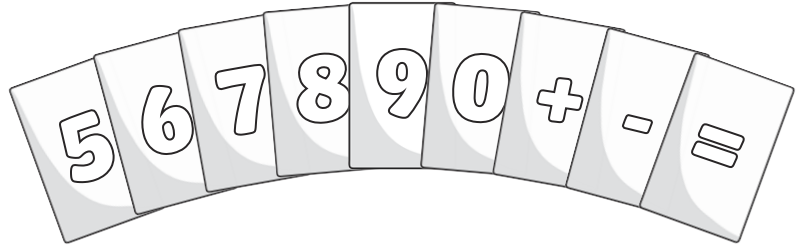
Find the Primes

I can name all of the prime numbers to 20.



1) In the first column, write down all of the prime numbers to 20.
The first one is done for you.

2) Use the numbers on the cards to calculate the prime numbers.

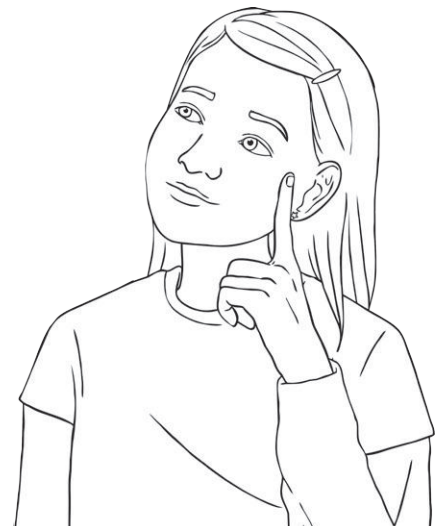


You can only use each number once for each prime number and you can only use addition and subtraction.

Good luck!

2	$7 - 5 = 2$

3) Did you get them all? Great work!
Can you find more than one way to calculate them?

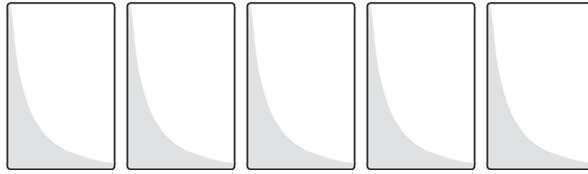




4) Now, try choosing any 5 numbers from 0 to 9.

Which of the prime numbers can you calculate?

What if you were allowed to use \times and \div ?





Find the Primes **Answers**

Question	Answer	
1-2	In the first column, write down all of the prime numbers to 20. The first one is done for you. Use the numbers on the cards to calculate the prime numbers. You can only use each number once for each prime number and you can only use addition and subtraction.	
	2	$7 - 5 = 2$
	3	$8 - 5 = 3$
	5	$5 + 0 = 5$
	7	$7 + 0 = 7$
	11	$6 + 5 = 11$
	13	$6 + 7 = 13$
	17	$8 + 9 = 17$
	19	$7 + 8 + 9 - 5 = 19$
3	Did you get them all? Great work! Can you find more than one way to calculate them?	
	Multiple answers possible.	
4	Now, try choosing any 5 numbers from 0 to 9. Which of the prime numbers can you calculate? What if you were allowed to use \times and \div ?	
	Multiple answers possible.	

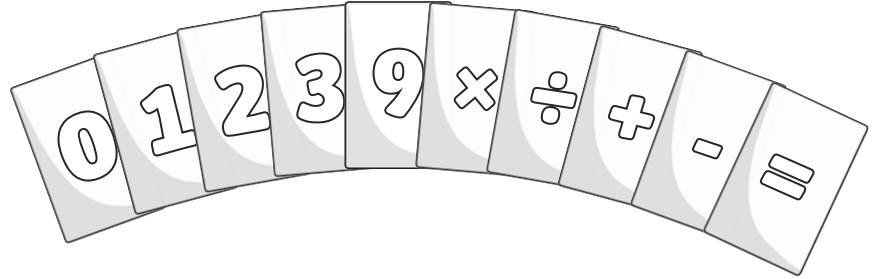


Find the Primes

I can name all of the prime numbers to 20.



- 1) In the first column, write down all of the prime numbers to 20.
The first one is done for you.
- 2) Use the numbers on the cards to calculate the prime numbers.



You can only use each number once for each prime number. You can use addition, subtraction, multiplication and division.

Good luck!

2	$2 + 0 = 2$

- 3) Did you get them all? Great work!
Can you find more than one way to calculate them?





4) Now, try choosing any 5 numbers from 0 to 9.

Which of the prime numbers can you calculate?





Find the Primes **Answers**

Question	Answer	
1-2	In the first column, write down all of the prime numbers to 20. The first one is done for you. Use the numbers on the cards to calculate the prime numbers. You can only use each number once for each prime number. You can use addition, subtraction, multiplication and division.	
	2	$2 + 0 = 2$
	3	$1 \times 3 = 3$
	5	$3 + 2 = 5$
	7	$3 \times 2 + 1 = 7$
	11	$9 + 2 = 11$
	13	$9 + 1 + 3 = 13$
	17	$2 \times 9 - 1 = 17$
	19	$9 \times 2 + 1 = 19$
3	Did you get them all? Great work! Can you find more than one way to calculate them?	
	<i>Multiple answers possible.</i>	
4	Now, try choosing any 5 numbers from 0 to 9. Which of the prime numbers can you calculate?	
	<i>Multiple answers possible.</i>	



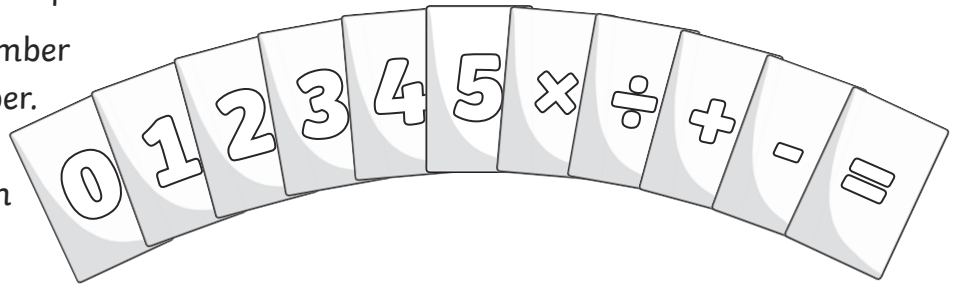
Find the Primes

I can name all of the prime numbers to 20.



- 1) In the first column, write down all of the prime numbers to 20.
The first one is done for you.
- 2) Consecutive numbers are numbers which follow on from each other in order. Consecutive numbers have a difference of 1 between them. Use the consecutive numbers on the cards to calculate the prime numbers.

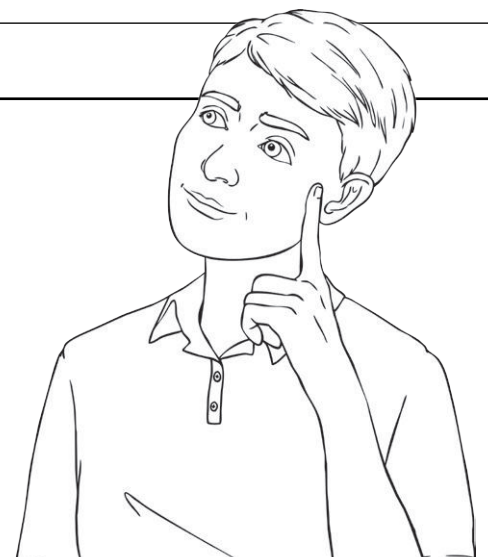
You can only use each number once for each prime number. You can use addition, subtraction, multiplication and division.



Good luck!

2	$2 - 0 = 2$

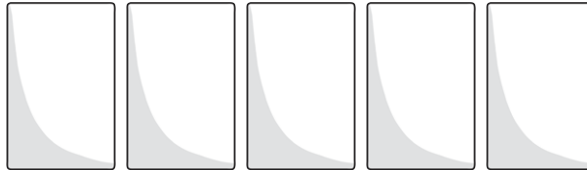
- 3) Did you get them all? Great work!
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4) Now, try choosing any 5 numbers from 0 to 9.

Which of the prime numbers can you calculate?





Find the Primes **Answers**

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1-2	In the first column, write down all of the prime numbers to 20. The first one is done for you. Consecutive numbers are numbers which follow on from each other in order. Consecutive numbers have a difference of 1 between them. Use the consecutive numbers on the cards to calculate the prime numbers. You can only use each number once for each prime number. You can use addition, subtraction, multiplication and division.																
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- 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

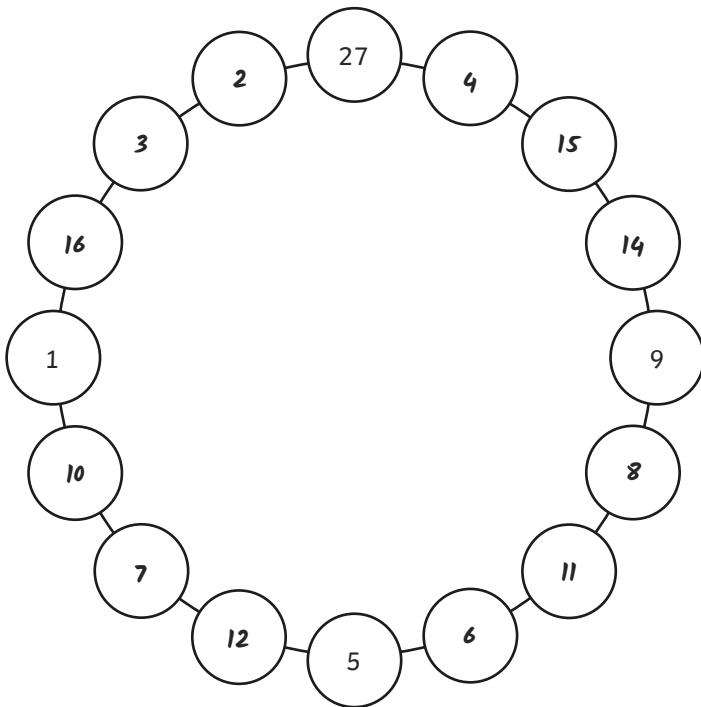
- 3) 71, 73, 79, 83, 89, 97



- 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:*





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?

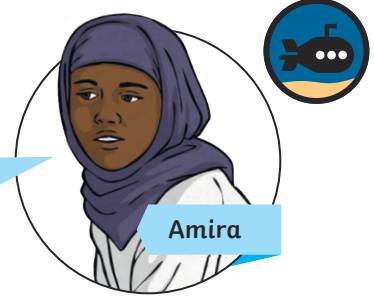
I am a prime number less than 100.

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.



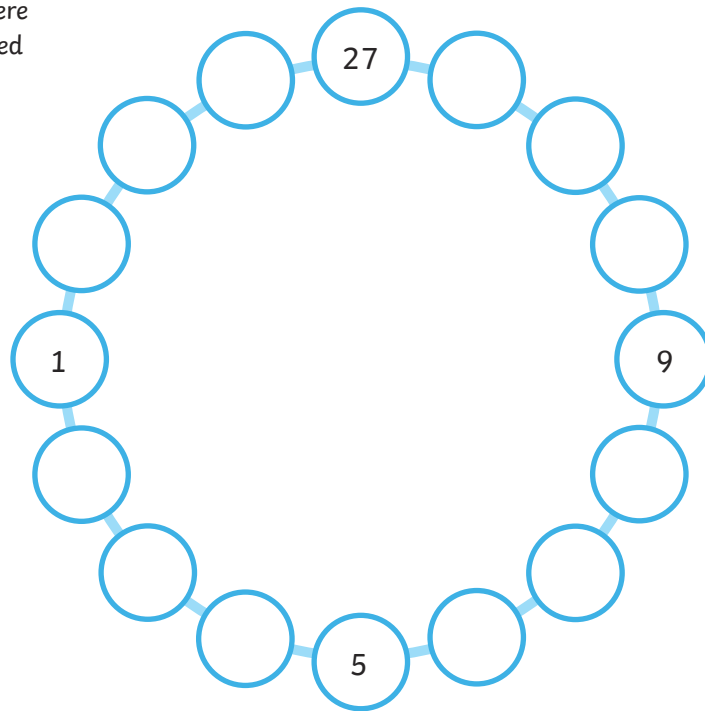
Marc

There are three possibilities.

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.



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 write them in a list.

1) Finish the definitions:

A prime number _____

A composite number _____



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

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1) Amira sets a challenge for her friend Marc.



Amira

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.

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

Is Marc correct?
Explain your reasoning.

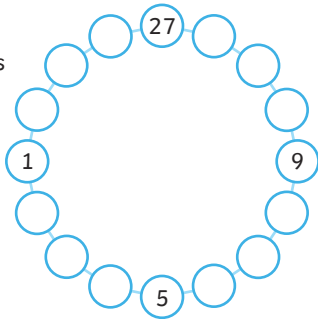
There are three possibilities.



Marc

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.

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Amira

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.

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

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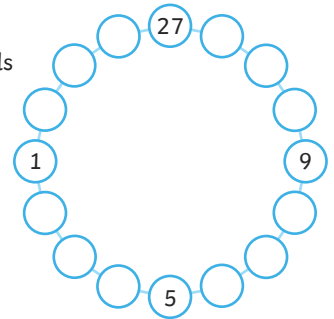
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Marc

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

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I can explain what a prime number is.		
I know that 2, 3, 5, 7, 11, 13, 17 and 19 are prime numbers.		

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